The government's letter 2023/24:59

The government's climate action plan – all the way to net zero

Skr. 2023/24:59

The government submits this letter to the Riksdag.

Stockholm on 21 December 2023

Ulf Kristersson

Romina Pourmokhtari
(Ministry of Climate and Business)

The main content of the writing

This letter is the second climate policy action plan that the government, in accordance with the Climate Act (2017:720), submits to the Riksdag.

In the letter, the government reports how the climate policy work should be carried out during the mandate period, including the decided and planned measures that the government intends to take to improve the conditions for households and businesses to make the decisions required for the national and global climate goals as well as Sweden's climate commitments towards the EU to be reached. During the current mandate period, a series of measures need to be taken to create the conditions required to reach zero net emissions
of greenhouse gases by 2045.

Even the climate-related work that the government intends to carry out internationally nationally and within the EU is presented.

The letter is based on an agreement between the Christian Democrats, the Liberals, the Moderates and the Sweden Democrats.

Table of Contents

1 The matter and its preparation

The Swedish Climate Act (2017:720) stipulates that the government must produce a climate policy action plan every four years. The action plan must be submitted to the Riksdag the year after ordinary elections to the Riksdag have been held.

On March 24, 2021, the government decided on three assignments to produce basis for the upcoming climate policy action plan.

Firstly, the County Administrative Board in Uppsala County was tasked, with the support of the Environmental Protection Agency and the Norwegian Energy Agency (Energymyndighet), to produce documents with analyzes and proposals for policy instruments and other measures that contribute to a local and regional climate change throughout the country (M2021/00669). The report Local and regional climate change – Documents for climate policy action plan 2023 were submitted on 14 September 2022 and have been forwarded. The referral responses are available in the Ministry of Climate and Business (KN2023/00729).

Secondly, the Agency for Growth Policy Evaluations (Growth Analysis) was tasked, with the support of the Environmental Protection Agency, the Swedish Energy Agency, the Swedish Agency for Agriculture, the Swedish Housing Agency and the Swedish Forestry Agency, to produce documents with analyzes and proposals for policy instruments and other measures that contribute to the climate transition of the business world (N2021/01037). The report Business climate change was submitted on 14 September 2022 and has been forwarded. The referral responses are available in the Ministry of Climate and Business (KN2023/00728).

Thirdly, Trafikanalys was tasked with, with the support of the Swedish Housing Agency, the Swedish Environmental Protection Agency, the Swedish Energy Agency, the Swedish Transport Agency and the Swedish Transport Agency, to produce documents with analyzes and proposals that lead to the transport sector's climate transition (I2021/01006). The report Proposals leading to the transport sector's climate transition was submitted on September 14, 2022 and has been referred. Referrals are available in the Ministry of Climate and Business (KN2023/00727).

According to the regulation (2012:989) with instructions to the Swedish Environmental Protection Agency, the Swedish Environmental Protection Agency is tasked with providing documentation for the parts of the climate policy action plan referred to in section 5, second paragraph 1–7 of the Climate Act every four years. The Swedish Environmental Protection Agency submitted its report Basis for the government's upcoming climate action plan and climate report on 13 April 2023 (KN2023/04436). According to the Environmental Protection Agency's instructions, the authority must also at least once every four years report an in-depth evaluation of the possibilities of achieving the environmental goals and, based on this, submit proposals with the aim of achieving the goals. The Swedish Environmental Protection Agency submitted the report In-depth evaluation of Sweden's environmental goals 2023 on 17 January 2023 (KN2023/01971).

According to the regulation (2017:1268) with instructions for the Climate Policy Council, the Climate Policy Council is tasked with submitting a report to the government at the end of March each year that evaluates how the government's overall policy is compatible with the climate goals that the Riksdag and the government have decided. On March 29, 2023, the Climate Policy Council's report 2023 was submitted, which, among other things, contains recommendations for the government's climate policy action plan (KN2023/03230). In Appendix 2 to

this letter reports the government's view of the recommendations from the council.

On July 4, 2023, the Government Office commissioned an investigator to analyze how Sweden's policy on a principled level should be developed based on the changes that have been decided or can be expected within the EU's climate package (KN2023/03567). Investigator John Hassler presented his proposals in the report Sweden's climate strategy – 46 proposals for climate change in the light of Fit for 55 on 11 October 2023 (KN2023/03828).

On 19 July 2018, the government appointed an investigation to propose a strategy for how Sweden should achieve negative emissions of greenhouse gases after 2045 (dir. 2018:70). The investigation submitted its report The road to a climate-positive future (SOU 2020:4) on 29 January 2020. The report has been forwarded and the referral responses are available in the Department of Climate and Business (KN2023/00890).

On May 12, 2022, the Government Office commissioned an investigator to map needs and identify focus areas for continued work on financing the green transformation of the business world. On August 15, 2022, investigator Hans Lindblad submitted the memorandum Financing the green transition of business (N2022/01677).

On 17 June 2022, the government appointed an inquiry to develop proposals for a strategy for a sustainable, competitive and growing Swedish bioeconomy and, if necessary, submit proposals for measures to promote the development of the bioeconomy (dir. 2022:77). On March 29, 2023, the investigation submitted the partial report Renewable in the tank - A policy proposal for a strengthened bioeconomy (SOU 2023:15).

On March 11, 2021, the government appointed an inquiry with the task of reviewing examination processes and regulations with the aim of ensuring a sustainable supply of innovation-critical metals and minerals from primary and secondary sources (dir. 2021:16). On 31 October 2022, the investigation submitted the report A secured supply of metals and minerals (SOU 2022:56).

On October 22, 2020, the government gave an additional directive to the Environmental Objectives Committee to propose an overall strategy for reduced climate impact from consumption (dir. 2020:110). On April 7, 2022, the Environmental Targets Committee submitted the report Sweden's global climate footprint (SOU 2022:15). The report has been referred and the referral responses are available in the Department of Climate and Business (KN2023/00683).

On 30 May 2022, the Government Office commissioned an investigator to investigate and develop proposals for the direction of the state's responsibility for airports in Sweden (I2022/01211). On February 15, 2023, investigator Peter Norman submitted the memorandum The State's responsibility for the Swedish airport system - For availability and preparedness (Ds 2023:3). The report has been referred and the referral responses are available in the Department of Rural Affairs and Infrastructure (LI2023/01786).

On 4 April 2012, the government appointed an inquiry with the task of reviewing the rules on water activities in the environmental code and the law (1998:812) with special provisions on water activities (dir. 2012:29). On 4 June 2014, the investigation handed over the report Wet and dry - proposal for amended water law regulations (SOU 2014:35). The report has been referred and the referral responses are available in the Department of Climate and Business (KN2023/01813).

On February 24, 2022, the government tasked the Housing Agency with issuing proposals on how to speed up the introduction of limit values for buildings, and extend the application of climate declarations (DNR). On 10 May 2023, the Swedish Housing Agency submitted the report Limit value for buildings' climate impact and an extended climate declaration (LI2023/02459).

On 10 December 2020, the government tasked the Swedish Transport Agency with investigating the conditions for and the suitability of introducing an opportunity in Sweden for people with driving license authorization B to drive vehicles that are heavier than what you are normally allowed to drive with that authorization (I2020/03231). On November 15, 2021, the Swedish Transport Agency submitted the report Pre-conditions for driving certain vehicles powered by electricity or other alternative fuels with driver's license authorization B (LI2023/01080).

On July 28, 2022, the government commissioned the Energy Agency and the Swedish Transport Administration to develop an action program for charging infrastructure and tank infrastructure for hydrogen (I2022/01562). On 15 November 2023, the Energy Agency and the Swedish Transport Administration submitted the report Action program for charging infrastructure and tank infrastructure for hydrogen (KN2023/02165).

In Trafikanalys' regulatory letter for 2022 (I2021/03292), the government commissioned Trafikanalys to investigate the conditions for an increased use of fully or partially electric ships in Sweden, as well as to investigate possible incentives to achieve an increased use of shore and charging current. On December 15, 2022, Trafikanalys submitted the report Conditions and control instruments for increased electric shipping (LI2023/01213).

On 18 February 2021, the government tasked the Swedish Transport Agency with developing proposals for a register for work machines (M2021/00358). On September 30, 2022, the Transport Board submitted the report Register for work machines - conditions for extended registration (KN2023/00735).

In order to obtain data for the climate policy action plan, the government also organized a number of roundtable discussions with the sectors that emit the most and the sectors that can create the conditions for climate change. On 20 April 2023, roundtable discussions were held with actors in agriculture and forestry, on 2 May 2023 with the transport industry, on 23 May 2023 with the industrial industry, on 30 May 2023 with financial market actors and on 5 June 2023 with the energy industry. As a conclusion to the round table discussions, the government also organized a national climate meeting on 16 June 2023. The purpose of the meeting was to collect data for the climate policy action plan. The meeting was attended by representatives of business, civil society, interest organizations and academia.

This letter is based on an agreement between Kristdemo-
the craters, the Liberals, the Moderates and the Sweden Democrats.

2 Climate policy as an engine in a growing economy

The government believes that global efforts to reduce greenhouse gas emissions need to increase. The vast majority of countries need to do much more to phase out coal, oil and gas and to become climate neutral. Sweden and the EU have taken a leading role through binding targets and legislation that directs the targets to be reached. All other large emitters need to follow the EU's example.

Sweden must pursue an ambitious and effective climate policy. At the same time, it is important that the climate transition takes place with the acceptance of the citizens. Without broad long-term support, it is impossible to implement climate policy.
It assumes that individuals and companies can act, innovate, consume, invest, finance and produce in a more climate-smart manner and that prosperity increases. It is basically the same factors that drive growth. Climate change presupposes growth, but it also drives growth.

The climate issue can only be solved in an economy that grows and is characterized by increased competitiveness, growth, strengthened preparedness and resilience. Swedish companies have been early adopters and have found opportunities to benefit from the change taking place globally. An ambitious, long-term and effective climate policy thus means an opportunity for the Swedish business community to take market shares and enter completely new markets with its fossil-free products, services and technical solutions.

Three findings lay the foundation for the government's climate policy.

1. A global question requires global answers. It is through international cooperation, knowledge exchange and free trade that we can achieve a successful climate transition. The EU is a central player both in influencing emissions within the Union and in influencing the outside world. Without the commitment of giants such as the US, China, India and Brazil, we cannot meet this global challenge.

2. Technology development and a massively increased use of climate-neutral electricity is a prerequisite for the transition in Sweden and in all other countries. In Sweden, expanded nuclear power is the single most important measure for us to be able to reduce our emissions nationally through the electrification of transport and industry. The government's roadmap for new nuclear power is a crucial piece of the puzzle.
3. Climate change can only succeed if it takes place in a growing economy. Legitimacy among the citizens is a prerequisite for the transition, which is also based on the possibilities of finding effective means of control, where the conditions and standard of living for individuals, households and companies do not stagnate, and where the entire country and all social groups have equal opportunities in the transition. Efforts must therefore be made where we get the most emission reductions - climate policy needs to become more cost-effective.

Climate change is based on many small and large decisions

Climate change requires a balanced policy of well-balanced long-term measures. In accordance with the Climate Act, the government's climate policy work is based on the climate policy framework and the long-term, timed emission target that the Riksdag has determined that Sweden must have no net emissions of greenhouse gases into the atmosphere by 2045 at the latest, in order to achieve negative emissions thereafter. The focus of climate policy is therefore to eliminate the emissions that can be removed in a socially efficient way, reduce the emissions that cannot be completely removed and, in addition, to create negative emissions via supplementary measures. In this way, the government's climate policy leads to net emissions passing zero in order to be negative after 2045 and contribute to lowering the carbon dioxide content in the atmosphere. the increase in carbon dioxide content in the atmosphere ceases, only to begin to decrease during the second half of the century. In addition, the work towards net zero emissions needs to be combined with work to adapt society to a changed climate.

The government's climate policy and the climate policy action plan take their point of departure in the target year 2045 and from there identify the conditions that need to be in place for emissions to reach net zero all the way in just over 20 years. Reaching zero is something completely different from reducing emissions. Getting all the way takes planning. Measures need to be put in place long before the goal is to be reached in order for net-zero to be possible to reach. It is the households and companies that, through millions and millions of decisions at kitchen tables and in boardrooms, carry out the climate transition. Stable and growing household economies and a favorable business climate are prerequisites for the effectiveness of the transition and broad support among the people. Without broad support for climate policy, it will not be possible to implement it.

The task of politics is to create the conditions that need to be in place so that emissions can be phased out in a controlled and efficient manner.

The industry is making extensive strategic investments in the green transition, which is crucial for creating long-term competitiveness.
The task of politics is to contribute with frameworks, conditions and incentives for this transition. In this way, Sweden contributes to fulfilling the Paris Agreement in a socio-economically efficient manner.

The climate issue is global and requires global solutions

Globally, annual emissions in the world have doubled since 1970. It is primarily populous countries that leave poverty behind that increase emissions. The country that emits the most is China, but other large countries such as India and Brazil are also increasing their emissions. EU countries have reduced their annual emissions by around 25 percent over the past fifty years.

It is crucial that the whole world works for the global goals to be reached, but also for Sweden to be able to continue towards ambitious goals on terms that are legitimate based on utility and economic sustainability.
Therefore, the government will continue to push for the EU to continue to act globally to influence the large emission countries to reduce their climate impact.

The international climate policy needs to be developed, all countries need to reach all the way to zero. Trade policy must be characterized by

free trade and i.a. be used to get other countries to implement their transition. Climate aid and investments need to be strengthened and made more efficient both at Swedish and European level. Climate aid needs to be focused on creating the conditions for a change in growth.
Poverty needs to decrease and prosperity to increase so that work on the climate can be prioritized.

The EU's climate policy is developing and placing new demands on Sweden

Sweden is part of the European Union and the EU sets the framework for Swedish climate policy. The EU's climate law from 2021 stipulates that the Union must achieve climate neutrality by 2050 at the latest and reduce emissions by at least 55 percent by 2030, compared to 1990. The EU has thereby taken the lead in global climate work and is in practice the world's largest climate club as of now of its size has the ability to lead and be an example to the rest of the world. Thanks to EU cooperation, EU member states can pursue a more ambitious climate policy with lower risks for their own competitiveness. The EU's decision to introduce a carbon border adjustment mechanism (CBAM) creates incentives for other parts of the world to take action to reduce emissions. In this way, European climate policy can provide an even greater global climate benefit.

Through the European Green Deal, the EU's climate policy has produced the broad framework for Sweden's climate transition. The EU's legislative package, Fit for 55, steers towards rapidly decreasing emissions by 2030. The government assesses that the adopted legal acts mean that the EU has the conditions to reach its climate goal by 2030, and that the EU will thus fulfill its commitment under the Paris Agreement. The fact that the EU has now acted so forcefully against the climate crisis means that Sweden's national discretion over climate policy has decreased and that climate policy will be regulated to a greater extent than today at EU level. Our national climate policy therefore needs to be adapted to the EU's jointly decided climate policy.

The task of the member states and the EU institutions is now to ensure that there are conditions for carrying out the transition in such a way that companies strengthen their competitiveness and that people are spared from abrupt changes.

Control instruments must be effective and acceptable

In order to achieve Sweden's ambitious commitment in the EU and national climate goals, effective policy instruments will also be required, not least to reduce the use of fossil fuels.

When the overall control instruments are in place for cost-effective emission reductions, the focus in climate policy will increasingly be about how a socio-economically efficient structural transformation is created within the framework of an increasingly smaller emission space.

The government will make use of the flexibilities offered by the EU regulations to make the achievement of the target as cost-effective as possible. It includes both the transfer of emission allowances from the EU emissions trading system by forgoing auction revenues and the purchase of emission allowances from other Member States. The consequences for households and businesses of the measures that are put in place to quickly reduce

the emissions need to be acceptable. It is therefore important that Skr. 2023/24:59
measures that mitigate the negative effects of climate policy.

Climate change offers new opportunities

The transition is a possibility for the future, but it is not free. Therefore, it needs to be effective. In order to reduce emissions as quickly as possible and for them to reach all the way to net zero, efforts need to be made where we get the most emission reductions per kroner while the total of the efforts takes us all the way. We need innovation, entrepreneurship and free trade – the most powerful tools for change there are.

The fossil-free society is not poorer or worse than today's society. On the contrary, there are considerable synergies between the climate goals and other social goals such as growth, security of supply and environmental goals. Coal, oil and fossil gas have enabled industrial society and great improvements to people's living conditions and freedom, but now need to be phased out. This can be done at the same time as the competitiveness of Swedish companies is strengthened. Sweden can contribute to global emission reductions through exports, both of green innovation technology and of goods that are produced with a lower climate impact than in the rest of the world or are completely climate neutral. A continued rapid change both in Sweden and the EU as well as globally is today crucial to maintaining the competitiveness of many Swedish companies.

Because Sweden is at the forefront of climate change, opportunities are also created to attract foreign direct investment. Thanks to access to fossil-free electricity, raw materials, sustainably produced biomass, competent labor and a well-developed infrastructure for communications, Sweden also has the opportunity to turn climate change into a growth engine.

In the same way that industrialization built Sweden strong more than a century ago, the green new industrialization that is now underway can create future prosperity and security.

By being far ahead in climate change, Swedish companies have a unique opportunity to export sustainable goods, know-how and technology to other countries, which contributes both to climate change globally and employment locally. Swedish exports, especially of energy-intensive goods and services, significantly reduce consumption-based emissions almost regardless of the foreign production they replace.

Electrification – a prerequisite for the transition

Increased electrification is central to reducing emissions to basically zero in several sectors. When internal combustion engines are replaced by electric motors, electrification also means a strong improvement in energy efficiency. By investing in charging infrastructure for both light and heavy vehicles and tank infrastructure for hydrogen gas for heavy vehicles, the conditions are created for electricity and hydrogen to more quickly replace petrol and diesel and, in the long term, also contribute to reducing transport costs. Looking at the total cost, some can electric vehicles already today compete with conventional vehicles. In the long term, aviation and shipping also appear to be able to benefit from electrification to reduce their emissions. Within industry, electrification will contribute to reduced emissions, either directly through the electrification of processes, or indirectly through the production of hydrogen with electrolysis.

The energy system needs to be developed to cope with the transition

To be able to reach Sweden's climate goals and commitments within the EU, the most important prerequisite is access to fossil-free energy at competitive prices. In order to meet society's increased need for electricity and to enable society's transition to climate neutrality, all fossil-free energy sources are necessary. As of June 20, 2023, a new goal of 100 percent fossil-free electricity production by 2040 applies instead of 100 percent renewable electricity production. The production and distribution of electricity needs to be greatly expanded. At the same time, it is crucial that the use of electricity continues to become more efficient. The government intends to return to the Riksdag with an energy policy orientation bill.

Conditions are created for companies to change

The Swedish business community is a leader in the work to reduce emissions but also in creating an effective climate effect in and outside the country through innovation and implementation of new technology. This makes the Swedish business community a crucial part of the solution to the climate issue, which strengthens its competitiveness on the global market. Many companies see great business benefit in being far ahead in climate work.

The policy must contribute to the conditions required for companies, both large industries and smaller ones, to be able to establish themselves in Sweden, grow and switch to fossil-free. The most important prerequisites for the transition are safe and cost-effective supply of fossil-free energy, predictable and efficient permit processes, necessary infrastructure and access to relevant competence to enable the companies' transition. Swedish companies have advanced conversion plans with the potential to greatly reduce emissions both in Sweden and globally. Because what is optimal from a socioeconomic perspective is not always optimal from one

from a business economic perspective, the state needs in some cases to contribute to the financing of these plans.

By the fact that Sweden is among the leading countries in the transition, Swedish companies gain advantages in a global market with increasing demands for climate neutrality, while at the same time creating future financial profits.

A fossil-free economy with sustainable value chains and increased production

The new economy is in great need of sustainable and fossil-free value chains for materials and products. In order to reduce emissions from both conventional combustion engines and industrial processes, fossil-free propellants and fuels will be necessary for a long time to come. Sweden contributes to global climate work by promoting a rapid transition to circular and bio-based value chains where natural resources are used more efficiently and where waste and logging residues from, for example, the forest industry can be processed into important fossil-free fuels and other inputs in the refinery and petrochemical industry. In order to achieve the objectives of the Paris Agreement, large amounts of negative emissions will be required. Thanks to a comprehensive bioeconomy and large point sources of biogenic carbon dioxide, Sweden has good conditions for negative emissions through the storage of biogenic carbon dioxide (bio-CCS).

To build the fossil-free economy, secure access to sustainably produced raw materials is required. To build electrical systems, energy production, batteries

and other technology that is needed in a fossil-free economy, Sweden needs Skr. 2023/24:59
significantly greater use of the raw materials we possess. Sweden can
through a strong mining sector and the circular use of minerals contribute to an
increased degree of self-sufficiency within the EU of metals and minerals which are
often central raw materials in technologies that are crucial for climate change and
thereby contribute to increased security and less dependence on imports from third
countries.

We are now laying the foundations for Sweden to move from a fossil to a fossil-free economy and to reach the goal of net zero emissions in 2045 and negative emissions thereafter.

Nuclear power is a prerequisite for reaching the climate goals

Nuclear power has the potential to produce the large amounts of fossil-free electricity that is a prerequisite for climate change. The importance of nuclear power in reaching the climate goals of net zero emissions is also highlighted by the International Energy Agency, IEA. The IEA assesses that the rate of expansion of nuclear power needs to be quadrupled by 2030 compared to 2022 in order to achieve net-zero emissions by 2050. An increased supply of nuclear electricity also strengthens the security of supply in the Swedish electricity system.

The fact that new nuclear power reactors may be built provides improved conditions for carrying out the electrification of the transport sector and industry, which is dependent on a strong power system. Being able to build nuclear power reactors in new locations opens up new planning of the power system, which can lower the system cost. We need to electrify vehicles and industrial processes to phase out the use of fossil fuels. The industry and the transport sector are in focus, due to their large emissions of fossil carbon dioxide, but electrification is crucial for changing other sectors as well.

Nuclear power is already a major part of the Swedish electricity system today (approx. 50 TWh corresponding to 30 percent of electricity production) and thus contributes strongly to the fact that the Swedish electricity mix has the Union's lowest climate footprint (carbon dioxide emissions per MWh). Nuclear power has several properties that together contribute to a secure electricity supply and that characterize a robust electricity system. Nuclear power therefore reduces the need for grid expansion and large-scale energy storage, and enables new connection of intermittent fossil-free energy sources such as wind and solar power.

Dismantling of Swedish nuclear power has had major consequences The

previous political obstacles and the previous prohibition in Section 6 of the Act (1984:3) on nuclear activities against taking certain preparatory measures for new nuclear power, the so-called Thought Prohibition Act, which have hindered the development of nuclear power have great damage and much work remains to rebuild nuclear power's self-evident role in Sweden's energy sector. In 2015, the owners of four of the ten remaining nuclear power reactors in Sweden decided to decommission these reactors prematurely. The owners of Oskarshamn 1 and 2 made this decision on 14 October 2015 and the day after, on 15 October 2015, the owners of Ringhals 1 and 2 decided to decommission these reactors prematurely as well. This meant that Oskarshamn 1 was taken out of operation in 2017. For Oskarshamn 2, which had then been shut

down since 2013 to undergo extensive modernization, further operations were suspended

investments. Ringhals 1 and 2, which were planned to be in operation until 2025 and 2026 respectively, were decommissioned in 2020 and 2019 respectively.

At the time of the decisions, a number of factors had arisen which worsened the market conditions for operating the nuclear power reactors.
As a result of the nuclear accident in Fukushima in 2011, and subsequent analysis work on the safety of nuclear power, the Radiation Safety Authority decided in December 2014 that the licensees for the nuclear power plants needed to have independent core cooling in order to continue operating the facilities after 2020. Increased costs also followed demands for enhanced physical protection .

More central, however, is that the effect tax on nuclear power was raised in 2015 at a time when electricity prices had been showing a downward trend for some years. As the National Audit Office states in the report The State's measures for the development of the electricity system – reactive and insufficiently substantiated (RiR 2023:15), the decision to raise the power tax in 2015 was not preceded by any impact analyzes that affected the electricity system, even though the government at the time, according to the National Audit Office, had clear indications that the decision could have significant consequences.

The National Audit Office states that the government at the time did not intend to contribute to the closure of nuclear power reactors, but that the limited reasoning that was used to justify that nuclear power could bear the cost increase that the higher power tax entailed was largely incorrect. According to the National Audit Office, the government at the time reasoned that many reactors had been in operation for a long time and that their initially high capital costs should therefore be well depreciated, which in turn would mean that nuclear power could bear higher taxation. The National Audit Office states that there is a lack of basis for these assessments, and that late investments in the reactors of just over SEK 5 billion per year during the period 2005–2014 required ongoing depreciation, which constituted a significant part of the production cost.

According to the National Audit Office, the increase in the effect tax in 2015 was preceded by a brief memorandum in which the referral bodies were given a week's response time. In the consultation process, the government at the time received a number of consultation responses that warned that the decision would lead to the decommissioning of nuclear power. In the Swedish Power Agency's response to the Swedish Power Agency's consultation, the four reactors that were subsequently shut down were specifically pointed out. The Swedish Power Grid Agency also believed that the proposal entailed a risk of power shortages that could not be met with additional wind power or demand flexibility. Furthermore, the Swedish Power Grids Agency called for a consequence analysis for the electricity supply of a higher power tax, but no such analysis was carried out.

The government notes that the concerns raised by the Swedish Power Grid Agency and other advisory bodies before the increase in the power tax in 2015 unfortunately came true. Four reactors were shut down and the Swedish electricity system deteriorated significantly. The National Audit Office assesses that a partial explanation for the lack of impact analyzes noted above is that the decisions were part of various political agreements. In doing so, the government states that it is clear from the agreement reached by the then governing parties the Social Democrats and the Green Party on 1 October 2014 that the new government's entry into a future energy commission would be that nuclear power should be replaced by renewable energy and energy efficiency.

Now the foundation is being laid to reach all the way to net zero The most important development in this second climate policy action plan is the clear focus on the fact that all measures taken must be part of a larger plan to reach all the way to net zero. Early emissions reductions are important, especially as the climate effects of carbon dioxide emissions are cumulative, but near-term emissions reduction measures must fit into the plan to get all the way to net zero with increased prosperity.

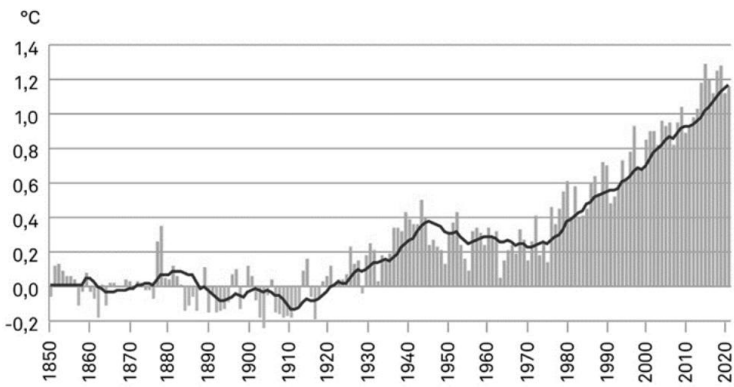
The awareness of the need for a fair transition that is accepted and experienced as reasonable by broad groups has also strengthened over time. The lack of acceptance for parts of the policy presented in the previous plan has also led to the need to change climate policy.

Implementing climate change requires a policy that is widely accepted. It takes place in a society that combines growing prosperity with reduced emissions, without major restrictions on people's freedom and standard of living. The government is now enabling the many decisions that implement the climate transition - through effective and acceptable policy instruments, prerequisites for companies' transition and fossil-free value chains, increased electrification and a developed energy system. This lays the foundation for reaching all the way to net zero.

3 The state of knowledge about climate change

Global warming continues unabated. As can be seen from Figure 3.1, the average temperature on Earth has been approximately 1.1 degrees Celsius higher in the last decade (2011–2020) than the average temperature during the period 1850–1900. The UN climate panel's sixth assessment report clearly shows that the climate changes we see around the world are caused by human emissions of greenhouse gases.

Figure 3.1 Global mean surface temperature and decadal mean 1850–2022 relative to the 1850–1900 average



Source: University of East Anglia (Climatic Research Unit), processing by the Swedish Environmental Protection Agency.

According to the UN Climate Panel's (IPCC) sixth assessment report, it is stated that the ongoing changes in the climate system are very noticeable. In many cases the changes are unprecedented in the last thousand years, and in some cases not in the last hundred thousand years. It is stated that the science is robust in its conclusion that it is human influence, above all through the emission of greenhouse gases, which caused the observed warming. Emissions of particles also affect the climate, but overall these particles in the atmosphere have a cooling effect.

Parallel to the fact that the temperature of the atmosphere has risen, the oceans have also warmed up more and more. Other components of the climate system where clear changes have been observed are, for example, changed precipitation patterns, shrinking glaciers, rising sea levels and rapidly decreasing Arctic sea ice. The increased carbon dioxide content in the atmosphere has also led to ongoing acidification of the world's oceans, as part of the added carbon dioxide dissolves in the oceans. Certain types of extreme weather events have, globally or in parts of the world, become more frequent and/or intense – e.g. heat waves, torrential rain and drought. Several cases of extreme weather in recent years illustrate what we can expect to see more of as a result of climate change. Recent examples are the extreme heat waves that plagued the USA as well as China and the southern parts of Europe. In Sweden, storms and other intense rains have led to floods, power outages and consequences for e.g. car, train and air traffic as well as land industries. According to the Copernicus program, September 2023 was approximately 1.75 degrees warmer than the average for 1850–1900, which is well above previous heat records.

The IPCC states that climate change is increasingly affecting nature and human living conditions around the world. Damage to the structure, function and resilience of ecosystems, both on land and in fresh and salt water, is evident all over the world. In their distribution, many species have moved towards the poles, or towards higher altitudes on land. Heat waves and other disturbances have been observed to exceed the tolerance levels of plants and animals, with example of mass mortality among trees and corals as a result.

Climate change has caused local species losses, increases in disease and mass mortality of plants and animals. With climate change, vector-borne diseases such as malaria are expected to expand to higher latitudes and altitudes, and the duration of the transmission risk season is expected to increase. According to the IPCC, 3.3–3.6 billion people live in areas highly sensitive to temperature rise, and one billion people in areas highly sensitive to sea level rise. Man's fragmentation, degradation and destruction of ecosystems has in many places made ecosystems more vulnerable to the effects of climate change.

Climate change has generally had a negative impact on food and water supplies in the world. Global agricultural productivity has increased, but the effects of climate change have slowed the increase. Climate variations and extremes are associated with longer-term conflicts through food price increases, insecurity around food and water supplies, loss of income and loss of housing. There is some evidence that climate change is associated with low-intensity organized violence within countries, while it is not clear whether climate change is associated with major international armed conflicts. climate change

the rings are expected to contribute to increased migration, but migration patterns will largely depend on i.a. community resilience.

The impact of climate change on people's physical health is felt in many ways, for example in the form of increased morbidity and mortality linked to heat waves. Women in developing countries are more exposed to the effects of climate change than men, as they are generally more dependent on natural resources for their survival. Children are more vulnerable than adults as they will experience a higher degree of climate change during their lifetime. Other examples are health effects resulting from the emergence of human and animal diseases, including pandemics, in new locations. The impact on people's mental health can be about the trauma of extreme weather events, as well as the loss of livelihoods and cultural contexts.

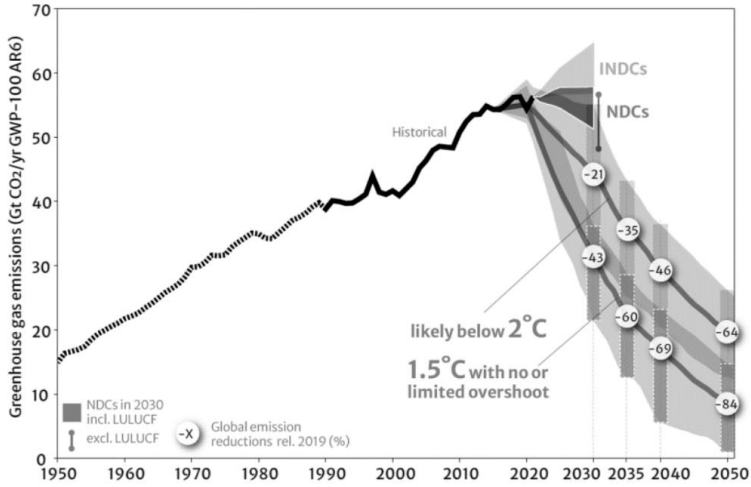
Negative economic consequences of climate change – linked to slow changes as well as to extreme weather events – have increasingly been able to be demonstrated. Risks and vulnerabilities to the effects of climate change tend to be particularly large in the poorest parts of the world - parts of the world that at the same time tend to have contributed the least to causing climate change. Figure 3.2 below shows different risks linked to different temperature increases. The risks linked to climate change are considered to have increased since the last evaluation from the IPCC. Already at 1.5 degrees Celsius of warming, major risks arise.

3.1 Global emission scenarios

According to the IPCC's sixth evaluation report, it is established that the countries' nationally determined contributions to the Paris Agreement (Nationally Determined Contributions - NDC) and the countries' long-term strategies (Long Term Strategies - LTS) have been tightened over time, but that the scope has so far been far from sufficient. To be in line with the 1.5 degree target, carbon dioxide emissions need to be almost halved by 2030 compared to 2019 and reach net zero around 2050. The IPCC shows that emissions in 2021 are around 60 billion tonnes of carbon dioxide equivalent and that they are not decreasing. In order to probably manage to limit the global temperature increase to 1.5 degrees Celsius until around 2100, according to the UN environmental program UNEP[1] there is an emission gap of 23 billion tonnes of carbon dioxide equivalents until 2030 compared to the countries' combined climate plans for the Paris Agreement. Similar conclusions are drawn by the UNFCCC ahead of the global review of the Paris Agreement, see Figure 3.3 below.

[1] UNEP (2022), Emissions Gap Report 2022.

Figure 3.2 **Global scenarios of greenhouse gas emissions until 2030 based on countries' climate contributions to the Paris Agreement (so-called NDCs) or scenarios leading to a warming below 1.5 and 2 degrees Celsius respectively**



Source: UNFCCC (2023), Technical dialogue of the first global stocktake – Synthesis report by the co-facilitators on the technical dialogue.

Based on the policy instruments and measures that are in place today, estimating the development very far into the future is difficult, but the UN Environment Program's (UNEP) assessment is that if current policies continue in all the countries of the world (current policies), we are moving towards a warming of about 2.8 degrees Celsius by the year 2100, compared to pre-industrial levels. Corresponding analyzes from Climate Action Tracker2 and the International Energy Council (IEA)3 give 2.7 degrees Celsius and 2.5 degrees Celsius re When it comes to these types of estimates, it is important to keep in mind that there is significant scientific uncertainty about how strongly the climate system will respond to continued emissions. This means e.g. that the future emissions according to current policies as indicated by UNEP appear to lead to a warming of about 2.8 degrees Celsius by the end of this century.

If, on the other hand, the countries of the world were to tighten their collective climate policy so that it would be in line with the pledges of future zero net emissions that the EU and other countries have made, the assessment is instead that warming will be around 1.7 degrees Celsius by the end of the century. For every decimal point that the average temperature increases, the risks to both the environment and societies grow faster. The difference between 1.5 and 2 degrees of warming is judged by the IPCC to be large in several respects. Such extra heating is assessed e.g. provide a doubling of habitat loss for vertebrates, fish and plants and a tripling of habitat loss for insects. At 2 degrees warming, 37 percent of the world's

[2] Climate Action Tracker (2022), Warming Projections Global Update - Climate Action Tracker November 2022.

[3] IEA (2022), World Energy Outlook 2022.

population to be exposed to extreme heat at least every five years, which is Skr. 2023/24:59 twice as many as at 1.5 degrees. At a temperature increase of 1.5 degrees, between 10-30 percent of all the world's corals are estimated to remain, while less than 1 percent is estimated to remain at 2 degrees of warming. The higher the temperatures, the higher the risks of threshold effects, but these risks are today associated with great uncertainties.

The pledges that have been made in recent years about net zero emissions are therefore positive steps. At the same time, UNEP notes that the world's collective climate policy is still so far from what is required that "the window of opportunity to meet the Paris Agreement's goals is now rapidly closing." This means that even greater efforts are required to meet the goals of the Paris Agreement.

Even if the policy pursued is not sufficient, climate ambitions have been raised over time. This can be illustrated by the fact that all the scenarios in the IEA's roadmap (Net Zero Roadmap: A Global Pathway to Keep the 1.5 Degree Goal in Reach) point for the first time to the fact that global demand for fossil fuels will peak in the 2020s in order to then begin to decrease. This also applies in the scenarios that only reflect decided policy.

The need to close the emissions gap between commitments, policies and what is required to meet temperature targets is a key issue during the 2023 Global Stocktake – the first reconciliation under the Paris Agreement's five-year review cycle.

3.2 Historical emission trends in the EU

The EU's net emissions of greenhouse gases amounted to approximately 3.5 billion tonnes of carbon dioxide equivalents in 2021 and have decreased by 30 percent since 1990. According to preliminary statistics, emissions are estimated to have decreased by a further 1 percentage point in 2022. By 2030, emissions are expected to decrease by 48 percent, while the EU aims to reduce these emissions by 55 percent.
Within LULUCF, the net absorption is estimated to be 260 million tonnes of carbon dioxide equivalents in 2030, while the EU's goal is for the net absorption to increase to 310 million tonnes.4

3.3 Historical emission trends in Sweden

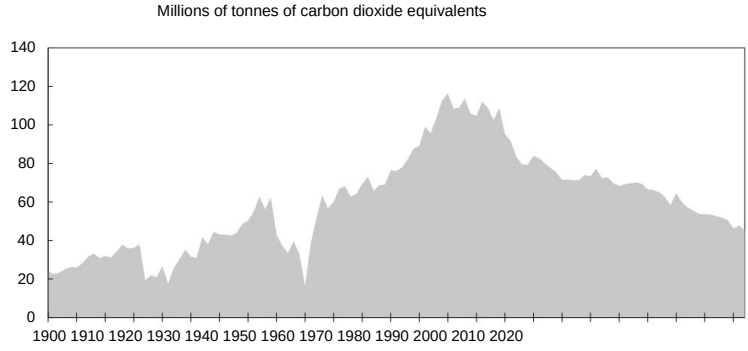
Sweden's territorial emissions of greenhouse gases (emissions that occur within Sweden's borders) amounted to 47.8 million tonnes of carbon dioxide equivalents in 2021. About a third of the emissions come from domestic transport, a third from industry and a third from other sectors, above all agriculture, electricity and district heating production and work machinery.

Sweden's emissions increased until the 1970s, above all due to increased industrialization and increased motoring, which led to coal and then oil being used to an ever greater extent. In 1970, almost 80 percent of Sweden's energy supply came from oil, which meant that emissions exceeded 100 million tons of carbon dioxide equivalents per year. Since the oil crises

[4] European Environment Agency (2023), Trends and projections in Europe 2023.

in the 1970s, emissions were more than halved and the role of oil in the energy system drastically reduced, mainly due to the expansion of nuclear power from 1972–1985, but also a continued expansion of hydropower. The increased availability of electricity led to the electrification of a wide range of industrial processes, whereupon society's need for fossil fuels decreased. In addition, since the 1980s there has been a transition from oil burning to biofuel-based district heating and heat pumps, while extensive energy efficiency measures implemented. In recent years, more energy-efficient internal combustion engines and an increasing use of biofuel have been important for the continued emission reductions. Sweden now has, compared to other countries, small emissions from electricity and district heating production and from own heating.

Figure 3.3 Data on Sweden's territorial emissions of greenhouse gases 1900–1990 and statistics on Sweden's territorial emissions of greenhouse gases 1990–2022



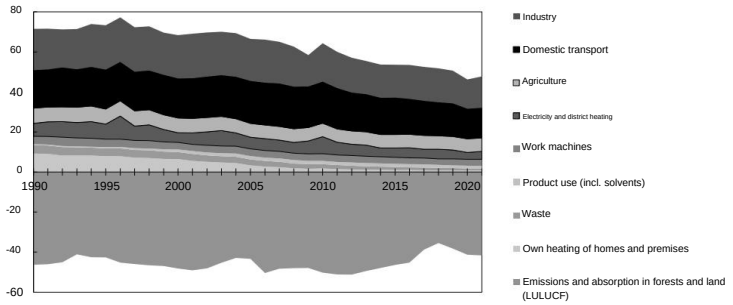
Source: Potsdam Institute for Climate Impact Research (PIK) and the Swedish Environmental Protection Agency.

The biggest contributions to the emission reductions since 1990 come from heating homes and premises. The main measures that have contributed to this are the expansion of district heating networks, increased use of biofuels and the transition from oil-fired heating boilers to both heat pumps and district heating. Heat pumps and district heating have also largely replaced direct electricity, which is a less efficient heating method. In electricity production and district heating, the reduction in emissions has also been due to a transition to burning waste, which has lower emissions than coal and oil. However, emissions from waste incineration are still increasing. The industry's emissions have decreased since 2010 thanks to increased use of electricity and biofuels in the form of residual products from the forest industry and energy efficiency. Remaining emissions from industry consist of more than two-thirds of emissions related to production processes. To reduce such emissions, new process technology is required, often with electricity or hydrogen gas, which in turn requires an increased supply of electricity. More efficient vehicles and an increased use of biofuels have historically contributed to reduced emissions from domestic transport. In recent years, sales of rechargeable vehicles have increased, which has also reduced Emissions from waste treatment have decreased steadily since 1990, which is primarily due to a sharp reduction in landfill as a result of the landfill ban that was introduced in the early 2000s.

The territorial emissions have decreased by 33 percent between 1990 and 2021, which is roughly the same as the EU average. The rate of reduction during this period has been approximately 1–1.5 percent per year, which is less than during the transformative restructuring of the energy system in the 1970s and 1980s. Despite the increase in emissions between 2020 and 2021, the emissions were roughly 6 percent lower than in 2019. According to preliminary statistics from the Environmental Protection Agency, the emissions are estimated to have decreased by 5.3 percent in 2022. The decrease is felt above all in domestic transport, which i.a. is explained by increased electrification and higher mixing of biofuels.

Figure 3.4 Statistics on emissions and uptake of greenhouse gases 1990–2022 distributed by sector

Millions of tonnes of carbon dioxide equivalents

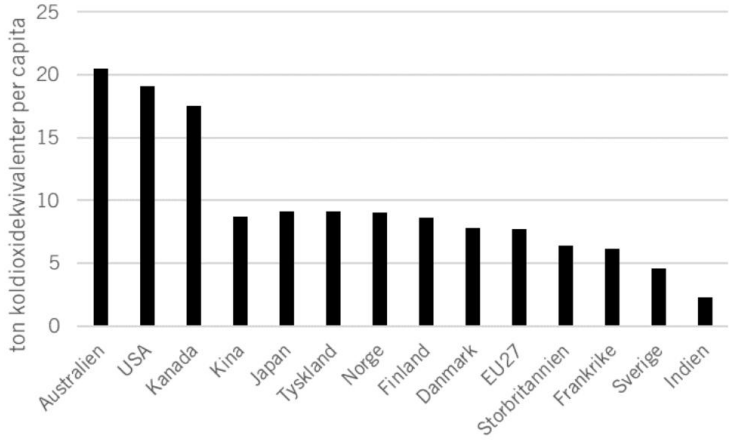


Source: Swedish Environmental Protection Agency.

Sweden's territorial emissions per person are around 4.5 tonnes, compared to around 6 and close to 8 tonnes on average for the world and the EU respectively, see figure below. Sweden's consumption-based emissions per capita are higher than Sweden's territorial emissions.

Figure 3.5 Per capita territorial emissions in 2020 or 2021 for a number of selected countries

Millions of tonnes of carbon dioxide equivalents



Sources: OECD (2021) and Climate Watch Data (China and India 2020).

The products and services exported from Sweden have, on average, a lower climate footprint than corresponding products in other countries. It is, for example, on the export of steel, forest products and energy. It is due, among other things, to that Sweden has a very low use of fossil fuels in electricity and heat production. In addition, Swedish bio-based alternatives replace fossil-based products produced abroad, e.g. in the packaging area. Climate benefits from exports can thus arise as a result of Swedish exports displacing other production in other countries. There are currently no statistics on the climate benefit of exports, but a rough estimate, based on the fact that all Swedish exports displace other production that on average has the same climate footprint as the world average, is that Sweden achieves a climate benefit corresponding to approximately 30–40 million tonnes carbon dioxide per year through its exports5 .

The emissions from refueling in Sweden to aviation and shipping abroad are not covered by national commitments on emission reductions, but are covered by global climate commitments within the international aviation and maritime organizations under the UN's International Civil Aviation Organization (ICAO) and International Maritime Organization (IMO).
Emissions from fuel refueled in Sweden for international aviation and shipping amounted to 9 million tonnes of carbon dioxide equivalents in 2021, which corresponds to an increase of 2 percent compared to 2020. Emissions are two and a half times higher than in 1990, which is due to air travel and freight transport at sea has increased, but also because Swedish fuel producers have won market shares, i.a. as they were early in being able to offer low-sulphur marine fuel. Emissions from international aviation within the EEA have also been covered by the EU ETS since 2012, which is considered to have limited the increase in emissions within foreign aviation. Over time, both aircraft and ships have become more energy efficient and the occupancy rate has increased. Parts of the emissions from international shipping will be covered by the EU ETS from 2025.

3.4 Indicators of the green transition

In order to change society so that the objectives of the Paris Agreement can be reached, a rapid green transition is required. However, this is not a work in its infancy: it has been going on for a long time and is now proceeding at an accelerating pace. On behalf of the government, the Swedish Environmental Protection Agency has developed a number of indicators to describe the pace of the green transition.

The Swedish Environmental Protection Agency has developed an indicator for the climate transition in industry by asking in which phase of the transition the industries are in and what proportion of the emissions are in each transition phase. In total, the industries have submitted permit applications to switch the equivalent of 53 percent of their total emissions in 2021 to alternative processes with lower emissions. This means that a large number of industries have come relatively far in their transition.

[5] Jiborn et al. 2020, Consumption versus Technology: Drivers of Global Carbon Emissions 2000–2014; Material Economics 2020, The climate benefits of Swedish exports.

the sector's transition based on the share of rechargeable passenger cars in Sweden and the average emissions from the vehicle fleet. During the first half of 2023, the share of rechargeable cars in new registrations has continued to increase and amounted to almost 60 percent. However, as several car models have long delivery times, there is a lag in the statistics, which means that a proportion of the newly registered cars in the first half of 2023 were acquired earlier. Furthermore, the weak economy is judged to lead to reduced sales of new passenger cars, mainly in the private market. At the end of 2022, the rechargeable passenger cars accounted for just under nine percent of the total passenger car fleet, which can be compared with just over six percent at the end of 2021. This contributed to the average carbon dioxide emissions from the passenger car fleet as a whole falling from 146 g/km in 2021 to 135 g/km in 2022.

4 International climate work

This section describes the government's international climate work outside the EU, which aims to contribute to the global climate goals and to contribute to the global goals of sustainable development. In 1992, the UN Framework Convention on Climate Change (UNFCCC) was signed. In the climate convention, it is stated that climate change is caused by human activities and that the levels of greenhouse gases need to be stabilized "at a level that prevents dangerous disruption of the climate system", it is also stated that this can only be achieved through international cooperation. Additional negotiation areas, structure and objectives were added through the Paris Agreement, which was adopted in 2015 and whose implementation period was initiated in 2020, with the aim of strengthening the implementation of the convention. The Paris Agreement includes three overarching goals: - keep the increase in the global average temperature well below 2
degrees Celsius above pre-industrial levels, and make efforts to limit the temperature increase to 1.5 degrees Celsius above pre-industrial levels

- increase the ability to adapt to the harmful effects of climate change and promote climate resilience
- make financial flows compatible with a path towards low greenhouse gas emissions and climate-resilient development.

According to the Paris Agreement, all countries have a responsibility to take measures regarding their emissions of greenhouse gases, and developed countries have a responsibility to assist developing countries in taking measures both regarding emission reductions and regarding adaptation to a changing climate. The UN's climate panel IPCC has determined in its sixth synthesis report that global greenhouse gas emissions need to decrease at a rapid pace in order for us to be able to limit warming to 1.5 degrees Celsius, see further section 3.2 for global emission scenarios to reach the Paris Agreement's goals. According to the IPCC, solutions and measures are currently available globally to limit climate change in line with the goals of the Paris Agreement. Through international climate work,

and in collaboration with other international environmental conventions, Sweden can contribute to a globally effective climate transition in addition to limiting national emissions. Furthermore, the countries most exposed to climate change need support to prevent and/or manage the negative effects of the changed climate. There are therefore good reasons to strengthen Sweden's international climate work in order to support and drive other countries' transition and thereby contribute to increasing the pace of implementation of the Paris Agreement.

4.1 International climate work with impact

The government's assessment: The climate convention and the Paris agreement should lay the foundation for Sweden's international climate work. The Paris Agreement's three goals of emission reductions, adaptation and financing should constitute overarching objectives.

The international climate policy should be developed and all countries need to reach all the way to net zero emissions. Therefore, Sweden should work for a higher ambition and to increase the pace of global climate work through e.g. capacity building, policy dialogue, cooperation, financing solutions and measures that promote climate change.

Sweden's main message in the international climate work should be urgency and opportunities: urgency based on science and opportunities based on what the transition entails in terms of new jobs and growth.
Sweden should show how climate change can lead to growth and welfare. The interaction between ambitious legislation, financing and technical solutions should be highlighted. Sweden should work to ensure that effective economic instruments are used in climate policy and that these are implemented globally to the greatest extent possible. That climate considerations should be integrated into all relevant policy areas for effective climate work should also be part of the message.

Sweden should continue to lead, support and be active in international initiatives and collaborations. At the same time, the establishment of new financial institutions should be avoided. Existing structures should be used as efficiently as possible. Exports of climate-friendly products, services and technology that contribute to the green transition should be promoted. Through increased cooperation between the state and business in global initiatives and partnerships, Sweden can contribute to climate change globally.

Sweden should continue to push for the EU to continue acting globally to influence countries with large emissions to reduce their climate impact.

The reasons for the government's assessment

Climate change is global and requires global responses. Efforts from the Swedish side in collaboration with other countries are a natural way to cost-effectively reduce emissions while the work to create the conditions to reach net zero emissions in Sweden continues. Developed countries have a vested interest in the entire world implementing climate change and in limiting the consequences of climate change globally. It is

through international cooperation, knowledge exchange and free trade that we can achieve a successful transition.

Through the Paris Agreement and decisions that the parties to the agreement have subsequently made, there is a solid and long-term framework for how countries should plan, communicate, implement, follow up and report their development towards the goals of the Paris Agreement. Since the agreement was completed, the international climate negotiations and development work have gradually focused on creating processes and capacity to implement the agreement's commitments in practice. So far, the pace of work to reach the Paris Agreement's goals has not been high enough. The IPCC states in its sixth synthesis report that with current measures we are not expected to reach the goals of the Paris Agreement, which would risk leading to extensive consequences, not least in Europe. See further section 3.2.

Impact on Swedish priorities through the EU's climate diplomacy

The EU is a central actor both in influencing emissions within the Union and in driving change in the outside world. Through the EU, Sweden works to influence Swedish positions and priorities in global climate work. The EU has a stated goal of being a leader in global climate work. It manifests i.a. through the goal of climate neutrality by 2050. The EU's climate diplomacy has so far been focused on regulations and policy issues, which has been natural given the role of the European Commission as the driving force in the EU's legislative work. At the same time, it is important that business gets a more prominent role in the EU's climate diplomacy in order to realize the opportunities in the transition with a focus on new jobs, competitiveness and sustainable economic growth. Without the commitment of countries with large emissions such as the USA, China, India and Brazil, we cannot meet this global challenge. The EU's trade policy also plays a role here in that free trade agreements with third countries contain sustainability chapters with provisions that promote implementation of the Paris Agreement.

The climate convention is the starting point for Swedish international climate work

In the negotiations within the framework of the climate convention, the EU and its member states act jointly based on a coordinated EU position. Swedish delegates are active in this coordination and represent the EU and its member states in various parts of the negotiations. In the climate negotiations and related diplomatic channels, Sweden is pushing to maintain focus on the goals of the Paris Agreement and increase the pace of implementation. Strengthening countries' capacity to implement the Paris Agreement in a structured and efficient manner is crucial for the agreement's credibility, goal achievement and follow-up. Sweden should increase its involvement in capacity building for the implementation of the Paris Agreement. This should, among other things, be done through an increased involvement in the Paris Committee on Capacity Building, a constituted body that aims to compile, analyze and promote capacity-building under the UNFCCC.

Achieving the international commitments within the Paris Agreement requires investments far beyond the public resources of the world's countries. It is therefore absolutely crucial to succeed in the objective in Article 2.1.c of the Paris Agreement, which states that financial flows must be made compatible with a path towards low

greenhouse gas emissions and climate-resilient development.
The government therefore intends to investigate how efforts can be increased to achieve that goal. In addition to the work within the climate convention, Sweden should also work to ensure that the climate perspective pervades the work and results in other parts of the UN's work. It may be a matter of, as a member state or through the EU, pushing for increased climate ambition within the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO), see further sections 9.6 and 9.7 for aviation's and shipping's climate transition. It can also be about pushing for a fair transition within the International Labor Organization (ILO) or for sustainable and climate-smart urban development through UN-Habitat.

Sweden should continue to work to promote synergies between the global work to reverse and stop the loss of biological diversity within the Convention on Biological Diversity and the climate work within the UNFCCC.
Climate change affects ecosystems negatively and at the same time management of ecosystems can help to stop climate change. Sweden should work to ensure that the global climate transition also takes into account the loss of biological diversity and the spread of pollution. Pollution
such as plastic pollution also has a negative environmental impact through the loss of biological diversity on land, in water and in the sea.

Sweden should advocate a coordinated implementation of international agreements, both globally and at country level. A coordinated approach to implementation at country level ensures both a holistic view of the policy and mobilization of resources.

Sweden should also work for an ambitious implementation of the so-called
The Kigali amendment to the Montreal Protocol, which involves a limitation and phasing out of the greenhouse gas HFC, see further section 12.5 on fluorinated gases. Effective implementation of the amendment is expected to prevent warming of up to 0.5 degrees Celsius until the end of the century and thereby contribute to the goals of the Paris Agreement. Sweden should therefore work for constructive cooperation between the Montreal Protocol and the UNFCCC. In order to reduce the impact of plastics on the climate, the ongoing negotiations on a new global agreement against plastic pollution will also be decisive (see sections 7.6.1 and 10.1).

Women in developing countries are more exposed to the effects of climate change than men, as they are generally more dependent on natural resources for their survival. Children are more vulnerable than adults as they will experience a higher degree of climate change during their lifetime. Equality and climate work are mutually reinforcing. Climate work must contribute to strengthening gender equality and increased gender equality contributes to the climate goals. Sweden must work to ensure that gender equality and women's full enjoyment of human rights are taken into account in the UN climate negotiations.

Sweden can contribute through involvement in the OECD, including the IEA and NEA

The Organization for Economic Cooperation and Development (OECD) has a unique starting point to contribute to the global climate transition through its multidisciplinary expertise, its multi-actor collaboration, its access to globally comparable data and statistics, and its role as a global standard-setter. Given these conditions, the OECD has designed a strategy based on

on five pillars: policy development for net zero emissions, adaptation and Skr. 2023/24:59 resilience, public and private financing (investment and action), monitoring and measuring results against ambition and multilateral and multidisciplinary methods for collaboration and raising ambition.

According to a ministerial communique adopted at the ministerial meeting in March 2022, the International Energy Agency (IEA) will focus on contributing to global net zero emissions, alongside continued focus on energy security. The IEA will also expand cooperation with India, China and Indonesia, as well as other middle-income countries with extensive and growing emissions of greenhouse gases, through the so-called Clean Energy Transitions Program (CETP).

Through the CETP, the IEA contributes to the energy transition towards net zero emissions and energy security even in countries that are not members of the OECD/IEA. It is welcome that climate work is given an increasingly prominent place in the OECD and IEA, as the organizations' policy work covers most of the policy areas that are relevant to increasing the pace of global climate work. Through involvement in the organizations, Sweden should contribute to desirable policy development in member countries and associated countries, including by highlighting the importance of nuclear power for the transformation of the energy sector. Through involvement in bilateral and multilateral collaborations, such as the International Nuclear Energy Council (NEA) and the International Atomic Energy Agency (IAEA), Sweden should strengthen the development of nuclear power internationally and contribute to nuclear safety, technology, science, environment and legislation in member countries and associated countries.

Cooperation in the Nordics, Arctic and Barents can strengthen Sweden's and the Nordics' position in international climate work

The vision of the Nordic region as the world's most integrated and sustainable region in 2030 has meant that the focus of Nordic cooperation on environmental and climate cooperation has increased. Sweden is working to realize the vision and believes that the Nordics should continue to be a forerunner in promoting Nordic green solutions both at home and in the rest of the world. Sweden has, among other things, initiated and took responsibility for a collaboration on transport with a focus on accelerated electrification and sustainable freight transport, and has also pushed to strengthen the collaboration with business. Sweden is chairman of the Nordic Council of Ministers in 2024. Nordic cooperation is a natural channel for strengthening Sweden's and the Nordics' position in international climate work. The Nordic cooperation should also continue to be used both at the political level and at the project level to demonstrate the possibilities of leading the way in the climate transition and contributing to progress in the international negotiations, international climate initiatives and in the Nordic countries.

The Arctic is an area with irreplaceable values and the region has great national, regional and global importance. The temperature in the Arctic is now increasing three to four times faster than the global average, which has major consequences for the Arctic ecosystems and biodiversity.
It also has major effects for societies in the Arctic, not least for the Arctic indigenous peoples. The Barents region is the European part of the Arctic. The northern parts of Sweden, Norway and Finland have unique opportunities to take the lead in the green transformation of industry and energy systems.
The opportunities to act within the Barents Council and the Arctic Council have

affected by Russia's large-scale invasion of Ukraine in February 2022 and Russia has recently announced that it is leaving the Barents Council. By pursuing an ambitious climate and environmental policy nationally, in the EU and internationally, Sweden can contribute to limiting climate change so that the sensitive environment in the Arctic and in the Barents region can be protected and preserved.

Sweden's participation in international climate initiatives and collaborations shows our commitment and initiative

Sweden's participation in international initiatives in the climate area aims to increase the pace of global climate work. The initiatives can take different forms, ranging from a declaration or a statement to more structured and financed collaborations. In some cases it is mainly about securing ambition and providing political support, in other cases it is about knowledge and experience exchange for increased implementation of climate measures. The initiatives fulfill an important function alongside the work within the framework of the climate convention to bring together ambitious actors who can both show leadership and develop solutions. This is something that is growing in both scope and importance. In order to demonstrate Sweden's commitment and ambition, it is important that Sweden participates in and contributes to these collaborations.

Swedish companies are innovative and are far ahead in the green transition. The government and several Swedish companies actively participate in international initiatives to promote and contribute to the green transition globally. It is important for Sweden to be involved in shaping the international discussion about conditions and policy development around goals, instruments, trade and market conditions for the industry in a global perspective. The largest producers in heavy industry are in countries such as China, India, Indonesia, the USA and others. In order to reach the Paris Agreement's goal of limiting warming to 1.5 degrees Celsius, the transition must also take place in these countries. Cooperation on e.g. technology, standards, capacity-raising initiatives and financing are central to reducing emissions, but also for developing countries and growing economies to be able to compete in global competition, develop their economies in a sustainable direction and reduce poverty.

The energy and transport sectors account for a significant part of the global emissions of greenhouse gases. Cooperation on a technical and political level between countries regarding energy and transport systems can contribute to a more cost-effective and accelerated transition. Sweden therefore participates in a number of international initiatives that aim to speed up the implementation of measures and policy instruments in these sectors, as well as to promote innovation and contribute to the exchange of experience between countries.

Sweden and India jointly lead a leadership group for the transformation of heavy and emission-intensive industry (LeadIT). The public and private sectors work together to promote innovation and technology exchange, develop roadmaps for industrial transformation, policy measures and financing solutions.
The purpose is to drive the transition work and contribute to the implementation of the Paris Agreement with the ambition of moving towards net zero emissions by the year 2050. The group is growing and now has 36 members consisting of countries and industrial companies. Today, emissions from heavy industry are no longer seen as impossible to reduce.

Examples of other initiatives and collaborations where Sweden currently
participating are the Global Methane Pledge, Clean Energy Ministerial, Mission Innovation, International Renewable Energy Agency, International Solar Alliance, Glasgow Breakthrough Agenda, First Movers Coalition and Coalition of Finance Ministers for Climate Action.

The government intends to continue and strengthen its involvement in, for the international climate work, important initiatives and partnerships with the aim of working for Swedish interests and contributing to the achievement of the goals of the Paris Agreement.

Authorities and other public actors have a central role in the development and implementation of international climate work. Several Swedish

authorities have established collaborations with other countries, initiated and financed through both aid and other areas of expenditure. Collaborations involve, among other things, about exchange of experience, capacity development and enabling Swedish companies to present solutions that can speed up the transition in other countries and thereby also contribute to Swedish exports and jobs in Sweden. There is currently a review of authorities' tasks and responsibilities in the energy field (KN2023/03329). The review includes i.a. to analyze whether and, if so, how the Energy Agency's duties and responsibilities can be developed to contribute to Sweden's international climate work and the global restructuring of energy systems.

The authorities' duties and cooperation with the business world regarding international standardization is another important part of the work that public actors carry out to strengthen international climate work.

The foreign authorities are also central actors, who, in their influence work, are based on the country's conditions by considering what the largest emission sectors are and how Swedish actors can contribute to reducing both current and potential emissions within these sectors.

Synergies should be achieved between the efforts of Swedish actors to strengthen the image of the opportunities in the transition and thereby increase the pace in each country. With strengthened institutional capacity, the conditions for countries to be able to benefit from Swedish export credits and Swedish company solutions are also strengthened.

Many Swedish companies have good conditions to play a central role in the global transition as they are at the forefront and can deliver solutions that enable and accelerate the climate transition in other countries. Swedish companies' exports of climate-friendly products, services and technology that contribute to the green transition must be promoted. The Foreign Affairs Administration, a number of different authorities and other state-funded actors contribute based on their respective mandates to Sweden's trade and investment promotion, i.a. within the framework of the Team Sweden collaboration.

The Swedish Export and Investment Council (Business Sweden) has, within the framework of its export and investment promotion mission, an important role in the work to promote green transition, sustainable growth and responsible business.

The long-term goal of the company's global sustainability work is to increase Sweden's contribution to the implementation of Agenda 2030 and the Paris Agreement and to contribute to Sweden's transition goal of net zero emissions by 2045.

Civil society actors also have a central role in driving global climate work. The government works to maintain an ongoing dialogue with civil society.

More countries need to price their emissions

Pricing of greenhouse gas emissions is central to an ambitious and effective climate policy (see section 7.2). This applies nationally as well as internationally. However, the pricing model, carbon tax or trading system, may vary between countries, as well as the exact level of pricing.

Today, the share of global greenhouse gas emissions that are priced is only around 25 percent, and in addition, the level of pricing is usually low, often far below the levels that are considered in line with the emission targets in the Paris Agreement. It is therefore important that the price signal becomes stronger.

Work is being carried out within several international organizations (e.g. UN, OECD, IMF, World Bank and WTO) to get more countries to increasingly price their emissions. Discussions are also held about how an international coordination of such pricing can be developed. Sweden should continue to contribute constructively to this work, e.g. through active participation in the discussions held in relevant international forums and by sharing lessons learned from our uniquely long practical experience of carbon dioxide taxation both bilaterally and within the framework of various international collaborations.

Pricing of greenhouse gases is an important starting point for an effective global climate policy. Sweden should therefore continue to actively work for an increased use of direct pricing of emissions in various parts of the world. Sweden should also support initiatives around a globally harmonized pricing of emissions as an effective way to reduce emissions.

4.2 Climate aid and restructuring of global financial flows

The government's assessment: Climate aid should be expanded and made more efficient in order to strengthen the implementation of the Paris Agreement and contribute to its goals. Climate aid should contribute to creating the conditions for the green global transition to go hand in hand with growth and should increasingly contribute to emission reductions, i.a. through conversion to fossil-free energy and energy efficiency.

Increased efficiency is achieved through a greater focus on high-emitting countries, including middle-income countries and adaptation efforts in already vulnerable countries, as well as by engaging local authorities and business, mobilizing private capital and cooperating with, and working for greater efficiency, in the major climate funds and development banks.

A starting point is that funds from the aid budget are not invested in fossil fuel operations, except if the effort contributes to achieving the overall priority of effective emission reduction. Climate adaptation and resilience to the most vulnerable and the least developed countries should be supported. The catalytic effects of climate aid

should be strengthened with an increased focus on the mobilization of private capital, for example by intensifying the work with tender funds and guarantees, developing Swedfund International AB's climate investments, seeking synergies with trade and innovations and developing capacity for functioning financial markets, domestic resource mobilization and an attractive investment climate.

The reasons for the government's assessment

The government has presented a reform agenda for aid with a focus on the long term, transparency and efficiency. The reform agenda establishes the government's direction for aid, which includes climate aid.

Development cooperation today has its starting point in the principles of aid and development effectiveness as well as in Agenda 2030, the Addis Ababa agenda and the Paris Agreement. Through the Paris Agreement, developed countries have undertaken to assist developing countries with financing to enable climate change and implement the Paris Agreement. A new collective and quantified climate finance target is to be decided in 2024. According to previous decisions, the target is to exceed USD 100 billion annually and take into account the needs and priorities of developing countries. The global average temperature continues to rise. People living in dysfunctional states or geographically vulnerable nations are often hit harder by climate change, which leads to increased conflict and food shortages. Climate change also brings an increased risk of infectious diseases and other negative health consequences. Reduced emissions, increased resilience and an energy-, climate- and environmentally sustainable transition are therefore crucial to securing people's living conditions in both the short and long term.

Countries' capacity to implement the Paris Agreement in a structured and efficient manner is crucial for the agreement's continued credibility, goal fulfillment and follow-up. The Paris Agreement places high demands on all countries' measurement, verification and reporting of emissions, as well as reporting of measures and financing. The high demands on transparency are central to credibility and control of target fulfillment, but also mean that extensive capacity building is necessary in many developing countries.

Designing the nationally determined contributions (NDC) and the national adaptation plans (NAP) places demands on countries' capacity to analyze, identify and prioritize possible climate measures in order to effectively contribute to global emission reductions and strengthen their climate adaptation work. At the same time, the overall level of ambition in the countries' NDC needs to increase for the Paris Agreement to be reached. Structured and effective climate work is a prerequisite for a high level of ambition. Countries' NDC and NAP should be taken into account in the design of Swedish aid efforts to ensure policy relevance and efficiency in the aid work.

Even developing countries with growing economies and large, growing emissions may lack capacity and may have insufficient resources to finance the transition required to limit climate change. By contributing to change in these countries, Sweden can contribute to an effective climate change. The implementation of development efforts in countries where Sweden lacks a country strategy but can contribute with Swedish solutions that are strategically important for the green transition should

be made possible. Sustainable procurement and policy development around procurement should be promoted. Swedish aid should cooperate with other Swedish actors (non-aid-financed authorities and businesses) in order to mobilize additional funding and strengthen the effect of the aid.
The IPCC states in its sixth synthesis report that the emissions from existing fossil-based infrastructure in the world, if they are not reduced, will mean that the global temperature increase exceeds 1.5 degrees Celsius. A starting point is that funds from the aid budget are therefore not invested in fossil fuel operations, except if the effort contributes to achieving the overall priority of effective emission reduction. Consideration should be given to foreign and security policy considerations based on a broad view of security, where both countries' needs for secure energy supply, access to secure and stable energy, and import dependence of individual countries or fuels must be taken into account. In line with the government's assessment, it is proposed in the report Sweden's climate strategy (KN2023/03828) that climate-related development aid should increase.

Integrated bilateral development cooperation

Swedish climate aid must be increased and made more efficient, and at the same time mobilize other capital to a greater extent. Within the aid, climate and environmental impact must be taken into account where relevant. The environmental and climate perspective should be integrated into countries' budget and planning processes. It is important to create capacity that lasts over time and is well anchored in national institutions. By contributing to the capacity of countries to join and implement commitments within the framework of international climate and environmental conventions and agreements, the work can be accelerated and the ambition raised in the broader global climate work, in the work to preserve biological diversity and in the work to reduce pollution .

Bilateral climate aid must contribute to limited climate impact and change, including through increased access to fossil-free and efficient solutions. Efforts that promote energy efficiency, and thus accelerate the phasing out of fossil fuels should also be supported. Activities that promote the phasing out of fossil subsidies can also be included.

Bilateral climate aid must contribute to strengthened adaptability and resilience against climate change and natural disasters. The work should focus on both short-term and longer-term adaptation measures, such as e.g. increasing access to and use of meteorological data, and promoting nature-based solutions and resilient infrastructure.

Multilateral climate funds a cornerstone of global climate finance The Green

Climate Fund (GCF) and the Global Environment Facility (GEF) form the financial mechanism for the Climate Convention and the Paris Agreement. Financing via these funds is central to the negotiations within the climate convention. The Adaptation Fund, like the Least Developed Countries Fund (LDCF), fulfills an important function in the international climate finance architecture, through a focus on local and small-scale adaptation finance. The global funds provide leverage for Swedish climate finance by contributing to the mobilization of private and

national capital, and thereby enables increased efforts on prioritized Skr. 2023/24:59 areas, where Swedish business can contribute with innovative and sustainable solutions. Sweden is a leading donor to these funds.

Through the climate funds, Sweden contributes to the UN's initiative to provide all the world's countries with early warning systems, the building of national and green climate banks, and not least investments and conversion to fossil-free energy systems. The funds are also important for financing integrated solutions for nature conservation, protection of biological diversity, carbon sequestration in nature and enhanced resilience against climate change. Adaptation of agricultural systems, water supply are other important parts of the funds' support for food security and sustainable livelihoods in rural areas.

International financial institutions should phase out financing for fossil-based activities

The multilateral development banks and international financial institutions should better contribute to the goals of the Paris Agreement on the mobilization of climate finance and to increased climate ambition. That the multilateral development banks and the international financial institutions adapt their operations in line with the Paris Agreement is a priority within the ongoing reform work. In addition, the multilateral development banks and international financial institutions should consider climate risks and resilience in their investments.

Climate considerations should be integrated into all investment decisions and support, where relevant. Sweden must work for the multilateral development banks and international financial institutions to phase out investments in fossil fuels as soon as possible. Sweden must also work for the multilateral development banks and international financial institutions to be able to promote the expansion of all cost-effective fossil-free energy types, including nuclear power, which can contribute to secure electricity supply and enable a faster phasing out of fossil energy. In the transition work, fair transition should also be taken into account.

The work of mobilizing private capital for climate action is particularly important and should be prioritized by the multilateral development banks (see also section 7.4).

The government intends to investigate the conditions and suitability for Sweden within the multilateral development banks to be able to invest in innovative instruments for financing projects in climate and sustainability.

4.3 International climate investments through Article 6 of the Paris Agreement

The government's assessment: The Swedish program for international climate investments in accordance with Article 6 of the Paris Agreement should be developed. The government has proposed that funds be added for this purpose in the budget bill for 2023. Through these climate investments, Sweden should support climate change in developing countries, contribute to globally reduced emissions and promote private investment in climate measures.
The investments should also, as a supplementary measure, potentially contribute to the Swedish climate policy goals in a cost-effective manner.

The reasons for the government's assessment

Article 6 of the Paris Agreement sets out how countries can work together to reach their Nationally Determined Contributions (NDCs). The goal is for the collaboration to enable increased ambition and promote sustainable development. Article 6 enables bilateral cooperation between countries (Article 6.2) and establishes a new market mechanism for emissions trading (Article 6.4) to be monitored by the UN.

The development of Sweden's program for international climate investments

The Swedish Energy Agency is responsible for Sweden's program for international climate efforts with the task of financing efforts that develop international collaborations and results-based climate financing within the framework of Article 6 of the Paris Agreement. The purpose of the program is to contribute to a system that creates incentives for countries and other actors to raise climate ambitions and achieve greater emission reductions than would otherwise have been the case. The aim is also to be able to contribute to the Swedish climate policy goals for 2030, 2040 and 2045 as supplementary measures (see section 6.4). In addition to climate benefit, additionality and permanence, the Energy Agency must in particular monitor how the efforts contribute to economic, social and environmental sustainability in the host country and thus strengthen their development.

The Swedish Energy Agency should regularly submit an updated strategy for the selection of cooperation countries, form of cooperation and type of technology.
The strategy should aim to achieve a project portfolio with high cost efficiency and low risk through a balance between different types of activities and a balanced geographical spread.

In order for Sweden to be able to participate in collaborations in accordance with Article 6 of the Paris Agreement, its rules need to be implemented in Swedish law. A national framework for cooperation in accordance with Article 6 should be created. The government has therefore proposed that funds for this purpose be added in the budget bill for 2023.

4.4 Climate in foreign trade and security policy

The government's assessment: The environmental and climate goals are and should be integrated in all relevant policy areas. Trade policy and security policy have an important role in the international climate transition and vice versa. The synergy effects between climate finance, trade and innovations should be utilized to a greater extent.

Trade policy should be characterized by free trade and i.a. be used to get other countries to implement their transition. Climate-related security risks should be taken into account and countered.

The reasons for the government's assessment

Foreign trade, investment and global competitiveness

Climate change creates new export opportunities, new markets and incentives for innovation. Sweden can contribute to global emission reductions through exports, both of green innovative technology and of goods that are produced with a lower climate impact than in the rest of the world or are climate neutral. A continued rapid change both in Sweden and the EU as well as globally is today crucial to maintaining the competitiveness of many Swedish companies. By the fact that Sweden is among the leading countries in the transition, Swedish companies gain advantages in a global market with increasing demands for climate neutrality, while at the same time creating future financial profits. The new strategy for Sweden's foreign trade, investments and global competitiveness will, in addition to strengthening Sweden's international competitiveness, also strengthen Sweden's position in the global climate transition. The strategy includes sub-goals on the impact of Swedish priorities in the formulation of the green and digital standards of the future, that the WTO's regulations and the EU's free trade agreement are ambitious in terms of climate and sustainability aspects and on ensuring access to critical raw materials, minerals and other input goods that is of strategic importance for green and digital transformation (see also section 7.6. An equality perspective must be taken into account in the implementation of the strategy. The government intends to cooperate closely with business in this work.

The EU's unilateral trade preferences within the framework of the Generalized System of Preferences (GSP+) are a trade policy instrument to promote environment, climate and sustainability issues in developing countries. Developing countries are granted favorable trade facilitations when exporting to the EU on condition that they ratify and implement the basic conventions for e.g. Sustainable Development. Through greater exports to the EU, increased conditions are created for developing countries to reach environmental and climate goals.

Through the WTO, Sweden can influence the development of global trade preferences. On 15 December 2021, three declarations on trade and environmental sustainability were presented in the WTO. In addition to the declaration on trade and climate, which i.a. includes writings on improved market access for climate-friendly goods and services, circular economy and sustainable production chains, a declaration on the phasing out of fossil fuel subsidies and one on the reduction of plastic waste was presented.

The Declaration on Trade and Climate has been signed by over 70 countries

which represents approximately 80 percent of world trade. Important actors such as the EU, USA and China have signed the declaration, as have a number of developing countries.

Work has begun in the WTO regarding liberalization of climate-friendly goods and services.

Security, conflict and migration

The relationship between climate policy issues in the broadest sense and security policy is becoming increasingly important. Climate and security go hand in hand, even in an international perspective. In fragile states, the effects of climate change, such as food shortages, droughts and other extreme weather events, risk creating or exacerbating conflicts and driving people to flee. In addition to the fact that Sweden and the EU can increase domestic security through the climate transition, the climate work, properly implemented, can counteract the risk of new and intensified conflicts in developing countries affected by climate change. The political, economic and social dynamics of vulnerable countries and societies must be taken into account in the design of effective climate aid.

Sweden has a strong resource base with i.a. research institute that contributes to a deepened international understanding of how climate change affects human security. Sweden also contributes to international and multilateral organizations delivering more effective support in countries where climate change interacts with other conflicts and crises.

Sweden will continue to support the development of this competence and knowledge in order to improve international efforts to strengthen societies' resilience and alleviate distress, indirectly or directly caused by climate change.

On 28 June 2023, the EU's High Representative for Foreign Affairs and Security Policy together with the Commission published a joint communication on how the EU should respond to the growing impact of climate change and environmental degradation in the areas of peace, security and defence. The communication contains a new approach where the EU strengthens its work in the interaction between climate and security in four tracks:

- incorporate consideration of climate change and environmental degradation into the planning, decision-making and implementation of the EU's work
- implementing the interaction between climate and security in the EU's external actions
- ensure security and defense work that is sustainable and resilient to climate change
- strengthen the EU's international collaborations in the field.

The government welcomes the joint communication and that the EU's High Representative for Foreign Affairs and Security Policy, together with the Commission, has put forward a joint approach for the EU's work in the area through the communication.

5 The EU's climate policy

Sweden's membership in the European Union (EU) is central to our climate work and the green transition. The internal market is Swedish companies' home market and the regulations created at EU level to contribute to climate work can contribute to significantly greater climate benefits and competitiveness than those created at national level. The size of the EU also means that decisions made jointly within the EU often affect companies throughout the world and thus have global effects on emissions.

The EU has taken significant steps forward in climate work in recent years. Through the so-called Green Deal, the European Commission has placed environmental and climate issues high on the EU's agenda. The overall purpose of the green gift is to pave the way for a green transition that leads to climate neutrality and a fair and prosperous Europe. The green given connects the green transition with other structural transformations such as the digital transition. A framework is now in place for the EU's climate transition through the European Climate Act. The Climate Act establishes a binding goal of climate neutrality in the Union by 2050 at the latest and a binding goal of a net reduction of domestic emissions by at least 55 percent by 2030, compared to 1990. The goal by 2030 also constitutes the EU's commitment, so-called

nationally determined contribution (NDC), under the Paris Agreement. Sweden is part of this joint commitment and the EU's climate policy is therefore absolutely central to Sweden contributing to the fulfillment of the Paris Agreement's goals.

5.1 The EU's climate policy and Sweden's commitments within the EU have been tightened

The government's assessment: The legislative package to reach the EU's climate goals by 2030, the so-called Fit for 55 package, steers the EU towards rapidly decreasing emissions. The downward emissions trajectory is steep enough to give the EU a good chance of doing its part to meet the Paris Agreement targets.
The government should work to ensure that the EU as a whole implements the Fit for 55 package with maintained ambition and in a socio-economically efficient manner.

The reasons for the government's assessment

In order to achieve the goal of reducing net emissions by at least 55 percent by 2030 compared to 1990 and for the EU to reach the long-term goal of climate neutrality by 2050 at the latest, the Commission presented in July 2021 a large number of legislative proposals in the so-called Fit for 55 package. The package sets out how the climate goal should be distributed between different sectors, but also contains sector-specific legislation, within e.g. the transport and energy area, which contributes to the achievement of the EU's climate goals.

The EU has adopted binding legislation to reach the climate goal by 2030

The EU's toughened climate targets for 2030 require that the emission space in the EU's system for trading emissions rights (EU ETS) and the responsibility sharing regulation (ESR) be reduced compared to previous regulations.

The reduction is distributed through a reduced emission ceiling in the EU ETS and a reduced emission space in the ESR, which is the legislation that distributes the member states' responsibility for emission reductions outside the EU ETS. According to the revised legislation, emissions must have decreased by 62 percent in the EU ETS and 40 percent in the ESR by 2030, compared to 2005.

The EU's common climate goals also include the overall development of emissions and absorption of greenhouse gases in land use, land use change and forestry (LULUCF). The revised LULUCF regulation means that EU member states jointly raise the ambition for net sequestration of carbon dioxide to 310 million tons by 2030, which can be compared with the previous goal of stabilizing the net absorption of about 225 million tons. According to the EU's climate act, however, a ceiling of 225 million tonnes of net uptake in the LULUCF sector is set, which may at most be counted against the EU's climate targets until 2030. If the reduction increases to 310 million tonnes in 2030, and the targets in the other legal acts are reached, it means in practice that the EU's total net emissions will decrease by around 57 percent by 2030, compared to 1990. This would mean an overachievement compared to the binding climate target by 2030 to reduce net emissions by 55 percent by 2030.

Overall, the Fit for 55 package means that the downward emissions trajectory is steep enough to give the EU a good chance of doing its part to meet the Paris Agreement targets. The government should work to ensure that the EU as a whole implements the Fit for 55 package with maintained ambition and in a socio-economically efficient manner.

Sweden's commitments to reduce net emissions have been tightened

Sweden has specific commitments under ESR and LULUCF. In the revised ESR Regulation, Sweden has a commitment which means that the national emissions in the ESR sector must be reduced by 50 percent by 2030, compared to 2005. This means an increase in the level of ambition by ten percentage points compared to the previously applicable legislation. The ESR sector includes e.g. road transport, work machinery, individual heating and agriculture. In the revised LULUCF regulation, Sweden has a commitment that the uptake should increase by approximately six million tonnes during the period 2026–2029 and in 2030 be approximately four million tonnes higher in 2030 compared to the levels of 2016–2018. A difference compared to the national stage target for the ESR sector until 2030, which prescribes how large the emissions must be in 2030, is that Sweden's EU commitments under the ESR are formulated as an emissions budget, i.e. that Sweden's total net emissions need to decrease throughout the period up to 2030.

In principle, this also applies to net intake in the LULUCF sector.

Sweden has no specific emissions commitment within the EU ETS, but the Swedish companies covered by the EU ETS are affected by the EU-joint goal of reducing emissions in the existing system by 62 percent by 2030, compared to 2005. This goal prescribes how high the emission ceiling for EU ETS must be and the number of emission rights in the system.

The revision of the EU ETS also means that a new emissions trading system for road transport, buildings and certain industry (EU ETS 2) is established with the aim of contributing to the achievement of the target for the ESR sector, see section 7.2.

Other sectoral legislation contributes to achieving the EU's climate goals In addition to the EU ETS, ESR and LULUCF, which together set the framework for the Union's net emissions of greenhouse gases, there is sector-specific legislation that contributes to the achievement of the goals in the various legal acts. Within the framework of the Fit for 55 package, sector-specific legislation for e.g. the energy and transport sectors have been adopted which will contribute to the achievement of the goals, see table 5.1.

Table 5.1 Overview of Fit for 55 legislation

Framework for net emissions	Energy legislation	Transport legislation	Other legislation
EU's emissions trading system (EU ETS)	The Renewable Energy Directive (RED)	Carbon dioxide requirements for light vehicle	Limit adjustment mechanism for carbon dioxide (CBAM)
The EU's responsibility distribution regulation (ESR)	Energy efficiency gs directive (EED)	Alternative Fuels Infrastructure (AFIR)	Social climate fund (SKF)
Regulation on Land Use, Land Use Change and Forestry (LULUCF)	Energy Tax Directorate knows (ETD)*	Sustainable fuels for aviation and shipping (Refuel EU Aviation and Fuel EU Maritime)	
	The directive on energy performance of buildings (EPBD)*		
	Ordinance on reduced methane emissions in the energy sector*		

* An agreement has not yet been reached regarding changes to these legal acts. Other legal acts have either been adopted or there is an agreement on these between the EU institutions.

In addition to the legal acts included in the Fit for 55 package, there is also other legislation within the EU that contributes to the EU's climate transition. As part of the EU's Green Deal, the Commission presented a circular economy action plan in March 2020 with initiatives along the entire product value chain. The action plan includes i.a. proposal for a regulation on ecodesign for sustainable products, regulation on packaging and packaging waste, revision of the Industrial Emissions Directive (IED), regulation on end-of-life vehicles and proposal for a directive on green claims.

The Commission has also presented proposals for stricter carbon dioxide requirements for heavy vehicles (see section 9.3.1), a certification framework for the capture and storage of carbon dioxide (see section 7.9), rules for f-gases (see section 8.7) and a regulation on nature restoration (see section 11.1). These legal acts are currently being considered in the Council and in the European Parliament. In addition, the Commission, as part of strengthening the EU's competitiveness in climate

the transition presented a proposal for a regulation on net zero industry (see section 8.2). The proposal aims to scale up the production capacity of key technologies that are crucial to achieving the EU's climate goals. In addition, a proposal for a regulation on critical raw materials has also been presented, which will ensure a safe and sustainable supply of critical raw materials (see section 8.2).

5.2 A cost-effective fulfillment of Sweden's commitments within the EU

The government's assessment: Sweden's commitments within the EU's responsibility-sharing regulation (ESR) and the land use sector (LULUCF) should be achieved in a cost-effective and socially efficient way
with increased prosperity. Sweden should take advantage of the opportunity to transfer emissions space from the EU's emissions trading system (EU ETS) to the ESR. Acquisition of emissions space from other member states to fulfill Sweden's commitments within ESR and LULUCF should also be an opportunity to increase cost efficiency.

The reasons for the government's assessment

Sweden's commitments within ESR and LULUCF are judged to be difficult to achieve through measures in Sweden alone. The Swedish emissions within the ESR sector need to be reduced by 50 percent by 2030, compared to 2005, and the Swedish net removals within LULUCF need to increase by around four million tonnes by 2030. Sweden's commitments at the EU level are sharper than the Swedish national milestones by 2030 in that show that a binding commitment is introduced at EU level to increase uptake within LULUCF, which in the national target structure is only counted as a possible supplementary measure. In addition, the tightened ESR and LULUCF regulations mean that a carbon budget will be introduced over time for both sectors by requiring member states to follow an emissions path each year towards 2030. If Sweden does not meet its commitments in the ESR and LULUCF sectors, it risks undermining Sweden's credibility in EU cooperation and contribute to the fact that the EU's climate goals and commitments to the Paris Agreement are not reached. If the commitments are not fulfilled, Sweden also risks a violation case where Sweden may be forced to pay fines in addition to taking mandatory measures to reduce emissions.

In the report Sweden's climate strategy (KN2023/03828) it is proposed that by 30 June 2024 at the latest, the government should present a comprehensive program that ensures that Sweden meets the requirements of the EU's new climate legislation. In the report, it is proposed that the starting point should be to meet the requirements for as low economic and social costs as possible, while maintaining or increasing Swedish competitiveness in the business world and without passing on adaptation costs to other countries. In this way, Sweden is judged to be able to become an example of climate policy.

Similar to the report's proposal, the government assesses that Sweden must meet its commitments within the EU in a cost-effective and socioeconomically efficient manner. The government assesses that in order for Sweden to cope with its

commitments within the EU, additional measures will be needed to Skr. 2023/24:59 reduce emissions and increase uptake in both the ESR and LULUCF sectors. Such measures are described in the various parts of this climate policy action plan. The climate policy action plan and its implementation will also be explained in the final updated national energy and climate plan to be submitted to the European Commission. In addition, there are opportunities for Sweden to make use of various flexibility mechanisms, which have been introduced within ESR and LULUCF to enable a cost-effective implementation of the legal acts. An opportunity that should be used if it is deemed to increase cost efficiency or is otherwise appropriate.

Transfer of emission space from EU ETS to ESR

In order to reach their commitments within the ESR, there is an opportunity for nine of the EU's member states, including Sweden, to transfer emission space from the EU ETS to the member state's commitment within the ESR. This flexibility is limited to an annual transfer corresponding to two percent of the Member State's emissions within the ESR in the base year 2005. The total transfer of emission allowance for the nine Member States may also not exceed 100 million tonnes in 2021–2030. Sweden has the opportunity to use this flexibility for the years 2025–2030. Sweden then needs to notify the commission by 31 December 2023 at the latest.

Concretely, this flexibility means that Sweden forgoes revenue from the auctioning of a maximum of 870,000 emission rights in the EU ETS annually between 2025 and 2030. Emission space corresponding to the canceled emission rights, i.e. a maximum of 0.87 million tonnes per year, may then be added to Sweden's emission space under the ESR the regulation. This can be compared to Sweden's emissions within the ESR amounting to 29.2 million tonnes in 2022. The flexibility must be distributed so that the same space is transferred each year. It is difficult to quantify the cost of using this flexibility, but if Sweden uses the flexibility fully, the lost revenue could amount to just over one billion kroner per year based on the assumption that the price of emission rights is approximately 100 euros per ton of carbon dioxide.

In the report Sweden's climate strategy (KN2023/03828) it is suggested that the government should plan to use this flexibility mechanism where emission space is transferred from the EU ETS to the Swedish ESR sector. In the strategy, it is proposed that the transfer be carried out if the price of emission rights falls below the costs of the most expensive emission reductions in the ESR sector.

Given the great challenges of reaching Sweden's commitments within the ESR until 2030, the government believes that Sweden should make use of this flexibility. From a climate perspective, this measure is not expected to affect emissions within the Union, as it only involves a transfer of emission space from the EU ETS to the ESR and it is not expected to significantly affect the price of emission rights. On the other hand, it makes it easier for Sweden to reach its commitments within the ESR, and reduces the need to take other measures that could lead to unwanted effects such as increased fuel costs or reduced production in agriculture and forestry with increased Swedish vulnerability. If Sweden's commitment within ESR is still reached without this flexibility, the emissions space that is freed up can instead be used to reach Sweden's commitment within LULUCF.

as Member States may transfer emission allowances without limitation from ESR to LULUCF. The government has therefore proposed in the draft Autumn amendment budget for 2023 (prop. 2023/24:2) that the Riksdag authorizes the government to fully utilize the transfer of emission space from the EU ETS to the ESR during 2025–2030.

Cost-effective measures in other Member States to achieve Sweden's commitments

In both the ESR and LULUCF regulations, there is the possibility to transfer emission space between EU member states in order for the member states to reach their commitments. Such flexibility can contribute to cost-effectiveness by taking measures where the cost is the lowest. This possibility can be done either in advance, by two Member States entering into an agreement to transfer emission space, or ex post if a Member State overachieves in relation to its commitment under one of the regulations and chooses to sell the overachievement. As a selling Member State, there is a limit on how much of its emission allowance may be transferred to other Member States. However, the corresponding limitation does not exist for buyers. It is currently uncertain to what extent other member states will be able to over-perform in relation to their commitments within ESR and LULUCF, and thus be able to sell emission space, or choose to enter into agreements in advance to transfer emission space. If further measures are taken in other Member States, however, a larger scope for such emissions can be created.

In the report Sweden's climate strategy (KN2023/03828), it is proposed that Sweden start negotiations with EU countries with low emission reduction conditions regarding the purchase of ESR space. The agreements are proposed to be public in terms of price and which emission reductions the selling party intends to make.

Given the challenges of meeting Sweden's commitments, the government agrees that measures should be taken to investigate the possibilities for Sweden to acquire emissions space from other member states. There is likely the possibility that measures that Sweden implements in other member states can contribute to fulfilling our ESR commitment. This does not mean that Sweden should slow down at home, but assist where efforts make the biggest difference. There are e.g. a potential in energy efficiency measures in other Member States where real emission-reducing effects can be demonstrated. Measures in other Member States may be challenging to implement on a large scale in the near term, which may require that additional measures to reach the ESR commitment need to be taken nationally.

Work to probe the possibilities of acquiring emissions space from other Member States should be started in the near future and be based on the national energy and climate plans that all Member States submit to the Commission. An analysis should be carried out to identify suitable approaches for the acquisition of emission space, including potential emission-reducing projects in which Sweden can already be included in the short term.

5.3 The development of the EU's climate policy

The government's assessment: Sweden should work for the EU to adopt a 2040 goals that create a socio-economically efficient path towards a climate-neutral union by 2050 at the latest and which are based on the latest research in the climate area. All Member States should contribute to reaching the climate target for 2040 and to reach climate neutrality by 2050.

Sweden should work to ensure that regulations at EU level that provide incentives for negative emissions in the form of e.g. biogenic carbon dioxide capture and storage (bio-CCS) is made clear, and that the EU's climate policy provides support for sustainable and active forestry and that the EU continues to work with and strengthen cost-effective control instruments such as emissions trading.

The reasons for the government's assessment

Cooperation within the EU is central to being able to reduce global greenhouse gas emissions and meet the Paris Agreement's temperature targets. Decisions at European level make it possible for emissions to be reduced throughout the Union at the same time as the EU shows the rest of the world that it is possible to combine emission reductions with growth and prosperity. The development of the EU's climate policy through the EU's climate law and the Fit for 55 package means that the EU as a comprehensive economic region stands out internationally by both having set climate targets for 2030 but above all introducing binding legislation on how the target is to be reached. However, the objectives after 2030 have not yet been clarified other than that climate neutrality within the EU must be reached by 2050 at the latest.

The EU's climate goals for 2040 should clarify the path to climate neutrality

According to the EU's climate act, a climate target for 2040 must be drawn up. The law states that in the spring of 2024, the commission must present a proposal for the target level for 2040, which must be based on, among other things, recommendations from the EU's scientific council for climate issues. In other words, discussions about the EU's climate policy after 2030 will intensify in the coming year.

A climate policy framework at the European level until 2040 has good conditions for contributing to an orderly climate transition that is predictable and creates good competitive conditions throughout the EU's internal market.

To make it possible for the EU to continue to be regarded as a climate leader on a global level and for future jobs and prosperity to be created in Europe, the EU's climate goals for 2040 should be in line with a socio-economically efficient path towards climate neutrality and be based on the latest research in the climate area.

In the report Sweden's climate strategy (KN2023/03828) it is proposed that the government gives the Environmental Objectives Committee the task of formulating as an overarching goal in the Swedish Climate Act that Sweden should work for a politically, economically and socially legitimate framework for an ambitious climate policy at EU level. The government agrees that Sweden should push for such an orientation, but believes that Sweden's positions in EU work should not be written into law.

All EU member states need to contribute to climate change

Today, there are large differences in climate ambition between EU member states. The member states' commitments in the ESR range from 10 percent for some member states to 50 percent emission reductions by 2030 for others, including Sweden. The distribution is based primarily on GDP per capita. In order for the EU as a whole to be able to achieve climate neutrality by 2050 in a cost-effective manner, it is important that this difference is reduced and that all member states contribute to the climate transition. In the report Sweden's climate strategy (KN2023/03828) it is proposed that Sweden works to

The EU uses comprehensive systems such as emissions trading as the main tools to reach decided emission targets. In the strategy, it is proposed that systems for distributing responsibility for emission reductions between member states be based to a lesser extent than now on different emission reduction conditions.

The government agrees that an increased convergence in climate ambition between the EU's member states contributes to a more level playing field and that a greater proportion of the measures can be implemented where the marginal cost is the lowest.
The government intends to analyze in more detail how legislation should be designed after 2030 in order to effectively reduce emissions throughout the EU.

The EU needs to step up for a large-scale expansion of fossil-free energy

A prerequisite for the EU to be successful with its climate goals in both the short and long term is to enable a large-scale expansion of the production of fossil-free electricity. Unfortunately, the policy introduced at EU level has not sufficiently taken into account the role of nuclear power in this development. Some legal acts, e.g. the directives on renewable energy and energy efficiency have provisions that in practice can act as a deterrent to the expansion of nuclear power.
Going forward, the EU's energy legislation should be developed to enable a rapid scale-up of all fossil-free energy and an expanded electricity system.

The EU needs to provide incentives for negative emissions

In order to reach the goals of climate neutrality, it is necessary that the policy provides clear incentives for negative emissions. In its scenarios for the goal of climate neutrality by 2050, the Commission has shown that there will be a need for both extensive natural carbon sinks as well as technical solutions to create negative emissions, such as carbon dioxide capture and storage of biogenic emissions (bio-CCS). A certification framework for carbon capture and storage is currently being negotiated in the Council and Parliament. The EU has not yet presented any policy instrument to stimulate the development of bio-CCS or other technical negative emissions. In order to achieve large-scale negative emissions within the EU by 2050, many of these investments need to start already before 2030. It is therefore important that the EU develops policy so that clarity is created around accounting and that clear financial incentives are created for such negative emissions as soon as possible.

The EU's rules for emissions and uptake in the land sector need to enable a growing bioeconomy

Swedish forestry is one of our most important industries, but is also central to Swedish climate work. Many of the solutions to reduce emissions within the EU between 2030 and 2040 are expected to come from forests and

ground. The bioeconomy provides double climate benefit through increased absorption and Skr. 2023/24:59
substitution effect, where biomass replaces fossil raw materials. It is important that EU policy
beyond 2030 is designed to create incentives for a sustainable and growing bioeconomy.

Cost-effective policy instruments should be rewarded in the EU's climate framework

The EU's climate policy should also continue to focus on cost-effective financial instruments
that benefit the companies and households that take the lead in the climate transition. In the
report Sweden's climate strategy (KN2023/03828) it is proposed that Sweden works to ensure
that the phasing out of new emissions rights in the EU emissions trading system (EU ETS)
continues at the same pace as that decided in the Fit for 55 package. The report also suggests
that Sweden should work for the introduction of harmonized control instruments to create
economic incentives for reduced emissions in the agricultural sector and for carbon dioxide
storage in forests and land.

The government assesses that the EU ETS will continue to be an important instrument for
greatly reducing emissions between 2030 and 2040 and intends to work to ensure that the
ambition in the legislation is maintained. As technological developments improve the
possibilities of reducing emissions from the agricultural sector, Sweden should work to
introduce harmonized, accurate and cost-effective control at EU level towards reduced
emissions (see further section 11.1).

In addition to pricing mechanisms, it is judged that there is still a need for legislation at EU
level that creates the conditions for both specific sector conversions (see sections 8 to 12), as
well as cross-sector conditions such as sustainable value chains (see section 7.6). Such
legislation, which is described in more detail in other parts of the climate policy action plan,
should also be reviewed against the background of the upcoming climate target for 2040 and
against the background that the EU as a whole must achieve climate neutrality by 2050 at the
latest.

6 Climate policy framework

The government's climate policy is based on the climate policy framework and aims to create
the conditions for a long-term, socio-economically efficient and stable climate policy. All actors
in society must be given long-term conditions to prepare and make informed decisions based
on the design of climate policy. The climate policy framework, which the Riksdag decided on
on 15 June 2017 (prop. 2016/17:146, bet.

2016/17:MJU24, rskr. 2016/17:320) consists of three parts: parliamentary targets for climate
policy, a climate act which legislates that the government's policy must be based on the long-
term, timed emissions target that the Riksdag has established and the establishment of a
climate policy council which must evaluate the government's overall policy based on how
compatible it is with the climate goals.

6.1 National goals for climate policy

Several national goals guide Swedish climate policy. The environmental quality target Limited climate impact is part of the environmental target system that was decided by the Riksdag back in 1999. A review was carried out in 2009. The environmental target system consists of a generational target for environmental work, sixteen environmental quality targets that indicate the state of the Swedish environment that the environmental work should lead to, a number of stage targets that indicate steps along the way to the environmental quality targets, a number of clarifications that clarify the content of the targets and are guiding for environmental work and the Generation Target (prop. 2009/10:155, bet. 2009/10: MJU25, SEK 2009/10:377).

The Riksdag has decided that the environmental quality goal Limited climate impact means that the level of greenhouse gases in the atmosphere, in accordance with the UN Framework Convention on Climate Change, must be stabilized at a level that means that man's impact on the climate system does not become dangerous. In connection with the adoption of the climate policy framework in June 2017, the Riksdag decided on a new specification for the environmental target, which means that the global average temperature increase is limited to well 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 level. Furthermore, it was stated that Sweden must work internationally so that the global work is directed towards this goal (prop. 2016/17:146, bet. 2016/17:MJU24, SEK 2016/17:320).
This specification is in line with the temperature target in the Paris Agreement.

The Riksdag decision also included several milestones within the environmental target system that contribute to the environmental quality target Limited climate impact. The stage goal that describes the long-term climate goal means that Sweden must have no net emissions of greenhouse gases into the atmosphere by 2045 at the latest, in order to achieve negative emissions thereafter. The remaining emissions from operations within Swedish territory must be at least 85 percent lower than the emissions in 1990. This means that supplementary measures may amount to a maximum of 15 percent by 2045 (see section 6.4).

For the sectors covered by the EU's allocation of responsibilities regulation (ESR) until 2030, the following national milestones apply according to the decision:

- Greenhouse gas emissions in 2020 should be 40 percent lower than emissions in 1990.
- Greenhouse gas emissions should be at least 63 percent lower than the emissions in 1990 by 2030. A maximum of 8 percentage points of the emission reductions may be achieved through supplementary measures.
- Greenhouse gas emissions should be at least 75 percent lower than the emissions in 1990 by 2040. A maximum of 2 percentage points of the emission reductions may be achieved through supplementary measures.

The Riksdag also decided on a climate target for the transport sector. The target is a stage target within the environmental target system and means that greenhouse gas emissions from domestic transport (except domestic aviation which is part of the EU ETS) must be reduced by at least 70 percent by the year 2030 at the latest compared to the year 2010 (the stage target for domestic transport).

6.1.1 The Environmental Targets Committee should be tasked with reviewing the stage goals

The government's assessment: Climate policy should steer towards the long-term climate goal of reaching zero net emissions of greenhouse gases at the latest 2045 and thereafter negative emissions. The national milestones are important checkpoints on the way to the long-term climate goal. The environmental goals committee should be tasked with reviewing the design of the national milestones so that they better correspond with Sweden's commitments within the EU. The preparation should also review the stage target for domestic transport until 2030.

The reasons for the government's assessment: The climate policy framework serves Sweden well and the goal of reaching zero net emissions of greenhouse gases by 2045 at the latest and negative emissions thereafter provides long-term conditions for business and society to carry out the transition required to be able to solve the climate challenge in an orderly and economically efficient manner way.

Sweden has pushed to make the EU the global leading force in climate change. The Fit for 55 package contains legislation in the climate, energy and transport areas and involves binding legislation for how the EU must achieve at least a 55 percent reduction in net emissions by 2030 compared to 1990.
In its climate act, the EU has undertaken to achieve climate neutrality by 2050 at the latest and to reduce net emissions within the Union by at least 55 percent by 2030 compared to 1990. The 2030 target also constitutes the EU's nationally determined contribution (NDC) under the Paris Agreement. The EU has agreed on several necessary measures for increased emission reduction rates until 2030, which also contribute to making the EU a fair and prosperous society with a modern and competitive economy. The emissions trajectory within the EU until 2030 is judged to be steep enough to give the EU good chances of doing its part to achieve the Paris Agreement's goals. See further about the EU's tightened climate policy until 2030 in section 5.1.

Through the package, the EU will have a basically comprehensive climate policy framework. A significant part of the emissions of greenhouse gases within the Union will be covered by one of the two systems for trading emission rights, which means that there is both a price and a ceiling for these emissions. Through the so-called border adjustment mechanism for carbon dioxide, incentives are also created for countries outside the EU to price their emissions in the sectors concerned and the risk of carbon dioxide leakage is countered. The EU's member states have binding commitments that guide the achievement of the EU's climate goals. In addition, a large number of legal acts have been decided which enable this changeover, e.g. carbon dioxide requirements for light vehicles and rules around renewable energy.

In the report Sweden's climate strategy (KN2023/03828) it is proposed that the government commissions the Environmental Targets Committee to update the Swedish climate targets so that they are based on the target structure used within the EU's regulatory framework. In the report, it is proposed that the Environmental Targets Committee revise the stage target for 2030 so that it complies with the requirements for Sweden within the distribution of responsibilities ESR without lowering the overall level of ambition. It is also proposed that the Environmental Objectives Committee review transport

the sector target's target formulation to achieve a clearer focus on rapid electrification.

The government agrees with the assessment that the rapid development of the EU's climate policy affects Sweden's climate policy. The goals in the climate policy framework were set in accordance with the Paris Agreement, i.a. with the aim that Sweden would act as a leading country for an ambitious climate policy and that the goals would set an example for other countries to set similar goals. The EU's climate law and the legal acts under it form a strict climate policy framework where member states are given legally binding rules and commitments to reduce their net emissions of greenhouse gases within the responsibility-sharing regulation (ESR) and the regulation on land use, land use change and forestry (LULUCF). Against the background of the EU's tightened climate policy until 2030, the government assesses that the Environmental Objectives Committee should receive additional directives with the task of reviewing Sweden's milestones for the non-trading sector in order to create good conditions for an effective and transparent climate policy.

The target for domestic transport by 2030 is designed in such a way that other sectors in practice barely need to reduce their emissions by 2030 in order to meet the target for the ESR sector. This reduces the adjustment pressure for these sectors, which risks leading to sub-optimization where transport buyers and travelers suffer from higher prices than would otherwise have been necessary. Today, the goal is deemed not to be reached without a large involvement of expensive bio-based fuels by 2030, which shifts the focus from the long-term transformation of the transport sector. Road transport dominates the emissions from domestic transport and the government assesses that the solution to reach all the way to essentially zero emissions in the transport sector is primarily about restructuring the vehicle fleet. The preparation should therefore also review the stage target for domestic transport until 2030.

Sweden also has a stage goal for the ESR sector to reduce emissions by at least 75 percent compared to 1990 by 2040 at the latest, with the utilization of a maximum of 2 percentage points of supplementary measures. Since the EU's climate policy beyond 2030 is in parts still unknown, the Environmental Target Preparation cannot at this stage review the stage target for 2040 based on the EU's climate policy in an effective way. According to the EU's climate law, the Commission must submit a proposal for a climate target for 2040 by March 2024 at the latest. After that, it will take longer before the target is decided and there is clarity in which climate policy will aim to reach that target, as well as which commitments Sweden will to be achieved within the EU by 2040. The government therefore intends to return to the question of the revision of Sweden's milestones until 2040. Section 5.3 describes the government's policy to influence the design of the EU's climate policy until 2040.

6.2 The Climate Act and follow-up of the climate work

As part of the establishment of the climate policy framework, the Riksdag also decided to introduce the Climate Act, which entered into force on 1 January 2018. The Act contains, among other things, provisions that the government's climate policy must be based on the long-term, timed emissions target that the Riksdag has established and how the climate policy work must be conducted. The government

must according to the law conduct the climate policy work so that the climate policy Skr. 2023/24:59
the goals and the budgetary policy goals are given the conditions to work together.
Every year, the government must present a climate report in the budget bill.

Furthermore, the government must produce a climate policy action plan every four years. The action plan should, among other things, describe historical and forecasted emission data, the outcome of measures taken for emission reductions, the degree to which decided and planned measures can be expected to contribute to reaching the national and global climate goals, and to what extent decided and planned measures in various expenditure areas affect the possibilities of reaching the goals. The government should also describe what further measures or decisions may be needed to achieve the goals. In this climate policy action plan, the government clarifies how it will work during the mandate period to reach the climate goal by 2045 and Sweden's EU commitments.

6.3 The Climate Policy Council

The third part of the climate policy framework is the Climate Policy Council, which is an organizationally independent, interdisciplinary expert body tasked with assisting the government with an evaluation of how the government's overall policy is compatible with the climate goals. According to its instructions (ordinance [2017:1268] with instructions for the Climate Policy Council), the council must, among other things, evaluate how the government's overall policy is compatible with the climate goals that the Riksdag and the government have decided. The council is also tasked with evaluating whether the orientation within various relevant policy areas contributes to or hinders the possibility of reaching the climate goals. The council must also highlight the effects of decided and proposed policy instruments from a broad societal perspective, identify policy areas where further measures are needed, analyze how the goals can be achieved in the short and long term in a way that provides good conditions for cost-effectiveness, and review and assess the quality of the documents and models on which the government bases its policy. The council must also contribute to increased discussion in society about climate policy. The Climate Policy Council's office is set up at the Research Council for the Environment, Land Industries and Community Development. The Climate Policy Council must submit an annual report with its assessments of climate policy, and also submit a report every four years on the government's climate policy action plan. The report on the action plan must be submitted no later than three months after the government has submitted its climate policy action plan.

The council's annual report for 2023, which was submitted to the government on March 29, 2023, contains a number of assessments and recommendations.

6.3.1 The Environmental Targets Committee should analyze an extended assignment to the Climate Policy Council

The government's assessment: The environmental objectives committee should be tasked with submitting a proposal for an extended assignment to the Climate Policy Council to, in addition to existing tasks, evaluate the policy in order to be able to

carry out the structural transformation to zero net emissions of greenhouse gases by 2045 in a cost-effective manner and with acceptable consequences for companies and private individuals throughout the country. The Environmental Goals Committee should also submit proposals for assignments to the Climate Policy Council to evaluate the policy to reduce global emissions of greenhouse gases.

The reasons for the government's assessment: The Climate Policy Council must evaluate how the government's overall policy is compatible with the climate goals decided by the Riksdag and the government. Within the framework of this task, the Climate Policy Council must evaluate whether the orientation within various relevant policy areas contributes to or hinders the possibility of reaching the climate goals, highlight the effects of decided and proposed policy instruments, identify policy areas where additional measures are needed, analyze how the goals can be reached in a cost-effective way, both short- and long-term, and evaluate the basis and models on which the government bases its policy. In addition to this, the Climate Policy Council must contribute to an increased discussion in society about climate policy and submit an annual report to the government on how the work has been carried out during the year.

Through the Fit for 55 package, the EU has now received an expanded package of European policy instruments. The introduction of a new emissions trading system for emissions from road transport and heating of buildings (EU ETS 2) means that the EU will have a common basic pricing in sectors where emission reductions in many parts of the Union have been insufficient.
The system involves the establishment of a control instrument which, over time, will have great potential to reduce the Union's emissions in a cost-effective manner and contribute to the national commitments of various member states. When the overall control instruments are in place for cost-effective emission reductions in all emission sectors, the focus in climate policy will increasingly be about how a socially effective structural transformation can be created within the framework of an increasingly reduced emission space, with increased or maintained prosperity. In order to cope with this structural transformation with maintained competitiveness, high employment and acceptable social and economic consequences throughout the country, a long-term policy is required that creates the conditions for companies and private individuals to make wise decisions.

Most of the decisions required for societal transformation are made independently by individuals, companies and public and private organisations. Equally, the state and other public actors have responsibility for societal functions that can facilitate and are often necessary for the structural transformation to take place at a sufficient pace and without major social disruptions. Society must continue to function well at the same time as society copes with the challenge that the phasing out of the fossil fuel economy entails. This requires policies within a very broad spectrum, for example business policy, regional development policy, distribution policy and education policy.

All these policy areas thus become part of climate policy, because a successful policy in all these areas is required for the transition to climate neutrality to be feasible and with acceptable consequences. However, the implementation of these measures should not be measured solely in terms of direct emission reductions. Instead, it should

measured and evaluated based on its objectives: the economic policy according to how well Skr. 2023/24:59
competitiveness in the business world is maintained and to what extent the new business opportunities created in the green transition are exploited, regional development policy according to how well its goals are achieved and so on.

In the report Sweden's climate strategy (KN2023/03828) it is proposed that the climate policy council's mission be expanded to also analyze what measures are required for Sweden to be able to make the transition to climate neutrality without losing competitiveness, deteriorating transport opportunities and without regional and social tensions building up as a consequence of the changeover. The council is also proposed to have a mandate to analyze Sweden's actions in the EU and other international organizations.

In order to better reflect the breadth of climate policy, the government agrees that the Climate Policy Council's mission should be expanded. In addition to existing tasks, the task should be broadened to also evaluate the policy to manage the structural transformation to zero net emissions of greenhouse gases in 2045 in a cost-effective manner and with acceptable consequences for companies and private individuals throughout the country.

Climate change is of a global nature and requires global responses.
Swedish companies contribute to global climate benefits by supplying the rest of the world with products with low emissions of greenhouse gases. Sweden can also act and push within the EU, other regional collaborations and globally to get the EU and other parts of the world to act more forcefully to reduce climate emissions. Without the commitment of countries such as the United States, China, India and Brazil, we cannot meet this global challenge. Against this background, the Climate Policy Council's mission should be broadened to also evaluate the government's policy to reduce the global emissions of greenhouse gases.

In order to be able to independently and credibly evaluate climate policy, the Climate Policy Council has a high degree of distance from the government, in that the government does not decide on tasks for the authority. Furthermore, the Climate Policy Council is part of the climate policy framework following a proposal from the Environmental Goals Committee. In order to secure the council's position, the government considers that a possible change in the Climate Policy Council's mission should be investigated by the Environmental Goals Committee.

6.4 Complementary measures

In order to reach the long-term goal until 2045 and the stage goals for 2030 and 2040, supplementary measures may be credited in accordance with internationally decided rules. Such measures may constitute a maximum of eight percentage points of the base year emissions to reach the stage target by 2030, two percentage points of the base year emissions to reach the stage target by 2040 and 15 percentage points of the base year emissions to reach the long-term target by 2045 at the latest. This corresponds to 3.7 million tonnes in 2030, 0.9 million tons in 2040 and 10.9 million tons in 2045. Such measures are also needed to reach negative net emissions after 2045. As supplementary measures, above all, the following can be counted:

- increased net absorption of greenhouse gases in forests and land
- separation and storage of carbon dioxide of biogenic origin, so-called bio-CCS

- verified emission reductions through investments outside of Sweden borders.

6.4.1 Supplementary measures require long-term planning and construction

The government's assessment: In order to reach the climate goals, Sweden should invest in supplementary measures. After 2045, such measures should contribute to net negative emissions. The majority of supplementary measures take a long time to achieve and therefore require long-term planning and construction.
Efforts should be started in good time before settlement against the goals is carried out.

The government assesses that full utilization of supplementary measures will be required in 2045 to reach the goal of net zero emissions.
The amount of preparatory measures should therefore gradually increase after a linear target trajectory in order to enable complementary measures to the corresponding ones 11.5 million tonnes of carbon dioxide equivalents per year by 2045. Measures should also be taken so that supplementary measures will subsequently contribute to negative emissions. The question of whether the supplementary measures should be used for goal fulfillment should be decided in connection with the settlement.

How settlement against the targets should take place and which accounting rules for supplementary measures should apply should be clarified, taking into account developments within the EU and internationally.

The proposal of the climate policy road selection investigation (SOU 2020:4) partially agrees with the government's assessment. The climate policy path selection investigation suggested that the government should set quantitative targets for supplementary measures decided by the Riksdag. The government's assessment means that measures should be taken to prepare and achieve supplementary measures, but not that specific targets are adopted.

Referral bodies: *The Environmental Protection Agency, the Nature Conservation Society, Friends of the Earth, WWF, the Royal Academy of Sciences, Svebio, the Authority for Community Protection and Preparedness, Region Norrbotten, the County Administrative Board in Gävleborg County, the County Administrative Board in Västerbotten County, the County Administrative Board in Halland County, the County Administrative Board in Skåne County, the County Administrative Board in Gotland County, The County Administrative Board in Uppsala County, the County Administrative Board in Västmanland County, the County Administrative Board in Östergötland County* and *the County Administrative Board in Västra Götaland County* recommend that goals for supplementary measures to 2030 and 2045 should be determined and decided upon. Like the investigation, the Environmental Protection Agency believes that it is up to future governments to decide to what extent the supplementary measures are to be counted against the climate policy goals.

WWF does not want supplementary measures to be included in the Swedish climate goals, but nevertheless supports the report's proposal to set milestones for the supplementary measures.

The County Administrative Board in Östergötland County recommends that the proposed target levels be used as underlying targets for the national targets and not as a stage target within the framework of the environmental target system. It would facilitate and provide a clear direction for the work until the year 2045. In a further step, these should also be broken down at county level to clarify which volumes of supplementary measures are required in each county.

The Swedish Chamber of Commerce believes that the volume of supplementary measures should be Skr. 2023/24:59
considered minimum levels and not be limited.

The County Administrative Board in Västra Götaland County is positive that the goals are built in a mechanism that requires annual increases in supplementary measures.

The Norwegian Institute of Economic Research considers, with regard to the volume targets for supplementary measures, that there is a concern that the Swedish climate policy targets are only stipulated for two target years. This applies not least to emissions trading with other countries. Unlike the other measures that the investigation discusses (measures within the LULUCF sector and bio-CCS respectively), emissions trading is relatively fast-paced. It is entirely possible to increase trade in 2030 or 2045 in order to reach the goal. In years when there is no goal, there is no corresponding reason to trade

The reasons for the government's assessment: In order to reach the stage goals, a limited amount of supplementary measures may be credited in accordance with internationally decided rules. These measures will also have to contribute to negative net emissions after 2045. Complementary measures include absorption of carbon dioxide in forests and soil (see section 11), emission reductions carried out outside Sweden's borders (see section 4.3), separation and storage of carbon dioxide from combustion of biofuels, so-called

bio-CCS (see section 7.9).

The climate policy path selection investigation had the task (dir. 2018:70) to propose a strategy for how Sweden should achieve negative emissions of greenhouse gases after 2045. By negative emissions here is meant that Sweden's net emissions are less than zero. The investigation proposed in its final report The path to a climate-positive future (SOU 2020:4) a strategy to achieve negative emissions and that the government should set targets as starting points for this strategy.

The climate policy route selection investigation stated that supplementary measures often involve investment-intensive projects that continue for a long time. In order for such projects to come to fruition, the area of action needs to be characterized by stable conditions and clear objectives in order to reduce the project risks for the actors involved. The investigation assessed that a politically anchored quantitative target for supplementary measures until 2045 would create conditions for long-term planning and long-term action for potential project owners. The investigation further stated that a goal on the road for supplementary measures to 2030 would help to create confidence that the long-term goal will be realized.

According to the investigation, however, this does not mean that supplementary measures are implemented at the expense of emission reductions. Instead, the starting point should continue to be that emissions should be eliminated as much as possible in the sectors where it is possible, while other emissions should be reduced to the extent feasible.

The climate policy path selection investigation emphasized that supplementary measures are a tool for reaching the climate goals in the climate policy framework. Determined and decided goals for supplementary measures would not be equated with the climate goals in rank, but primarily aimed at reaching climate goals. The investigation also assessed that the area of supplementary measures needs to be continuously evaluated and developed, in the same way as is done for other parts of climate policy. The work to evaluate and develop the supplementary measures should take place integrated with, and within

the framework for, the system that is applied for climate policy in general according to the climate policy framework.

The government broadly shares the inquiry's analysis, but does not believe that the Riksdag should make decisions on targets for various types of supplementary measures. There needs to be a certain flexibility for future governments in how supplementary measures are to be used in the climate policy framework, and parliamentary targets for supplementary measures would risk giving supplementary measures the same status as the stage targets in the framework.

Instead, it is appropriate to establish a long-term direction for supplementary measures. This means that the government creates the conditions for long-term planning and long-term action for potential project owners and other actors in society in accordance with the needs identified by the investigation. At the same time, there is no uncertainty that the climate policy framework continues to focus on society's transition towards net zero emissions. The focus should be to prepare supplementary measures that increase successively following a linear target path towards 11.5 million tonnes of carbon dioxide equivalents per year by 2045. After the year 2045, the measures should contribute to negative emissions. Since the emission statistics are revised annually, the government assesses that the levels proposed by the investigation may need to be raised so that they can contribute with greater certainty to cover the amount of supplementary measures that are needed in the target years to reach the national climate goals.

The policy to reach the levels that are set should be followed up within the framework of the annual climate report to the Riksdag.

In March 2023, the Swedish Environmental Protection Agency presented its mission to propose accounting methods for supplementary measures according to the climate policy framework and to propose how accounting and settlement against the climate goals should take place. The assignment has been carried out in collaboration with the Swedish Energy Agency, the Norwegian Forestry Agency, the Swedish Agricultural Agency and the Swedish University of Agriculture (SLU). In the report, Supplementary measures according to the climate policy framework (NV-09894-21), it is proposed that an increase in the total net absorption that occurred in the target year within the LULUCF sector compared to the period 2016–2018 should be recorded as supplementary measures and form the basis for settlement towards the Swedish climate goals. However, in order for an increased net absorption within the LULUCF sector to be credited against the Swedish climate goals, a condition must be that measures have actually been implemented with the aim of increasing the net absorption from forests and land. The contribution that may be booked as a supplementary measure from bio-CCS in a specific target year is the total amount of biogenic carbon dioxide that is separated and permanently stored in the current target year. For verified emission reductions in other countries acquired in accordance with Article 6 of the Paris Agreement, the report proposes that Sweden should use a target trajectory method for settlement in line with international regulations for Article 6. The method means that Article 6 units at the target year are retroactively distributed over the period 2021–2029 for the years where emissions in that ESR sector exceed the climate policy framework's indicative target trajectory. Within the EU, regulations are currently being updated and regulations are being added that affect how Sweden can book and settle supplementary measures according to the climate policy framework. In 2024, the European Commission is expected to present proposals for a framework for how the EU should reach the stage goal by 2040 on the way to climate neutrality in 2050. In the EU's long-term scenario

for development to 2050 includes a build-up of both reinforced coal sinks Skr. 2023/24:59
in LULUCF and development of technical negative emissions. The government will
follow these processes, together with developments under the Paris Agreement,
and then establish the national accounting and settlement rules for supplementary
measures.

7 Conditions for climate change

Sweden has a unique opportunity to take advantage of the growth potential and geopolitical advantages that the green transition represents. We have a fossil-free electricity system, abundant minerals and metals, high competence, innovative power and significant enterprise. Properly handled, the transition can create more jobs, increased growth and strengthened welfare.

In order to enable a structural transformation on the scale that the green transition entails, a series of system changes is required in several of society's basic technical systems such as electricity production, industrial processes, material recycling, transport, land use, etc. Some of these the public has a certain control over, but the predominant part of it
economic activity in the Swedish economy is governed by decisions made by households and businesses. In order for Sweden to adjust all the way to net zero emissions, a number of prerequisites must be put in place that make it possible for companies and households to make wise decisions. Military defense is a socially important sector that cannot change at the same pace as other sectors. Military defense requires continuous, robust and field-grade fuel. The in some cases exceptional power outputs and energy needs for military equipment in combination with today's battery technology, the absence of possibilities for charging in the field and the need to quickly carry out refueling rounds mean that electrification is not an option for the Armed Forces' vehicles.

This section describes the government's work to create the conditions for climate change. It can i.a. about streamlining the licensing process (section 7.3), ensuring access to fossil-free electricity throughout the country (section 7.5), developing the supply of skills (section 7.7), and reducing financial risks linked to new technologies (section 7.4). These prerequisites have often been taken for granted in analyzes of policy instruments, but are recurring in social actors' description of the obstacles that exist for their transition to fossil-free energy. Swedish companies have clearly shown a willingness and a capacity to take on a leadership role in the global transition and thereby combine climate benefits with growth and competitiveness.

The state's role thus becomes to create the conditions for households and companies to change by setting the right framework and incentives.

7.1 Commitment and acceptance of climate change

Reaching all the way to net zero emissions means a restructuring of Swedish society. The transition can only succeed in an economy that is growing. The climate work in Sweden is a success story for Swedish industry and Sweden's GDP growth has long been decoupled from fossil emissions. Being a world leader in the transition means great opportunities, but can also mean challenges and changes that hit some groups harder than others. It is therefore important that citizens, civil society and companies throughout the country have the conditions to be part of the development and take part in the benefits of climate change. Without acceptance from citizens, it will be difficult, for example, to expand electricity production and electricity grids according to the needs of, among other things, the players in industry and the transport sector have to adjust. A large part of society is already engaged in climate change based on the opportunities that are created. In order to succeed in reaching all the way to net zero emissions, however, all relevant social actors throughout the country need to be included in the climate transition, both business, civil society and citizens.

7.1.1 Acceptance and inclusion in climate change

The government's assessment: The climate transition is the major structural transformation of our time and, if carried out in the right way, can generate competitiveness, sustainable growth and prosperity on the way to zero net emissions of greenhouse gases in 2045. Legitimacy among citizens is a prerequisite for the transition. Existing and new initiatives for collaboration and cooperation should be developed to create further commitment to climate change.

In order to achieve commitment and acceptance for the climate policy, greater consideration needs to be given to how citizens and companies in different parts of the country are affected by the climate transition. The whole country needs to be included in the transition work. In order to take part in funds from the social climate fund, the government intends to draw up a social climate plan with measures for a fair climate transition.

The reasons for the government's assessment

Further promotion of fossil-free competitiveness

Climate change means that many companies have to adjust their operations. Fossil-free Sweden (M 2016:05), which is a committee subordinate to the government, has since 2016 worked to create a commitment to Sweden's climate goals being reached, not least within the business world. 22 industries that represent a large majority of Sweden's greenhouse gas emissions have presented roadmaps for fossil-free competitiveness, where their contribution to the Swedish climate goals is made clear.

In addition, the government works through climate diplomacy and collaborations with

other countries to promote Sweden's export opportunities as a result of the green transition. The government considers that such initiatives are important for Sweden's climate transition and intends to continue to create commitment to the climate transition among various actors in society.

During the spring of 2023, the government has worked actively to conduct a dialogue about the possibilities of different sectors to adjust and contribute to the climate goals. Through a series of meetings with round tables, the government has met and collected opinions from actors involved in the transport sector, forestry and agriculture, energy, industry and actors in the financial sector. The Prime Minister has also organized a national climate meeting where it emerged that there is both the will and the opportunity for business to change, as long as politics contributes with the right conditions. The series of meetings and the national climate meeting show a great commitment to climate change in many sectors around Sweden. Business has taken great strides forward in the transition work, and to realize these ambitions, an ambitious policy is presented here that aims to create the conditions for ventures and investments in Sweden that enable the climate transition. Under the respective sector sections in this letter, some of the recurring and prioritized proposals that have been received are explained, as well as how the government intends to proceed with these proposals. Through this dialogue, the government can develop a climate policy that combines reduced emissions with sustainable growth, competitiveness and prosperity.

Climate policy should be adapted to the situation around the world

The climate transition can also, if designed incorrectly, entail large costs and negative changes for certain groups, and it is important that the policy is designed with respect so that households and businesses throughout the country can be part of the climate transition.

Climate policy also needs to deal with the straining economic situation with high fuel prices and inflation that is putting a lot of pressure on households and businesses. In such a situation, policy instruments should not lead to residents of Sweden facing significantly higher costs than residents of our neighboring countries. The government therefore changes policy and takes measures to lower fuel prices, i.a. through a reduction in the reduction obligation (see section 7.1.2) as well as the tax on petrol and diesel (prop. 2023/24:1).

The entire country must be included in the climate transition

In order to achieve an inclusive climate transition, climate policy needs to take a holistic perspective for the whole of society. It must be possible to live, work and live throughout the country and at the same time be part of the climate transition. Legitimacy among the citizens is a prerequisite for the transition. Transition needs to be based on the possibilities of finding effective means of control, at the same time that the conditions for individuals, households and companies are not negatively affected and where the whole country and all social groups have equal opportunities in the transition.

Today we see investments in the industries of the future in large parts of the country, not least in northern Sweden where many communities are facing extensive expansion. It is positive at the same time as it creates challenges because, among other things, new electricity production, infrastructure, housing, educational opportunities and the transfer of skills must quickly be in place. This means new

challenges for municipalities linked to i.a. to quickly plan, build and manage new homes and good living environments and offer access to preschool, school and other community services. Section 7.7 describes the measures the government takes to secure competence for the green new industrialization. In addition, there is an important interplay between the state, municipalities and regions to ensure that the public sector contributes to attractive communities to live in. Section 13 describes measures to improve governance at state, regional and local level to contribute to the development of the entire country .

From 2035, new passenger cars or light trucks with internal combustion engines will no longer be sold within the EU, according to the EU's decided carbon dioxide requirements for light vehicles. New ambitious European CO2 requirements have also been proposed for heavy vehicles. This means that it needs to be planned for a future where even in sparsely populated parts of the country it will be possible and attractive to choose electric vehicles. In a transition phase, however, it is important that the changeover does not limit accessibility for households and businesses that depend on conventional vehicles. Through these measures, the government is intensifying work on an inclusive climate transition for the whole of Sweden.

The consequences of the climate transition must be acceptable for households and

businesses Climate policy instruments such as pricing of greenhouse gas emissions affect different parts of society in different ways. In order to gain acceptance, climate policy must be focused on enabling the transition so that the consequences for households and companies of the measures implemented to quickly reduce emissions become acceptable, while the economy is strengthened through the transition and confidence in development is maintained.

As part of the Fit for 55 legislative package, a social climate fund is introduced to address social challenges arising from the introduction of a new emissions trading system for road transport, buildings and certain other greenhouse gas emissions (EU ETS 2, see further section 7.2). The fund enables Member States to compensate, among other things, vulnerable households, micro-enterprises and transport users who receive a price surcharge through EU ETS 2 directly for increased costs but also to support them in their work to change towards reduced emissions of greenhouse gases. The fund can thus become significant in promoting a fair transition throughout the country.

To take part in funds from the fund, EU member states must submit a social climate plan that describes measures intended to be implemented to compensate households, micro-enterprises and transport users for the price mark-up of EU ETS 2 or assist them in reducing their emissions. By meeting the conditions of the Social Climate Fund, Member States can finance these compensatory and supportive measures through the Social Climate Fund. One condition is that the Member State contributes at least 25 percent of the estimated costs of its plans.

In the report Sweden's climate strategy (KN2023/03828), several measures are proposed to create acceptance for climate policy instruments. The report proposes a climate bonus for all households linked to the income from climate-related financial instruments. The report also proposes a transport subsidy for rural households and that the energy tax on electricity should

be lowered with the justification that a lower tax on electricity in several different ways would Skr.
2023/24:59 reduce the burden on households and businesses that the transition entails.

The government believes that measures should be taken to promote a fair climate transition. The government intends to analyze how the social climate fund can best be used in Sweden to enable ambitious climate policy and create acceptance for climate policy instruments. The analysis should take into account the introduction of EU ETS 2 in Sweden, as well as other instruments to phase out fossil fuels, see section 7.1.2. The government intends to concretize this work further in the social climate plan, which must be submitted to the European Commission by 30 June 2025 at the latest.

Climate policy that takes into account the conditions of different social groups

Anchoring and acceptance are crucial to implementing the climate transition. Consideration needs to be given to people's different conditions and there must be opportunities to participate in the work and influence the direction of climate policy.

Children and young people are affected by decisions made today to counteract climate change. That children and young people are affected by climate policy is also the starting point for the Generational Goal, i.e. that the goal of environmental policy is to hand over to the next generation a society where the major environmental problems are solved, without causing increased environmental and health problems outside Sweden's borders. An ambitious and effective climate policy that realizes the objectives of the Paris Agreement is therefore crucial for the possibility of meeting the Generational Goal. The government believes that both the international climate negotiations and the implementation of the Paris Agreement should be imbued with a child rights perspective. Having a children's rights perspective in climate work is supported by the Act (2018:1197) on the United Nations Convention on the Rights of the Child (the Convention on the Rights of the Child). Article 3 of the Convention on the Rights of the Child states that an assessment of the best interests of the child must be taken into account in all measures taken concerning children. According to Article 19, children have the right to express their opinion and to be heard in all matters concerning the child. The government works to consider and highlight the participation and involvement of children and young people in the climate issue, including the negotiations, i.a. through collaboration with LSU – Sweden's child and youth organisations. In addition to ensuring that children and young people can participate in a meaningful way, it is also important that there is feedback to children and youth organizations on how their participation is taken care of.

In the Paris Agreement, it is established that the climate transition must take place with regard to human rights and that it must promote gender equality. There are differences between women and men both when it comes to the view of climate change, in how men and women respectively contribute to the emission of greenhouse gases, as well as how women and men, girls and boys, are affected by climate change. Sweden must continue to work to ensure that an equality perspective pervades the implementation of the Paris Agreement, for example by actively working for equal participation in decision-making processes, as well as continuing to work for a strengthened gender equality perspective for everyone in all parts of the negotiations that take place within the framework of the Paris Agreement.

At least a quarter of the world's land is owned, managed or used by indigenous peoples. The Sami people have since time immemorial lived in the Sápmi area, which extends over large parts of northern Sweden and our neighboring countries.

Both reindeer herding rights and Sami culture are protected in the Swedish constitution, and the Sami also have protection under international law as an indigenous people. There may be conflicts of interest between Sami villages and new establishments and expansions of industrial activities with significance for climate change.
According to the Act (2022:66) on consultation in matters concerning the Sami people, the government, state administrative authorities, and eventually also regions and municipalities, must consult with Sami representatives in matters that may have special significance for the Sami.

In order to achieve a broad anchoring of climate change, the public also needs to be informed and involved. According to the Paris Agreement, the parties must work to increase public awareness, participation and access to information in matters related to climate change. Several Swedish authorities today have ongoing work based on this commitment to disseminate information about climate change.

7.1.2 A safe and acceptable phasing out of fossil fuel and diesel

The government's assessment: Clear conditions should be provided in good time for society's phasing out of fossil fuels. Climate policy instruments such as pricing of greenhouse gas emissions affect different parts of society in different ways. It should therefore be analyzed how the phasing out of fossil fuel and diesel can take place in an acceptable way that does not have harmful effects on parts of the country or society.

The reasons for the government's assessment

The government's assessment is that the emissions of greenhouse gases for domestic transport should reach basically zero by 2045 at the latest in order for Sweden to be able to reach the long-term goal of net zero emissions by 2045. In order to reach basically zero emissions in an orderly and efficient way, an extended societal analysis is required. This analysis should contain an overall analysis of what measures should be taken so that the phasing out of fossil fuel and diesel can take place in a way that is acceptable to citizens and entrepreneurs and does not have harmful effects on parts of the country or society given the governance that is designed at the Swedish level and at EU level.

In order to contribute to the phasing out of fossil fuels, several pieces of the puzzle must be analyzed and put together effectively. The analysis should cover the areas described below. Consideration should also be given to society's preparedness and that socially important activities such as blue light activity
and the needs of the military defense, so that these are not limited in any way
in carrying out their assignments or solving their tasks. In section 7.1.1, the government states that a social climate plan should be drawn up with measures for a
fair climate change. The social climate plan should be based on Sweden's commitment to the EU.

Accessibility in sparsely populated and rural areas must be ensured

There are several motivations that differ in the analysis between reducing emissions on the margin from high emissions to somewhat lower emissions

compared to phasing out the last percent of emissions. Not least is advantage- Skr. 2023/24:59 ning policy aspects important to take into account, such as accessibility in sparsely populated areas with an increasingly smaller fuel market. At a certain point, a market can no longer hold critical mass to maintain societally important functions. Electrification will eventually take over as the dominant energy carrier among road transport and the demand for liquid fuels will decrease so that there is no longer a business opportunity in sales. There are already accessibility problems linked to fuel sales closing down in sparsely populated and rural areas.

The analysis therefore needs to take into account how the phasing out can be carried out without risking socially important functions and basic accessibility for certain groups or parts of the country.

Limitations resulting from fuel quality requirements must be taken into account

The Energy Agency proposes in the Control station for the reduction obligation 2022 (ER 2022:07) that Sweden switches to the same diesel quality that is used in most of Europe, i.e. diesel in environmental class 3 (diesel MK3). The Swedish environmental classification of fuel, i.e. of diesel and petrol, aims to reduce emissions of pollutants into the air. Today, MK1 diesel and gasoline are promoted with a lower tax rate than MK3 diesel and MK2 gasoline, which correspond to the EU standard. Regardless of the requirements placed on fuel suppliers, a phase-out of fossil fuels may increase the need for mixing fossil-free fuels to higher levels than is currently possible. The possibility of blending biofuels into petrol and diesel is limited by the EU's fuel quality requirements, the Swedish environmental classification and by fuel standards. A transition to the EU standard for petrol and diesel is considered to enable a higher mixing rate of biofuels than today. The positive environmental effects that the use of MK1 petrol or diesel gives in relation to the EU standard have decreased over time as the EU's fuel quality requirements have been revised. A reduced use of fossil diesel and petrol can also reduce the reason for a special Swedish environmental classification of petrol and diesel which entails higher costs for the fuel suppliers. In the long run, this and the need to be able to mix in larger proportions of biofuels may justify a transition to the EU standard. The analysis therefore needs to weigh the advantages against the disadvantages of continuing with the Swedish environmental classification of fuel.

The Pumping Act is not adapted to the phasing out of fossil petrol and diesel. The

Act (2005:1248) on the obligation to provide renewable fuels, the so-called Pumping Act, means that since April 1, 2006, larger petrol stations are obliged to provide renewable fuels such as e.g. E85 (ethanol) or vehicle gas (biogas). However, according to the law, electricity, regardless of production source, is not counted as a renewable fuel. The purpose of the law is to improve the availability of renewable fuels, mainly in light of the fact that availability has been assessed as one of the biggest obstacles to an increased use of renewable fuels. The law has been criticized for increasing costs for fuel suppliers without contributing to sufficient climate benefits. Around Sweden, several gas stations, not least in sparsely populated and rural areas, have been forced to shut down their operations due to poor

profitability. At the same time, it can be questioned whether the law is adapted to steer towards essentially zero emissions in the transport sector. In order to reach the goal of zero net emissions of greenhouse gases by 2045 at the latest, extensive electrification of the transport sector is required. The analysis should therefore also include what requirements should be set around providing renewable fuels, including whether the requirement should be broadened to also include fossil-free fuels, not least in sparsely populated areas.

7.2 Pricing of greenhouse gas emissions

Anyone who causes harm or inconvenience to someone else should also do the right thing for themselves. This principle, that the polluter pays, has been guiding both Swedish and international environmental and climate policy for a long time.
That the polluter pays for their greenhouse gas emissions means that private individuals and companies need to include this cost in their decisions.
The price signal provides effective incentives to reduce greenhouse gas emissions as long as the environmental impact is correctly priced.

The fact that the polluter pays also means that it is the actor himself, and not the state, that chooses how greenhouse gas emissions are to be reduced, through e.g. technology changes, efficiencies or reduced consumption or production.
If everyone pays the same price for their emissions, emissions will also, in theory, be reduced first where it is cheapest, and thus pricing is a cost-effective control tool. In practice, there are a number of conditions in the economy that mean that pricing emissions cannot on its own reduce emissions effectively and without unwanted effects in society. For example, a large difference in ability to pay between consumers can cause the price control to produce unacceptable distribution policy effects. Pricing of greenhouse gases is therefore combined in practice with other policy instruments in both the national climate policy and the EU common one.

Pricing emissions is also a prerequisite for the green transition and a good investment climate for companies trying to commercialize sustainable solutions. It is often the price that the emitter is forced to pay that allows sustainable solutions to compete on the market. At meetings with financial actors, several participants have highlighted that a high price for greenhouse gas emissions, in Sweden and globally, through a carbon dioxide tax or other pricing is important for the green transition.

7.2.1 A clear logic for pricing emissions

The government's assessment: Pricing of greenhouse gas emissions is central to an ambitious and effective climate policy and should be harmonized at EU level to ensure cost-effectiveness and competitive neutrality. The aggregate pricing of fossil greenhouse gases should be regulated based on a clearly formulated long-term logic and cooperate in a cost-effective manner with a common basic pricing at European level. The pricing of fossil emissions should ensure that Sweden's climate commitment in the EU is met and contribute to Sweden's

climate goals and the green transition taking into account other Skr. 2023/24:59 social goals, Swedish competitiveness and EU legal conditions
and that the conditions and standard of living for individuals, households and companies do not stagnate.

The reasons for the government's assessment

Pricing is an important part of cost-effective management towards Sweden's ESR commitments and national goals. Pricing can be direct by pricing the fossil carbon dioxide, for example as in the EU's emissions trading system (EU ETS), or the carbon dioxide tax before the introduction of the reduction obligation when the tax was only levied on, for example, petrol and diesel of fossil origin. The pricing can also be indirect through requirements or taxes, which raises the general price of fuel and not just the fossil share, for example large parts of the current Swedish carbon dioxide tax or the reduction obligation. At present, pricing of greenhouse gas emissions in Sweden takes place mainly through the EU ETS, and through energy taxation and the reduction obligation.

Control instruments through pricing for reduced greenhouse gas emissions should be EU-wide. The EU ETS currently covers emissions from approximately 750 Swedish industrial facilities, such as steel mills, refineries and electricity and cogeneration plants. When the EU ETS was introduced, the requirement for emission rights essentially replaced the carbon tax. The price of emission rights was initially significantly lower than the Swedish carbon dioxide tax, but has risen since then. Average prices within the EU ETS during 2022 were approximately SEK 900 per ton of carbon dioxide. This is a relatively strong increase from 2019, when prices averaged around SEK 260 per ton.

Of Sweden's total emissions in 2021, roughly 39 percent was covered by the EU ETS and just under 38 percent by carbon dioxide taxation. The remaining emissions, approximately 23 percent, were not subject to any pricing. These emissions mainly consisted of greenhouse gases other than carbon dioxide, mainly in the form of methane and nitrous oxide from agriculture.

The introduction of a new emissions trading system for emissions from road transport and heating of buildings (EU ETS 2) means that the EU will have a common basic pricing in sectors where emission reductions in many parts of the Union have been insufficient.

The system involves the establishment of a control instrument which, over time, will have great potential to reduce the Union's emissions in a cost-effective manner and contribute to the national commitments of various member states. Sweden should participate in and support this EU-joint development, see section 7.2.2.

The common basic pricing needs to be supplemented with additional policy instruments

In order to ensure that Sweden's ESR commitment is reached and contribute to Sweden's national goals in a cost-effective way, the EU-common basic pricing should be supplemented with additional policy instruments to achieve an effective combined pricing of fossil greenhouse gases. However, there are several limitations in how these instruments can be designed which must be taken into account. Which policy instruments should supplement it

European basic common pricing is an important issue for cost-effective governance.

Trading systems price emissions efficiently through direct pricing

A trading system that includes the greenhouse gas emissions that occur when burning fossil energy is a cost-effective way to reduce emissions. A trading system provides incentives for technology changes, e.g. electrification and fuel changes such as increased use of biogenic energy and efficiency improvements – operators choose the method that suits them best. A trading system keeps down the socio-economic costs of the transition while the auctioning generates revenue which can be used to facilitate the transition. However, a trading system always means a direct price mark-up on low-mixed fuels, in addition to the higher prices driven by increased mixing levels, as an operator needs to cover the remaining fossil emissions with emission rights.

From 2027, alternatively 2028 if the price of gas and oil exceeds certain levels, EU ETS 2 will be introduced. This means that the vast majority of greenhouse gas emissions in Sweden are covered by one of the EU's two trading systems with emission rights. The government takes a positive view of this and assesses that the pricing of emissions should mainly take place at a European level in order to increase the cost-effectiveness of management.

Energy tax, carbon dioxide tax and reduction obligations can contribute through indirect pricing

Energy and carbon dioxide tax is regulated in the Act (1994:1776) on tax on energy and is levied on fuels used as fuel, operation of stationary engines or for heating. For low-involved fuels within the reduction obligation, no distinction is made between the biogenic and the fossil share in terms of taxation due to state aid rules. Therefore, the energy or carbon dioxide tax does not provide incentives for further blending of biofuels into low-mixed petrol and diesel. On the other hand, high fuel taxation dampens the total use of fuel.

Since the fossil and biogenic share of low-involved fuels are taxed equally, the carbon dioxide tax is now, just like the energy tax, a blunt instrument for steering towards reduced emissions. A trading system governs through a price mark-up, which provides incentives for higher biofuel mixing, electrification and transport efficiency. However, a higher carbon dioxide or energy tax mainly provides incentives for electrification and higher transport efficiency through its price mark-up. A higher carbon dioxide or energy tax also provides incentives for higher use of high-input biofuels. The price difference between low- and high-mix fuels that can be achieved is limited by state aid rules, however, because the tax reduction, which is a state aid, cannot exceed the additional cost of biofuel production.

The Swedish reduction obligation today provides strong incentives for a higher use of biofuels. After Sweden has implemented the new renewables directive (RED III) in 2025, fuel companies will be able to use

electricity sold from public charging stations to fulfill the reduction obligation. It Skr. 2023/24:59 changes the dynamics of how the reduction obligation steers towards reduced emissions. Since the requirements in the reduction obligation can be met through electricity sold from public charging stations, fuel companies receive a direct incentive to support electrification, e.g. through an expansion of public charging stations. The current reduction obligation's one-sided focus on higher levels of involvement will thus no longer remain because the need for higher involvement decreases as the fuel companies' incentive to push for electrification increases. The new system will thus, in addition to a higher involvement of biofuels, provide incentives for electrification, but without the same direct price markup on the fuel that a trading system (or fuel taxes) entails. The government will analyze how a developed reduction obligation that also includes electricity from public charging stations from 2025 could contribute to Sweden's commitment in ESR and how the impact on fuel prices can be minimized.

Tax exemption for fossil-free fuels is an uncertain way forward

Highly blended biofuels are neither subject to carbon dioxide tax nor energy tax. The system of tax exemption for highly involved fuels is surrounded by many uncertainty factors that make stable and long-term conditions difficult. Above all, there have been discussions for a long time about how the tax exemption relates to the Energy Tax Directive (ETD) and the EU's state aid rules.

According to the ETD, which governs the countries' taxation of electricity, propellants and fuels, biofuels must, as a general rule, be taxed at the same tax rate per volume or weight unit as the fossil fuel they replace. A lower tax on biofuels than fossil fuels is thus considered a state aid, which as a general rule is not allowed. In some cases, measures covered by a so-called block exemption regulation can be introduced without having to observe the normal procedure of prior notification and the Commission's approval of the measures. However, the group exemption regulation contains a number of conditions for when the regulation is applicable, such as e.g. limits the scope of aid.

In order to have a lower tax on biofuels, it is required that the support be notified to and approved by the European Commission. A tax reduction that is a state aid may in principle be at most so large that it corresponds to the additional cost of producing the biofuel compared to the fossil equivalent. The additional cost of biofuels therefore needs to be determined so that it is possible to check and as far as possible ensure that no overcompensation occurs and in the event of any overcompensation the tax needs to be adjusted.

On 14 July 2021, as part of the Fit for 55 package, the Commission presented a proposal to recast the ETD. According to the Commission, the purpose of the proposal is that the directive should contribute to achieving the EU's climate goals for 2030 and climate neutrality by 2050 within the framework of the Green Deal, to preserve and improve the EU's internal market, and to maintain the possibility for member states to receive income from energy taxation. An amended ETD could, depending on the design, make it easier for EU member states to be able to use taxes in a more efficient way to price the emissions from energy use, not least in the transport sector.

Sweden currently has a state aid approval for tax exemption for clean and highly blended biofuels until 31 December 2026.
Sweden has also had two state aid approvals for the tax exemption of biogas for heating and motor fuel respectively, but the commission's approvals of the aid have been invalidated by the European Union's tribunal (see below). Biofuel and biogas production is also promoted with investment support and for biogas two different forms of production support.

In the summer of 2020, the commission approved, through two decisions, ten-year extensions of Sweden's tax exemptions for biogas and biogasol, which is required as they count as state aid. However, the Commission's approvals were appealed by a German company, Landwärme GmbH, to the General Court of the European Union (Case Tÿ626/20 Landwärme GmbH v European the Commission), which is the first instance of the Court of Justice of the European Union in this type of case. The basis for the lawsuit was that Landwärme believes that the Swedish tax reduction entails overcompensation for the players who have already received production support for biogas in Denmark. Through the judgment from 21 December 2022, the tribunal annulled the commission's decision and ruled that the commission should have started a so-called formal review procedure in order to be able to decide on Sweden's tax exemptior The Commission will carry out such a formal review procedure of the support schemes and then make new decisions.

On March 7, 2023, the Tax Agency announced its assessment of the legal situation due to the judgment. The implication of the Swedish Tax Agency's analysis is that the authority can no longer grant exemption from tax for biogas or biodiesel used for heating. Exemption from tax on biogas or biogasol that has been consumed or sold as motor fuel cannot be granted either.

Against the background of EU legal difficulties, the scope to steer towards climate goals through tax reductions is therefore assessed as limited and the government will therefore analyze other alternatives to promote the use and production of fossil-free gases and oils (see sections 7.2.3 and 7.5).

The principles for pricing carbon dioxide emissions need to be updated

Given the restrictions that exist around how the pricing of emissions can be designed in practice, the development of pricing at a European level and the importance of pricing for other societal goals and Swedish competitiveness, there is a need to update the principles for pricing.

7.2.2 The EU's emissions trading system is tightened

The government's assessment: The tightened rules for the EU's emissions trading system (EU ETS) will increase the pace of climate change. Sweden should participate from the start in the implementation of the new emissions trading system, EU ETS 2, and include the burning of fuels in all additional sectors beyond those that are mandatorily covered by EU ETS 2. The government intends to come back with proposals aimed at fully compensating consumers and businesses for the effects on fuel prices. The government also intends to use

the possibility to make exceptions for ferry traffic between Gotland and other Skr. 2023/24:59 parts of Sweden up to and including 2030.

Sweden welcomes the fact that the border adjustment mechanism for carbon dioxide (CBAM) has entered into force and should work for effective implementation nationally. CBAM is considered to be an important mechanism for reducing the risk of carbon dioxide leakage from the EU's internal market. At the same time, CBAM is judged to create incentives for businesses outside the EU to change.

The reasons for the government's assessment: The introduction of a new emissions trading system for road transport, housing and certain other emissions (EU ETS 2) means that the EU will have common pricing in sectors where emission reductions in many parts of the Union have been insufficient. Even if the system's effects until 2030 will be limited, not least in countries that already have policy instruments in place, the system represents a first step and the establishment of a policy instrument that over time will have great potential to reduce the Union's emissions in a cost-effective manner.

An inclusion of more sectors in Sweden's implementation of EU ETS 2 means a more uniform pricing of carbon dioxide and can lead to a more cost-effective transition. Including in principle all burning of fossil fuels that are not already covered by ETS 1 also contributes to simpler administration for operators, consumers and authorities. The government considers that the introduction of EU ETS 2 is a cost-effective policy instrument. Sweden should therefore participate in the implementation of the new emissions trading system from the start and include the burning of fuels in all additional sectors beyond those that are mandatorily covered by EU ETS 2. The government also intends to use the opportunity to make exceptions for ferry traffic between Gotland and other parts of Sweden to and by 2030.

The government considers that consumers and businesses should be fully compensated for the effects on fuel prices that the introduction of EU ETS 2 entails, for example through reduced tax on fuel, compensatory measures financed by the EU's Social Climate Fund (SKF), or support for businesses that, upon the introduction of ETS 2 is covered by a diesel tax reduction for so-called agricultural diesel or those that do not pay tax on their fuel, such as fishing vessels and rail traffic.

The revision of the existing EU ETS, which currently includes energy producers, industry and aviation as well as shipping from 2024 onwards, involves several changes that contribute to a faster climate transition.
After the revision, emissions must be 62 percent lower in 2030 compared to 2005, to be compared with the previous goal of 43 percent lower emissions. The system of product benchmarks is being redesigned for increased technology neutrality and facilities that phase out their emissions will be allowed to remain in the system and receive free allocation. Both of these changes have the potential to increase the profitability of converting facilities.

The introduction of a border adjustment mechanism for carbon dioxide (CBAM) means that certain products imported into the EU's internal market will be charged the same carbon dioxide price as in the EU's emissions trading system.
This means that the conditions for actors inside and outside the EU are levelled, and that the incentives for operations in third countries to reduce emissions increase. Sweden should continue to work so that the border adjustment mechanism for

carbon dioxide (CBAM) constitutes an effective instrument to reduce the risk of carbon dioxide leakage from the EU's internal market, and at the same time put pressure on operations in third countries to reduce their emissions.

7.2.3 A broad policy investigation is added

The government's assessment: In order to contribute to reaching the Swedish climate goal of emission neutrality in 2045, measures need to be taken which mean that the use of coal, oil and fossil gas is phased out as fuel as well as raw material. In the proposal Reduction of the reduction obligation for petrol and diesel (prop. 2023/24:28), the government makes it clear that with previous legislation, a disproportionately large emphasis is placed on the reduction obligation contributing to reaching the stage target for domestic transport, without sufficient consideration being given to the consequences for other societal goals. Therefore, in the same bill, the government stated that the reduction levels for the years 2027–2030 should be scrapped pending a renewed analysis in which other socio-economically effective policy instruments are also considered. Before the period 2027–2030, an investigation will therefore be added in 2024 to analyze and provide information about and, if so, which instruments can be designed to achieve Sweden's commitments in the EU in a cost-effective and socio-economically effective way that ensures that unreasonably high costs for households and businesses arise with the risk of serious impact on the competitiveness of Swedish companies. Such an analysis could include relevant parts of the report Sweden's climate strategy (KN2023/03828).

The analysis shall in principle be based on the political agreement Climate policy to reach all the way to net zero which was presented on 14 November 2023. It stipulates that Sweden is bound by and must, like all EU member states, live up to our ESR commitments. The plan
to reach the assigned target path is based on the possibilities of finding policy instruments that gain legitimacy among the citizens, where the conditions and standard of living for individuals, households and companies do not stagnate and where the whole country and all social groups have equal opportunities in the transition. The measures should be such that they lead to real emission reductions and not to emission leakage through discontinued domestic production and increased imports. The pace of the transition is affected by the outside world keeping pace. War, crises and other social challenges affect the ability to meet the climate challenges in a sustainable way.

The reasons for the government's assessment

The phasing out of coal, oil and fossil gas as fuel has a decisive role in the possibilities of reaching all the way to net zero emissions by 2045 at the latest.
Emissions from domestic transport and work machinery also need to be reduced in order for Sweden to meet its EU commitments and the revised milestones for 2030 and 2040 in the climate framework that the government intends to commission the Environmental Goals Committee to propose.

The government's assessment is that fossil fuel and diesel in principle need to be phased out by the year of the long-term timed climate target, i.e. at the latest

2045. However, since Sweden belongs to the EU's internal market, it cannot be introduced Skr. 2023/24:59 a national cut-off date for the sale of fossil fuels. On the other hand, it is an important conclusion that there is deemed to be no room for emissions from fossil fuels after 2045. Through a phasing out to 2045, the goal fulfillment of the climate policy goal of net zero emissions in the entire economy is thus made possible. A phasing out until 2045 also means that the use of fossil fuel and diesel will be significantly lower until 2040 and thus also contributes to the 2040 milestone in the climate policy framework being easier to reach. The governance that is now being established at EU level such as

emission requirements for light and heavy vehicles, emissions trading and increased mixing requirements will contribute to the cost-effectiveness of the phase-out.
According to the EU's climate act, a climate target for 2040 must be drawn up (see section 5.3). When the EU's ambitions are raised, Sweden's conditions to reach the proposed phasing out in 2045 in a more cost-effective way also improve. The large investments in new technology and infrastructure that need to be made quickly to achieve a phase-out of fossil fuel and diesel by 2045 can also lead to competitive advantages for companies operating in Sweden. The possibilities of achieving such a result increase if the direction of the transition follows that chosen by other countries and the EU as well.

The reduction obligation for petrol and diesel is lowered to 6 percent in 2024–2026 to reduce fuel prices

The reduction obligation means that fuel suppliers must reduce greenhouse gas emissions from petrol and diesel by mixing in renewable or other fossil-free fuels. To calculate whether the reduction obligation has been met, a comparison is made with how large the emissions would have been if all petrol and diesel had been fossil fuels. Emissions must be reduced by a certain percentage (reduction levels). It is the fuel's life cycle emissions that count, i.e. all emissions arising in the production chain. The lower the production emissions of the fuels used to fulfill the reduction obligation, the lower the volume proportion that needs to be mixed in. It benefits biofuels produced from residual products or waste, but also producers of fossil-free fuels that have succeeded in reducing emissions in the production chain. The reduction obligation affects the price of petrol and diesel, as the price of fossil-free fuels is higher than the price of fossil petrol and diesel. The cost of fulfilling the reduction obligation is already relatively high today and is expected to increase gradually as the reduction levels increase. In 2021, a new standard quality was introduced for petrol with up to 10% ethanol by volume (E10) in Sweden. The increased reduction levels that came into effect on 1 August 2021 were a prerequisite for this change. To ensure that E10 remains standard quality, the reduction level for gasoline should not be set too low.

The Riksdag decided on 30 November 2023 that the reduction obligation for petrol and diesel should be lowered to 6 percent for 2024–2026 and that the reduction levels for petrol and diesel for 2027–2030 be scrapped.

The Renewables Directive has recently been renegotiated

Under the recently renegotiated Renewables Directive, Member States must introduce an obligation for fuel suppliers to ensure that greenhouse gas emissions in the transport sector are either reduced by

at least 14.5 percent compared to if only fossil energy is used or that the share of renewable energy in the transport sector is at least 29 percent (the minimum share). There are also intermediate goals. Member States shall ensure that advanced biofuels contribute to meeting the minimum share of at least 0.2 percent in 2022 and 1 percent in 2025. Member States shall also ensure that advanced biofuels and renewable fuels of non-biological origin contribute to meeting the minimum share of at least 5.5 percent in 2030, of which one percent must be made up of renewable fuels of non-biological origin.

The provisions in the directive for calculating the extent to which the objectives are achieved are complicated. The member states may credit all renewable energy in the transport sector to meet the minimum share and sub-targets, even renewable energy that is not covered by the reduction obligation. Use of biogas in the transport sector contributes e.g. to increase the proportion of advanced biofuels. The use of clean and highly blended biofuels and renewable electricity in road and rail traffic contributes to reaching the minimum share. The member states must also allow the fuel companies to credit electricity sold in public charging stations when fulfilling the reduction obligation. This gives the fuel companies an incentive to push for the expansion of charging infrastructure in order to maximize the amount of electricity sold in public charging stations that they can credit. This will change the control effect of the reduction obligation and may turn it into a powerful tool for electrification.

However, the calculation rules mean that it is not possible to compare the targets in the directive with reduction levels in Sweden as the reduction obligation is designed today. The member states must introduce an obligation for fuel suppliers, but which requirements are set is up to the member state as long as the overall goals are met. According to the directive, the member states must allow emission reductions from the sale of electricity from public charging stations to be used to fulfill the reduction obligation.

In the report Sweden's climate strategy (KN2023/03828) it is proposed that the Swedish reduction obligation should be adapted to the EU's renewable directive, but not be used to impose the mixing of biofuel as a way to meet the emission reduction requirements within the ESR distribution of responsibilities or the Swedish climate goals. The government's assessment is that there is potential to change the reduction obligation and thereby make it a more effective policy instrument. The changes made due to the implementation of the renewables directive may also turn a possible intervention requirement into a powerful tool for electrification.

Other effective control measures should be considered

Other economically efficient policy instruments should also be considered to phase out fossil fuel and diesel in the transport sector. Effective control measures can also reduce the demand for petrol and diesel and thereby have an impact fuel prices in a favorable way. If other control measures with a large effect to reduce emissions are introduced, the reduction levels or other requirements placed on the fuel suppliers may be lower than what is otherwise needed. The investigation should take greater account of the consequences of increased fuel prices for households and businesses than has been the case in the past. The investigation should be based on the assessment that the use of fossil fuel

and diesel in principle need to be phased out by 2045 at the latest and take into account the Skr. 2023/24:59
governance that is designed at EU level. This largely depends on the outcome of EU
negotiations that will take place in the next few years. However, the government
considers the need for governance to reach our commitments in the ESR and climate
goals to 2030 to be obvious. The policy instruments that are decided for no later than
2027 and beyond should, together with the climate policy in general, ensure that
Sweden's commitments in the EU are achieved in a socio-economically efficient way
that also takes into account other social goals. The revised stage targets for 2030
that the Environmental Targets Committee will be tasked with proposing should then
also be reached.

Emissions trading system for fuel suppliers The

Environmental Protection Agency proposes in its documentation for the climate policy
action plan that the government should analyze how the interaction between the
reduction obligation and the EU's future common trading system for transport and
housing (ETS 2) could look like. The Swedish Environmental Protection Agency
believes that fuel taxes, vehicle taxes and distance-based road taxes may need to
be analyzed in parallel. Tightened requirements in the EU's renewable directive also
need to be taken into account. The Swedish Environmental Protection Agency
highlights that there is a lack of alternatives to control measures, besides mandatory
reductions and trading systems, which individually or in combination with each other
can have a similar effect on emissions.

In the report Sweden's climate strategy (KN2023/03828) it is proposed that a
national emissions trading system be introduced for as large a part of the ESR sector
as is practically possible.

A broad instrument investigation is added

As Sweden has higher commitments within ESR than most other member states and
due to the high Swedish ability to pay for emissions within the ESR sector, the pricing
within EU ETS 2 is not deemed to be sufficient, neither for Sweden's ESR commitments
nor our national goals. Nor has the aim of ETS 2 been to fulfill the individual
commitments of countries alone.

The supplementary governance needed to achieve ESR commitments and
contribute to our national goals should be cost-effective and take into account other
societal goals, Swedish competitiveness and EU legal prerequisites (for example
limitations due to state aid regulations).

The government makes the assessment that Sweden should make full use of the
flexibilities in the ESR in order to reach its commitments. The government further
makes the assessment that the accumulated emissions that remain after this should
be able to be managed through changes to the control measures aimed at the
consumption of petrol and diesel as above together with the climate policy in general
(see also chapter 14).

The government will therefore, before the period 2027-2030, set up an investigation
to analyze and provide information about and, if so, which policy instruments can be
designed to achieve Sweden's commitments in the EU in a cost-effective and socio-
economically efficient manner. It has to

ensure that unreasonably high costs for households and businesses do not arise with
the risk of serious impact on the competitiveness of Swedish

business. Such an analysis could include relevant parts of the report Sweden's climate strategy (KN2023/03828).

7.3 More efficient permit processes for a faster climate transition

Climate change means that new businesses establish themselves and need permits at the same time that many established businesses need to apply for new or changed permits due to new technology, new fuels or raw materials. An important factor that determines the pace of conversion is the time for preparation and examination of an application for a permit.

The Climate Policy Council has on several occasions, by March 2023 at the latest, recommended that the permit review of activities that contribute to the climate transition needs to become faster and more transparent. According to the actors behind the 22 roadmaps for fossil-free competitiveness developed within the framework of the Fossil-free Sweden committee (dir. 2016:66), one of the dominant obstacles in the implementation of the plans is the long permit processes for power lines, power production and other investments in industry. Also during the national climate meeting on June 16, 2023, it emerged that companies feel that long and unpredictable permit processes are a significant obstacle to climate change.

The time from when the companies start the consultation process of the application until the business can start therefore needs to be shortened so that the climate goals can be reached. The willingness to invest for a green transition is influenced by the predictability of the permit processes. By reducing the uncertainties in the process with clear information about requirements and prerequisites early in the process, Sweden can become more attractive for investments that promote a green transition.

7.3.1 The permit processes according to the Environmental Code should be streamlined and shortened

The government's assessment: The permit processes according to the Environmental Code should be designed so that Sweden can meet the challenges of the climate change in an effective way. Changes should be implemented in the environmental review system to enable shorter, more predictable and more efficient permit processes.

The reasons for the government's assessment

The permit processes according to the Environmental Code are critical for the business community to be able to start new operations and change existing operations, which is important for the business community's work with climate change. Shorter, more predictable and more efficient permit processes are needed to secure the competitiveness of business, increase the willingness to invest and promote an effective industrial climate transition, which contributes to the achievement of the climate and environmental goals. A well-functioning process enables investments that steer towards long-term sustainability work.

In many environmental permit processes for larger operations and measures Skr. 2023/24:59 included e.g. requirements for a specific environmental assessment that includes consultation and preparation of an environmental impact statement, handling by the testing authority and any appeal process. In order to shorten the total time for the permit process, a review needs to be made of all phases of the process.

Parts of the Environmental Assessment Investigation's proposal should be implemented In recent years, several initiatives have been taken to develop the environmental assessment as a tool in the green transition. Since the first climate policy action plan was established in 2019, i.a. The environmental assessment investigation (SOU 2022:33) reviewed the Swedish environmental assessment and presented its mission in the report On assessment and re-examination – part of the green transition (SOU 2022:33). Parts of the Environmental Assessment Investigation's proposal should be implemented with the aim of facilitating environmental and climate-improving investments through various changes in the environmental assessment.

A new inquiry has been appointed on the review of permit examinations according to the Environmental Code

Permit examinations according to the Environmental Code play an important role in being able to assess for which purposes land and water areas should be used and to counteract negative effects on health and the environment. In the roughly two decades that have passed since the Environmental Code came into force, the world around us has changed. Climate change, the loss of biological diversity, the geopolitical situation, tougher competition between companies and the need for security of supply pose major challenges. These challenges will for a long time to come characterize the development of our society and require changes in many areas. This means that Sweden will need new technology and new infrastructure. The transition must be rapid and requires large investments, which means a high level of risk for developers and investors.

Further changes to the environmental review system will be required to enable shorter, more predictable and more efficient permitting processes. The government therefore decided on 8 June 2023 to appoint the Inquiry into simplified and shortened permit processes according to the Environmental Code (KN 2023:2) (Environmental Permits Investigation). The investigation must take a greater approach to the issue of environmental assessment than has been done so far and consider various measures with the aim of streamlining the assessment so that Sweden can meet the challenges of climate change and secure the competitiveness of the business world.

Sweden must not over-implement EU law The EU's regulations in the environmental field have a major impact on the environmental permit processes in Sweden. The regulations aim to protect, preserve and strengthen the EU's natural capital, transform the EU into a resource-efficient, green, competitive and low-carbon economy and protect the EU's residents against environmental impacts and risks to human health and well-being. During the last ten years, EU law in the environmental field has developed at a rapid pace, i.a. through the amendments to the EIA directive (European Parliament and

Council Directive 2011/92/EU of 13 December 2011 on the assessment of the impact on the environment of certain public and private projects) made in 2014 and the Industrial Emissions Directive (Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (coordinated measures to prevent and limit pollution)).

A number of regional and global factors such as the war in Ukraine and Europe's energy crisis have resulted in the EU presenting legislative proposals in 2022 and 2023 aimed at a rapid expansion of fossil-free electricity production and fossil-free industries. The proposals set demands for changes to the Member States' permit processes and demands that certain activities be prioritized in the processes.

The national implementation of EU regulations looks different in the Member States. The government believes that Sweden, in order to secure the competitiveness of the business world and avoid delaying the green transition, should not introduce stricter requirements than existing and future EU legislation in the area of the environment, unless it is particularly justified for national reasons with stricter requirements. The environmental permit investigation has therefore been tasked with reviewing the implementation of the EU regulations in the area with the aim that Sweden should not set higher or overlapping requirements in relation to what the EU regulations require. The investigation must particularly focus on procedural requirements and make use of the existing flexibility and the possibilities for exceptions found in the EU regulations.

Questions linked to changed land use need to be resolved more quickly

Climate change means increased need for changed use of land and water areas. The provisions of the Environmental Code on management of land and water areas are applied when examining cases and cases according to the code and other laws and when planning and examining permits according to the Planning and Building Act (2010:900).

In order to increase the incentives to invest in industry, energy production, animal husbandry or other activities, it is advantageous to be able to inform society's basic view of the suitability of a certain activity in a certain location at the earliest possible stage. It can be questioned whether this purpose can be achieved with the existing provisions on admissibility decisions according to ch. 22. Section 26 of the Environmental Code. There is therefore reason to consider another, or a complementary, structure. The goal should be that information about the general public's basic view of the suitability of a certain activity being conducted in a certain place should be given as early as possible. It is part of the Environmental Permit Investigation to review that issue as well.

The distribution of responsibilities between authorities and the structure of the authorities should be reviewed with the aim of streamlining the environmental permit

processes. According to the Environmental Code, certain authorities have the right to bring legal action in cases concerning permits for environmentally hazardous activities according to the Environmental Code in order to protect environmental interests or other interests. The party role has a potentially large impact on the efficiency and time consumption of the review processes and means, for example, the right to appeal. Administration in the environmental area should become more supportive and integrated within everything from law enforcement to

follow-up, supervision and guidance so that it can contribute to more efficient Skr. 2023/24:59
and predictable permitting processes. The environmental permit investigation has
therefore been tasked with reviewing the extent to which authorities should participate
as parties or referral authorities, including the distribution of responsibilities between
authorities and the authority structure, with the aim of streamlining the environmental
permit processes and shortening the time required for examination in connection with
appeals. While waiting for the investigation to report on its mission, the government will
also review whether there are further opportunities for streamlining the environmental
assessment in the short term.

Expanded resources for authorities and courts

The government proposes in the budget bill for 2024 that the county administrations, the
Environmental Protection Agency and Sweden's Courts receive increased resources so
that they have better conditions to work for shorter and more predictable permit
processes. An increased number of permit applications and increasingly complex
legislation, and thus more difficult cases and cases, mean an increased burden on the
authorities and the courts. An increase in resources gives the relevant authorities better
conditions to work effectively with the environmental permit processes, develop
processes and competence, and retain and recruit personnel so that their combined
examination capacity matches the needs. State authorities also need to assist each
other in order to achieve a more efficient use of the state's collective resources. The
government assesses that cooperation between the county boards, in the form of e.g.
borrowing and lending of personnel, is important in order to make use of the county
administrations' combined skills and resources.

7.3.2 More efficient testing processes for electricity grids

The government's assessment: The permit processes for expansion of the electricity network should be shortened, streamlined and made more predictable.

The reasons for the government's assessment: In order to enable the expansion of new industry, as well as the electrification of existing industry and the transport sector, the supply of electricity in Sweden must increase. In order to enable an increased supply of electricity, an expanded and strengthened electricity grid is required in turn. If the electricity grid is not expanded at a rapid pace, more restrictions will arise that risk delaying the climate and energy transition.

The time it takes to build an electricity line, from planning until the line is put into operation, can be significantly shortened already by authorities, municipalities and electricity grid companies working smarter and more goal-oriented during the process. A report from the Energy Market Inspectorate, Shorter lead times for electricity network expansion - Develop working methods and parallel processes (Ei R2023:09), shows that the lead time for a new electricity line can be shortened by several years just by using different working methods.

An investigation is underway within the Government Office to review the compensation given for the granting of land in connection with electricity network expansion. The review aims to examine suitable compensation models that contribute to a greater acceptance of the intrusions that power lines cause for the property owners, and shall thereby enable a faster and more efficient power grid expansion (KN2023/03796).

The government has given the Public Health Authority the task of producing guidance on long-term exposure to low-frequency magnetic fields for permit testing of power lines.

The Energy Market Inspectorate has stated that the requirements for environmental assessment for overhead lines that are built with the support of an area concession need to be changed in order for Sweden to fulfill its obligations in the EIA directive (see report Ei R2022:03). The issue of permit processes for electricity grids will also be dealt with in the government's energy policy orientation bill.

7.3.3 Collaboration can make processes more efficient

New technology places demands on new knowledge and ability within the public administration to handle both rapid changes and the goal conflicts that may arise between e.g. quickly enable new climate-smart solutions and business models and to consider responsible technology development.
Responsible technology means that an ethical approach is applied to the development, use and dissemination of new technology. It also means a need for an awareness that technology development must contribute to an environmentally, socially and economically sustainable society as well as to strengthened competitiveness. New solutions are often characterized by cutting across existing structures and regulations. The working method of the responsible authorities needs to be characterized by an overall picture that reflects the different dimensions of sustainability in a relevant and effective way; both economic, social and environmental. Different companies with completely different business orientations can create resource efficiency, climate benefit and increased profitability through so-called industrial symbiosis. Despite this, these collaborations and companies may find themselves in the middle of being able to apply for support or permission because they work in a new way. This requires a development work of cooperative working methods and regulations.

An example of this is the assignment to the Energy Market Inspectorate, the Land Survey and the county boards (I2021/02334, I2021/01110) to develop and test new working methods for a coordinated process for handling the permits and rights required to expand or strengthen the Swedish electricity grid. The work was conducted within the framework of five pilot projects and was finally reported in April 2023 (Ei R2023:09). Permit pilots mean that the authorities are given the conditions to select cases based on which they then jointly develop new and parallel working methods for more efficient permit management, while handling the cases.

7.3.4 More efficient trial processes for mines

The government's assessment: The process for exploration and extraction of concession minerals should be streamlined and made more predictable.

The reasons for the government's assessment: The mining industry is crucial both for Sweden and for the EU's competitiveness and ability to adjust and produce goods in times of crisis or war. Sweden has an opportunity to reduce the EU's dependence on third countries at the same time that we can contribute to a greater degree with ethically, environmentally and labor law sustainable raw materials to the digital and green transition. The mining industry is thus an important one

industry from both a climate, competitiveness and preparedness perspective and Skr. 2023/24:59
needs to continue to develop. In order for Sweden to continue to stand strong as a mining
nation and be able to grow, it is important to create favorable conditions for the mining and
mineral industry. Sweden has great opportunities to contribute with good resources for
materials and great know-how.

7.3.5 The EU's regulatory framework should contribute to an effective permit examination

The government's assessment: EU regulations such as the Industrial Emissions Directive (IED), the Renewables Directive (RED) and RepowerEU, the regulation on net zero industry (NZIA) and the European Critical Raw Materials Act (CRMA) can have a major impact on the Swedish permit processes. Sweden should press ahead in the negotiations within the EU to secure the competitiveness of the Swedish business community, promote an effective industrial climate transition and ensure that the regulations work in Sweden.

The reasons for the government's assessment

Adapting the Swedish legislation to enable efficient permit processes is of central importance for climate change. In the same way, the EU's regulatory framework should be designed and implemented so that it works in a Swedish context and leads to simplified and more efficient permit processes.

Framework to Accelerate the Deployment of Renewable Energy (Emergency Regulation)

Council Regulation (EU) 2022/2577 establishing a framework for accelerating the deployment of renewable energy was adopted by the Council on 19 December 2022, and contains rules on deadlines for the examination of certain renewable energy activities as well as provisions to simplify the examination of permits. The regulation is directly applicable and does not require national implementation. It applies until 30 June 2024, but parts of the contents of the emergency regulation have been transferred into the revised renewables directive.

Industrial Emissions Directive (IED)

On 5 April 2022, the Commission presented proposals for the revision of the Industrial Emissions Directive (IED) as part of implementing the EU's Green Deal and several related strategies. IED means that common requirements are drawn up within the EU regarding what constitutes the best available technology and means an opportunity for increased predictability for industry by making the requirements placed on industrial activities more similar between different Member States. It can simplify the environmental assessment both for assessment authorities in the individual member states and for companies that operate in several different countries within the EU.

Negotiations on the directive are still ongoing, but it is likely that the revised directive will mean that more facilities are covered

of the requirements in the directive and that the requirements are adjusted and expanded. The changes in IED must be implemented in Swedish legislation and will thus lead to a review of Swedish legislation. Changes will likely need to be made in the Environmental Code and in regulations that have been adopted with the support of the code, such as the Industrial Emissions Ordinance (2013:250) and its regulation of conclusions about what constitutes best available technology, so-called BAT conclusions. The directive allows for some flexibility regarding implementation, e.g. through regulation in permit review or through general regulations where generally binding rules can replace the review in the individual case.
Sweden already uses general regulations today. The proposed requirements in the directive will likely lead to changes in the use of general regulations when implementing the revision of the directive. The extent of changes required depends on the final outcome of the negotiations.

The regulation on net zero industry

The Commission has also proposed a regulation on Net Zero Industry Act (NZIA). The proposal aims, among other things, to simplify and speed up permit procedures for individuals and companies applying to establish facilities for the manufacture of net zero technologies and net zero products. The proposal is described in more detail in section 8.2 EU's green industrial policy.

The Renewable Energy Directive

The negotiations on the revision of the renewables directive were completed during Sweden's presidency of the Council of the European Union, also called the Council of Ministers, and were finally decided on 9 October 2023. The changes, in the parts that deal with permit processes, aim to shorten the decision-making times for renewable energy and associated infrastructure as well as increase the likelihood that such projects will be granted permission, i.a. in that renewable energy must be seen as an overriding public interest in certain considerations, e.g. at EU species protection rules. Deadlines are introduced and tightened for the permit examination. Changes will need to be made to Swedish legislation to implement the directive's requirements. Installation of solar cells will have a special position in terms of quick processing, but will not affect Sweden to any greater degree because solar cell installations are not subject to a permit.

European Critical Raw Materials Act (CRMA)

The European Critical Raw Materials Act (CRMA) aims to ensure the EU's access to a secure and sustainable supply of critical raw materials, and to strengthen the various steps along the entire value chain. The regulation is described in more detail in section 7.6 Sustainable value chains.

7.4 Capital supply

Through the Paris Agreement, Sweden has undertaken to make financial flows compatible with a path towards low greenhouse gas emissions and climate-resilient development. Companies that change do it through

sustainable investments. Therefore, the green transition is also dependent on Skr. 2023/24:59 of well-functioning capital markets. The role of the capital market in terms of the development towards a sustainable society has also become increasingly clear in recent years.

The role of the capital market is to efficiently allocate capital to the businesses that provide the best risk-adjusted return based on the investor's preferences. In many ways, sustainability considerations have a natural connection to factors that financial companies need to take into account in order to assess the risk in their business relationships - regardless of whether it is about lending, insurance operations, investments or something else. At the climate meeting with the financial industry on 30 May 2023 with representatives of banks, insurance companies, fund managers and other financial actors, there was the view that Swedish industry is at the forefront and is driving the climate change. Climate and sustainability is a profitability issue and in several respects a stability issue for banks and other players and a significant percentage of their customers want to discuss sustainability. Politics has an important role in strengthening the conditions for this without it entailing direct or indirect costs such as unreasonable regulatory burdens. Development is fast, and it is important that politics live up to the market's demand for clear and long-term rules of the game.

7.4.1 Integrate sustainability aspects within the Capital Markets Union

The government's assessment: Sweden should continue to get involved in influencing the development of the EU's rules on a sustainable financial market so that it becomes ambitious and accurate while taking into account the negative effects of regulation.

Growth analysis's proposal is essentially in line with the government's assessment. Growth analysis believes that special focus should be placed on the taxonomy.

Referral bodies: *The Export Credit Board, Luleå University of Technology, the County Administrative Board of Kronoberg County, the County Administrative Board of Stockholm County, the County Administrative Board of Västerbotten County* and *the County Administrative Board of Örebro County, the Authority for Community Protection and Preparedness, the Environmental Protection Agency* and *The train companies* support the proposal.

The Export Credit Board shares the assessment that a clearer definition of conversion investments can facilitate the provision of capital for the climate transition of the entire business community.

Reasons for the government's assessment: The European Commission's 2018 action plan on sustainable finance contains a number of measures to support the transition to a low-carbon economy. Several of the measures have already been introduced. For example, a uniform European classification system, a taxonomy, has been introduced to determine what is a sustainable economic activity. The Commission has also introduced EU labels for green financial products based on the taxonomy (EU standard for green bonds, and EU reference values for climate change and for adaptation to the Paris Agreement). Furthermore, measures have been introduced to clarify those of asset managers and institutional investors

obligation to take sustainability into account in investment processes and strengthen disclosure requirements through the Regulation on Sustainability-Related Disclosures (SFDR).

The Commission's 2021 Sustainable Finance Strategy builds on the 2018 Action Plan and aims to improve the EU's sustainable finance framework by supporting an inclusive sustainable transition and recovery from the COVID-19 pandemic. The strategy contains a number of measures to support the transition to a sustainable economy. The measures are divided into four main areas: financing the transition to a sustainable economy, a more inclusive framework for sustainable financing, the financial sector's resilience and contribution to sustainability, and the global level of ambition. A number of measures are presented under each main area. Among other things, a proposal to consider options for expanding the taxonomy is presented, as well as a proposal to develop standards for corporate sustainability reporting (CSRD). The implementation of the strategy has meant that the EU today has a leading role in terms of sustainable financing, which gives the EU's capital market a competitive advantage against the rest of the world.

Work is ongoing both at the EU level and globally around conversion plans, and in June 2023 the Commission presented recommendations on how companies can interpret rules relating to conversion investments in EU law (ref. C(2023) 3844/3). Requirements for the production of conversion plans may result from the ongoing final negotiations on a new due diligence directive (CSDDD).

However, the issue of integrating sustainability aspects into the Capital Markets Union is broader than that. The new strategy for sustainable finance aims at relevant objectives and the areas of action are in line with Swedish priorities, i.e. to make it easier for investors and private individuals to make sustainable investment decisions, and that sustainability risks must be integrated into the financial system so that capital is used more sustainably, also on a global level.

As capital moves freely in the internal market in the EU, the regulation of financial actors must be largely handled at EU level. Sweden is therefore committed to influencing the development of the EU's rules on a sustainable financial market so that it remains ambitious and accurate while taking into account the negative effects of regulation.

7.4.2 Facilitate the dissemination of information on financing forms for climate investments

The government's assessment: There is an untapped potential for Swedish companies, municipalities and regions to use available national and European funds for important climate investments throughout the country.
The government believes that further analysis is needed regarding the possibility of facilitating the dissemination of information about available forms of financing for climate investments.

Growth analysis proposal: Growth analysis suggests that the government prepare a national platform for sustainable financing.

Referral authorities: *Luleå University of Technology, County Administrative Board in Kronoberg County, the County Administrative Board in Stockholm County and the County Administrative Board in Västerbotten County, the Authority for Community Protection and Emergency Preparedness, the Environmental Protection Agency, the Swedish Growth Agency and the Railway Companies* endorse the proposal.

The County Administrative Board in Kronoberg County supports the proposal and believes that a more focused way of working that creates better conditions for the financial market to contribute to the climate work with risk capital is important. *The County Administrative Board in Kronoberg County* particularly appreciates the proposal's focus on providing aggregated information about which Swedish and EU support systems exist, which support system(s) are suitable for which type of project and how private capital can match this public capital in the most appropriate way.

The reasons for the government's assessment: There is a flora of financial support in Sweden, the Nordic countries and the EU which aims to speed up and facilitate the climate transition. However, it is difficult for individual actors to have an overview of which support can be applied for and which criteria must be met. All in all, there is an untapped potential for Swedish companies, municipalities and regions to use available national and European funds for important climate investments throughout the country.

Growth analysis has suggested that the government prepare a national platform for disseminating information about funding opportunities.
The government believes that further analysis is needed regarding the possibility of facilitating the dissemination of information about available forms of financing for climate investments.

7.4.3 Changed management of the state's risk capital

The government's assessment: It should be analyzed how the state can use risk capital in a more efficient way to drive the green transition and get the largest possible exchange of private capital for the green transition.

The proposal in the memorandum Improved financing opportunities for the green transformation of the business world is partially consistent with the government's assessment. However, the government sees a need for a further analysis of how the state's risk capital should be used.

The reasons for the government's assessment: Climate change and the climate goals that have been set internationally and in Sweden require significant investments to bring about a green transformation of society. Increasing international competition for investments, i.a. as a result of new forms of state support in other countries, affects Sweden's conditions for the green transition. There are a number of risks and challenges for business climate change, for example linked to access to labour, energy, infrastructure, permits and higher prices for certain fossil-free resources, which can make it difficult for fossil-free products to compete with products of fossil origin. Uncertainty about how these challenges can be handled increases uncertainty and can thus constitute an obstacle to financing and investment. Generally speaking, there is no shortage of capital, but the challenges in terms of capital supply look different depending on how big the company is and in what development phase it is.

On the contrary, the memorandum states Financing of business green

adjustment that there is plenty of risk-averse capital, but that there is also room for improvement. Areas for improvement that are indicated are partly the capital's long-term nature (referred to in certain contexts as endurance), partly the capital's willingness to take risks.

Based on a survey, the memorandum states that there is a need for alternatives to standard bank loans and traditional risk capital in the form of share capital. Finally, the investigation believes that there is a need for a government actor that can take into account the positive externalities of green investments and that has a clear mission regarding risk capital and green investments that companies in the early stages can turn to. The government assesses that a further analysis is needed of how the state can use its risk capital in a more efficient way in order to drive the green transition and obtain the greatest possible exchange of private capital.

7.4.4 The state credit guarantees are developed

The government's assessment: Credit guarantees can be an important instrument to support Swedish companies in the green transition, i.a. by promoting the expansion of nuclear power and contributing to investments and exports of sustainable goods and services. The requirements for being able to use the government's green credit guarantees, which are managed by the National Debt Office, should be reviewed.

The reasons for the government's assessment: There are two green guarantee instruments that have been developed to facilitate the provision of capital for the green transformation of the Swedish business community. They are handled by the Export Credit Board (EKN) and the National Debt Office (National Debt Office). In their design, they are similar to each other to the extent that they can be issued for loans from credit institutions and cover up to 80 percent of the loan amount. The National Debt Office can issue guarantees for loan amounts over SEK 500 million and EKN for under SEK 500 million. The National Debt Office's credit guarantees may be issued for loans that are used to finance industrial investments in Sweden that contribute to the achievement of the goals in the environmental target system and the climate policy framework. An EKN guarantee may be issued to cover loss in connection with export business if there is a significant Swedish interest. For non-export-related companies with loan needs below SEK 500 million, there are no government green credit guarantees available.

Investments in, for example, new nuclear power are economically very extensive and are characterized by high initial financing costs, long construction times and a long operating time to recover the investment costs. However, it has been several decades since new nuclear power was built in Sweden, which means that there are great uncertainties about which national requirements will be placed on new reactors and how the requirements will be applied. This drives up the risk level of the projects. The high risk makes it difficult to attract financing for these investment projects. For investments of this kind, it can therefore be decisive that the state bears parts of the risk for the investments to come to fruition. A credit guarantee means that the state, up to a certain amount, guarantees someone else's payment commitment and it thus functions as a protection against certain credit losses for the companies concerned. A credit guarantee contributes

thus to reduce the financial risks for investments and Skr. 2023/24:59 thus facilitates the private financing of these investments.
The government has proposed special credit guarantees for investments in new nuclear power (prop. 2023/24:1 expenditure area 21, p. 53). The government is also working further to ensure that the National Debt Office's green credit guarantee program can continue to contribute to enabling long-term investments and thereby play an important role in the development of sustainable large-scale
industrial technology, for example in the energy sector.

7.5 Access to fossil-free energy

Sweden's competitiveness and welfare are based on access to fossil-free energy at competitive prices. The transition to fossil-free energy is central to climate change. In order to reach the climate goals, the Swedish business community and households need to be given the conditions for their transition in the form of access to fossil-free energy.

In Sweden, the fossil-free share of the energy supply has increased steadily, from 54 percent in 1983 to 77 percent in 2021. The electricity system today has 10,000 MW more installed power than in 2013, but the electricity production that has been built has consisted almost exclusively of wind power.

Within the transport sector, the share of fossil-free energy is still relatively low at 27 percent, but a significant increase has taken place since the mid-1980s
the number. Since the 1980s, the percentage increase in fossil-free energy has been greatest in district heating production, followed by agriculture, forestry and fishing. Even within the industrial sector, there has been a significant increase in the proportion of fossil-free energy. Compared to many other countries, Sweden has a high proportion of fossil-free energy, largely thanks to the fact that electricity production is dominated by hydropower, nuclear power and wind power, and that industry and district heating production use a large proportion of biofuels.

7.5.1 Fossil-free energy a prerequisite for climate work

The government's assessment: In order to meet the climate goals and enable the green transition, Sweden needs a robust and reliable electricity system. Nuclear power is the planable type of power that has the potential to produce the large amounts of fossil-free electricity that climate change requires. In order for nuclear power to be expanded in Sweden, measures need to be implemented in a number of areas.

The reasons for the government's assessment

Electrification is central to climate change

Sweden has come a long way in the energy transition with almost fossil-free electricity production. Fossil fuels remain mainly in the transport and industrial sectors. Electrification is the main way to replace fossil energy and reduce emissions in those sectors and is therefore crucial for climate change. A continued rapid expansion of fossil-free electricity production is central to the industry's climate transition and to its operations.

The availability of fossil-free electricity when and where it is needed is the single most important thing

the prerequisite for electrification. Increased fossil-free electricity production in Sweden also reduces dependence on fossil energy in the northern European electricity system and creates climate benefits abroad. Continued conversion and increased access to fossil-free energy also strengthens Sweden's ability to attract foreign direct investment and increase the climate benefits of Swedish exports.
In order for Sweden to cope with the climate transition and for the industry to be able to adapt, the energy policy needs to be developed to meet the challenge we face today. During the current parliamentary year, the government intends to present an energy policy orientation bill.

The availability of fossil-free electricity at competitive prices enables the electrification of industry and the transport sector, while at the same time it can constitute a competitive advantage for companies establishing themselves in the Swedish market. Fossil-free Sweden and its actors emphasize that electrification is in many cases an enabler for industries to become fossil-free. Fossil-free Sweden has pointed out that much is being done, but more needs to be done in both electricity supply and electricity grids so that industries and households
must dare to invest in new technology that requires electricity.

The importance of electrification for the climate transition was also highlighted during the industry talks that the government invited to in the spring of 2023 and the national climate meeting in June 2023.

In its annual report for 2022, the Climate Policy Council has highlighted fossil-free electrification as a key area for reaching the climate goals. The report Sweden's climate strategy (KN2023/03828) also highlights the decisive role that a functioning electricity system will play in the Swedish structural transformation to climate neutrality. The report describes various problems in the area and makes the assessment that these need to be remedied, as well as presents a number of proposals regarding the electricity system and different types of energy.

Scenarios indicate that electricity demand may double compared to today's level. Sweden therefore needs to plan to be able to meet an electricity demand of at least 300 TWh in 2045. In order to be able to meet society's increased need for electricity and at the same time ensure good security of supply, prerequisites are required for an expanded power system with increased security of supply and an extensive expansion of both electricity production capacity and electricity grid at transmission, regional and local grid level. Energy efficiency, demand flexibility and energy storage techniques also need the right prerequisites in order to contribute to a cost-effective development and adaptation of the power system.

The electricity system also needs to be better planned so that electricity production and electricity networks are adapted and expanded with the right characteristics, in the right place and in time to meet the demand for electricity at competitive prices for the green transition. In order to improve the conditions for expansion and maintenance of the electricity system, it is necessary to have efficient and shortened permit processes for both electricity production and electricity networks (see section 7.3).

Nuclear power is one of the most important components for a robust electricity system

The industrial renaissance requires a nuclear renaissance. Within 25 years, Sweden basically needs to double electricity production. Nuclear power is the planable type of power that has the potential to produce the large amounts of fossil-free electricity that climate change requires and is one of the most important components for achieving a robust electricity system that can deliver competitive

strong electricity prices. An increased availability of nuclear power also strengthens supply-
the safety of the Swedish electricity system. Nuclear power also has the prerequisites
to contribute benefits such as swing mass and control capability to the electricity system.
With increased predictable electricity production, the conditions for connecting more
variable electricity production such as wind power to the electricity system are also
improved. The government has therefore begun work on paving the way for new nuclear
power in Sweden. A first measure is that from next year it will be permitted to have more
reactors and reactors in more locations. Where reactors are to be built is determined by
the need for energy and by the local conditions, which are tested on the basis of the
Environmental Code and the Act (1984:3) on nuclear activities and by the requirement
for the municipality's approval. The limitation of the number of reactors in the country
has become a concrete obstacle to development in that small reactors have for some
time been a realistic option for those considering investing in nuclear power or nuclear
heating. The possibility of building small reactors also makes it possible to use nuclear
energy in new ways, e.g. for as a source of process heat, which in turn is an argument
that they should be able to be built in more places than where there is nuclear power
today.
The government has also appointed an investigation with the task of streamlining the
permit review, reviewing the fee structure for nuclear power, proposing how the system
for handling waste and used fuel from nuclear power should look in a future with new
types of reactors and new actors, and to review the design of nuclear preparedness
zones. In order to pave the way for new nuclear power in Sweden, additional measures
should be implemented.

The state's financial responsibility is clarified through a risk sharing model

Today's electricity market model is unable to deliver what the electricity system would
need. Nuclear power producers are not financially compensated for the properties that
nuclear power contributes to the electricity system. In addition, new nuclear power
involves taking risks over long periods of time (both construction and operating time),
which inhibits investments in large projects such as the expansion of nuclear power
reactors. Therefore, it is required that Sweden put in place good economic conditions
that lay the foundation for investments in new nuclear power to be implemented. The
credit guarantees that the government previously presented will not be sufficient to get
new nuclear power in place.
Nowhere in the world is new nuclear power built without a clear government commitment
that compensates for the financial risk that this type of project entails. The government
will therefore develop an economic risk sharing model where the state steps in and
shares the risk with the actors who build new nuclear power. The model must be able to
be used for all types of nuclear power investment and for all actors who want to build
new nuclear power in Sweden.

A nuclear coordinator is added

In order to drive and coordinate the work with new nuclear power in Sweden, the
government will appoint a nuclear power coordinator as soon as possible. The coordinator
must ensure that all the measures required for it to be possible to make investment
decisions for new nuclear power during the term of office are carried out.
The coordinator must also function as a point of contact between the government and
the various stakeholders and in this part be able to guide stakeholders in the right direction

and to capture existing needs and wishes and pass these on within the Government Office.

Goal of 100 percent fossil-free electricity production

In order for Sweden to reach its climate goals and enable industry to change and develop throughout the country, a vigorous expansion of fossil-free electricity production is needed. To enable society's transition to climate neutrality, all fossil-free energy sources are necessary. The government has therefore, in the bill Vårändringsbudget for 2023 (prop. 2022/23:99) proposed a new energy policy goal that the composition of electricity production in 2040 is 100 percent fossil-free electricity production, which was adopted by the Riksdag in June 2023 (bet. 2022/23:FiU21 , SEK 2022/23:254).

Nuclear power has the potential to produce the large amounts of fossil-free electricity that climate change requires. From next year, more reactors and reactors in more locations are permitted. Investments in nuclear power are economically very extensive and fraught with risk. To facilitate the financing of these investments, the government proposes that credit guarantees for investments in i.a. new nuclear power is introduced (see section 7.4.3).

Wind power has increased significantly in recent decades. Many new wind farms have been added after the approval of the municipalities and environmental assessment according to the Environmental Code. In 2022, wind power produced 33 TWh of electricity, which corresponded to approximately 19 percent of Sweden's total electricity production. The strong development is expected to continue in the coming years.
According to the Energy Agency's latest forecast, wind power's annual production will increase from 33 TWh in 2022 to 52 TWh in 2026, mainly through
wind power projects approved in the years 2013–2017. Currently, there are applications for the connection of onshore wind power for the period up to 2030 corresponding to approx. 12 GW, but the expansion rate is assessed to slow down significantly after 2026 due to the fact that new permits are not granted by the municipalities concerned at the same rate as before. The percentage of rejections for applications by the municipalities (through the so-called municipal veto) increased from 18 percent in 2018 to 78 percent in 2021. The slowdown can to some extent be compensated partly by technological development that leads to increased production capacity, so-called repowering, and partly by expansion of offshore wind power.

Offshore wind power has the potential to deliver electricity in large volumes but is further ahead and is significantly more expensive than land-based
wind power. Offshore wind power is also subject to some uncertainty in terms of connection to the electricity grid, transmission capacity and goal conflicts with primarily the needs of the Armed Forces. In order to improve the conditions for utilizing the potential for energy extraction at sea, nine authorities have been tasked with identifying new areas that are suitable for energy extraction in the marine plans. A planning document for new or changed areas for energy extraction in the sea was presented in March 2023. As a next step, the Norwegian Maritime and Water Authority must submit proposals for changed marine plans by December 2024 at the latest. In May 2023, the government made a decision on permits according to the law (1992:1140 about Sweden's economic zone to two new wind farms in western Sweden. The government has also appointed the investigation An orderly trial of offshore wind power (KN 2023:01) with the task of analyzing how the regulations for the use of sea areas when establishing

of wind power can be improved and submit proposals on how the permit examination Skr. 2023/24:59
of wind power in Sweden's economic zone can become more efficient and clear.

In the report Sweden's climate strategy (KN2023/03828), the severely slowed development of land-based and coastal wind power is identified as a priority issue, because the slowdown risks making the electrification of Sweden's basic industry in northern Sweden impossible and creating major social problems throughout the country. The report assesses that conflicts between the overall societal interest and local inconveniences must be resolved. In the report, proposals are made to strengthen nearby property owners' right to compensation or redemption, investigate systems that give municipalities a share of wind power's revenues, and make the process for municipal decisions about wind power more legally secure, transparent and predictable. In April 2023, the investigation Strengthened incentives for expanded wind power submitted its report The value of the wind (SOU 2023:18) with proposals that are well in line with the report's proposals. The report has been processed for referral and is now being prepared further in the Government Office.

The expansion of grid-connected solar cells is increasing rapidly in Sweden, but from a relatively low level. In 2022, the installed power was 2,384 MW, which is an increase of 50 percent from the previous year. At the end of 2022, there were a total of 147,692 grid-connected solar cell installations in Sweden, which is an increase of 55,333 installations or the equivalent of an increase of 60 percent compared to the previous year.

7.5.2 Efficient energy use and fossil-free fuels important for climate change

The government's assessment: The transition is facilitated by efficient energy use. Energy policy should be developed in order to provide good conditions for fossil-free energy types. The transport sector's climate transition is mainly made possible through electrification and the use of fossil-free fuels. Hydrogen technology, electrofuel and tank infrastructure are important for reducing emissions from e.g. heavy transport. The policy must continue to promote the development and production of new fossil-free fuels.

The reasons for the government's assessment

An efficient use of energy is an important contribution to reduced climate impact
Energy efficiency

measures that reduce the use of fossil fuels have a direct climate effect. More efficient use of fossil-free energy facilitates climate work because the energy can instead replace fossil fuels in other processes. Energy efficiency can speed up the transition to fossil-free energy systems and at the same time reduce household and business expenses in both the short and long term. Energy efficiency should be seen as resource efficiency and is thus a cornerstone of both environmental work and productivity in the economy. Energy efficiency should therefore not stand above other resource efficiency, but should take place based on a socio-economic analysis.

The climate step is a measure which, in addition to the main aim of reducing greenhouse gas emissions, has also contributed to a more efficient use of energy by providing support for energy conversion measures and energy saving measures.

Targets for energy efficiency are found at both EU and national level. At EU level, there is a target for energy efficiency which means that the final energy use within the EU must be reduced by 11.7 percent by 2030 compared to a reference scenario. Sweden has a national goal of
50 percent more efficient energy use by 2030 compared to 2005.
The target is expressed in energy intensity, which is measured as added energy per unit of GDP in fixed prices. Production of fossil-free hydrogen is considered to be a prerequisite for the transition within several industrial sectors, but also requires an increased amount of supplied energy. Measures of energy efficiency therefore need to take into account the changing energy system of the future. The government's approach to energy efficiency is to be developed in the upcoming energy policy orientation bill.

Hydrogen and electrofuels in a future energy system

Fossil-free hydrogen is expected to be of great importance for the climate transition of industry and the energy system in Sweden and Europe. Hydrogen can be used to provide, transport and store energy and as a raw material for the production of industrial products and electro-fuels. Hydrogen has in a short time become a central part of the EU's and many countries' strategies for climate and energy transition. In Sweden, hydrogen is crucial for industry
conversion, for example for the production of fossil-free steel and can also be used for the production of various fuels for aviation, shipping and long and heavy road transport as well as for the production of ammonia and artificial fertiliser. Hydrogen is expected to be central to climate change, but requires large amounts of electricity.

Electrofuel is a collective name for fuels based on hydrogen and carbon dioxide, such as e.g. methanol. Electrofuels can be used as chemicals or as propellants. For aviation, for example, electrofuels can complement electrification and the use of other fossil-free fuels (so-called SAF). Electrofuels are also interesting for the shipping sector because it is a technology that has the potential to be scaled up to a sufficient degree to meet future demand for fuel in the sector. FuelEU Maritime enables a potential early market for electrofuels in shipping.

The government intends to clarify its political orientation for the role of hydrogen in the energy system in the upcoming energy policy orientation bill.

Fossil-free fuels, oils and gases are important for the transition

Both gaseous and liquid fossil-free fuels are important for reducing emissions both from road traffic and work machines as well as from aviation and shipping. Fossil-free gases and oils are also increasingly used in other parts of business, not least the manufacturing industry. An increased production of fossil-free fuels, gases and oils in Sweden can increase the national security of supply, reduce the vulnerability of the Swedish business community to external events, create jobs and contribute to regional

development. It can also increase the total supply of sustainable renewable Skr. 2023/24:59
fuels and fossil-free gases and oils on the European market, which also promotes
climate change in other member states. By developing new technologies, the raw
material base can be broadened by using, for example, residual products from
agriculture and forestry to a greater extent than today.

Sweden has good conditions for large-scale production of fossil-free fuels, gases
and oils that can contribute to changing the transport sector and the manufacturing
industry in both Sweden and other countries to fossil-free
and at the same time contribute to green jobs throughout Sweden. Today, there is
great potential in using additional residues from fellings, especially in northern
Sweden, for biofuels.

In order to reduce emissions from the parts and sectors of society that have not
had time or cannot be electrified, fossil-free propellants and fuels will be necessary
for a long time to come. There is a great need for sustainable carbon value chains.
Sweden contributes to the global climate work by promoting a rapid transition to
circular and bio-based value chains where waste and logging residues from, for
example, the forest industry can be processed into important inputs in the refinery
and petrochemical industry.

Biogas – a resource for both the transport sector and industry The

biogas investigation gave in the final report More biogas! For a sustainable Sweden
(SOU 2019:63) i.a. proposal for increased production of biogas in Sweden. The
investigation assesses that the tax exemption has been significant for the advent of
biogas production and for stimulating the use of biogas. The tax exemption has
primarily contributed to stimulating an increased use of biogas in the road transport
sector. On the other hand, the tax exemption does not favor long-term investments
in increased production capacity, partly as subsidized biogas production in other
countries contributes to making domestic production less attractive. The investigation
therefore proposed a number of supplementary production subsidies to reduce the
distortion of competition, including the so-called manure gas subsidy, which has
been an important economic control tool for the production of manure-based biogas.

Biogas production from manure provides both societal and business benefits
through an increased share of renewable energy, reduced methane emissions from
animal production, a fertilizer with readily available nutrition and strengthened
preparedness and reduced dependence on fossil fuels for agricultural companies.

In connection with the project period for current manure gas support ending at the
end of 2023, the government has decided, based on the Biogas Market
Investigation's proposal, to continue supporting biogas from manure by combining
the support with other production support for biogas. In the budget bill for 2024, the
government has proposed that additional funds be added
the production support for biogas.

Tank infrastructure for fossil-free fuels, including hydrogen and other electro-fuels

For the existing vehicle fleet as well as for aviation, shipping and some long and
heavy road transport, sustainable fossil-free fuels will continue to be of central
importance in reaching the climate goals.

In section 7.1.2, an analysis of the law (2005:1248) on the obligation to provide renewable fuels, the so-called pump law, which i.a. must include what requirements should be set for providing renewable fuels, including whether the requirement should be broadened to also include fossil-free fuels, not least in sparsely populated areas. The regulation on the expansion of infrastructure for alternative fuels (AFIR) sets requirements for the expansion of charging infrastructure and filling stations for hydrogen for road transport as well as requirements for infrastructure for alternative fuels in certain ports. Furthermore, ports draw up operating regulations for fuel bunkering. In the Port of Gothenburg, there are e.g. possibility for i.a. bunkering of methanol.

The development and use of hydrogen will be of great importance for the transition to an emission-free society and will have a major impact on future electricity needs in Sweden and Europe.

The government has tasked the Energy Agency with coordinating the work with hydrogen in Sweden. The purpose of the coordination task is to identify and contribute to the removal of obstacles so that the use, production, distribution and storage of hydrogen can be integrated into the energy system in an economically efficient manner and contribute to the achievement of the energy and climate policy goals. The assignment includes i.a. that the Energy Agency must coordinate Sweden's work with hydrogen by working for a close and coordinated collaboration, dialogue and dissemination of knowledge between government authorities and companies, industry organizations and other public actors including regions and academia. The collaboration must include broad questions regarding hydrogen's development and ongoing processes as well as permit processes, standardization, certification as well as safe supply and safe handling. The assignment includes i.a. to investigate how hydrogen and the infrastructure for hydrogen in Sweden can be developed from a systems perspective.
This includes mapping overlaps and gaps between existing financial instruments such as investment support and research and innovation support, as well as, if necessary, proposing adjustments to existing instruments or additional measures and analyzing how the hydrogen infrastructure can be developed in synergy with the electricity system and the energy system at large, in different scenarios with clusters or with more extensive management infrastructure.

The Energy Agency must also draw up national advice and recommendations for handling hydrogen and hydrogen pipelines and follow up the development of hydrogen in Sweden and internationally.

In the spring of 2022, the Energy Agency carried out a first call for regional electrification pilots for heavy traffic. There was great interest in the tender, and a total of 140 charging stations, 12 hydrogen gas filling stations and a combined charging and hydrogen filling station were granted support for a total of SEK 1.4 billion.

In November 2023, the Swedish Energy Agency and the Swedish Transport Administration gave their final report on the assignment to develop an action program for charging infrastructure and tank infrastructure for hydrogen (I2022/01562). In the report Action program for charging infrastructure and tank infrastructure for hydrogen (Final report ER 2023:23) about ten measures relating to hydrogen are proposed for the transport sector. The proposals are prepared in the Government Office.

The government considers that hydrogen technology and tank infrastructure are important to reduce emissions from, among other things, heavy transport. The work to identify and contribute to removing obstacles so that the use, production, distribution and storage of hydrogen in a socio-economic

can be effectively integrated into the energy system should continue, i.a. on the basis that Skr. 2023/24:59
reduce emissions in the transport sector.

The EU's governance for fossil-free fuels has been developed

Within the EU, the pace of conversion to fossil-free fuels has accelerated in recent years. The Renewable Energy Directive has been amended. This means that EU member states are required both to increase the share of renewable energy in the end use and specific requirements to increase the share of renewable energy in the transport sector. In addition, a new emissions trading system for road transport and buildings has been introduced at European level, which will contribute to reduced use of fossil fuels in both heating and fuel (see section 7.2). The EU's policy instruments for fossil-free fuels mean that emissions are reduced throughout the Union, but also contribute to creating demand for a growing market for fossil-free fuels throughout the European market. European demand is favorable for Swedish producers who are well ahead in the production and development of biofuels and electrofuels.

Sweden is a leading country in the use and production of fossil-free fuels

Sweden is a pioneering country when it comes to the use of fossil-free fuels. The reduction obligation means that fuel suppliers must reduce greenhouse gas emissions from fuel by a certain percentage.
In addition, Sweden has tax reductions for both gaseous and liquid biofuels. These measures have meant that Sweden has for a long time been far ahead of other European countries in the use of biofuels. For the existing vehicle fleet and some road transport
and work machines that have a slower conversion rate or where there are particular difficulties regarding electrification, sustainable fossil-free fuels will continue to be of central importance in reaching the climate goals. Even in the longer term, when road transport has essentially been electrified, sustainable fossil-free fuels will be needed for parts of road transport, certain work machines and aviation and shipping (see sections 9.6 and 9.7). In addition to reducing emissions of greenhouse gases, the use of fossil-free fuels can create business opportunities for producers in a growing Swedish bioeconomy and contribute to Sweden reducing its dependence on imported oil from other countries. The production of fossil-free fuels and other oils is a growing industry that may become important both for employment and for the supply of fossil-free inputs in other sectors such as the petrochemical industry and steel manufacturing.

A long-term and economically sustainable plan is needed for the phasing out of fossil fuels

Going forward, a well-balanced policy is needed that takes into account both climate goals and other socio-economic effects. Against this background, the government will work for a gradual phasing out of fossil fuel and diesel. At the same time, it is important that the policy for mixing sustainable fossil-free fuels is based on the tough economic situation that households and companies are facing. The government is therefore presenting a balanced policy that lowers the intervention requirements within the reduction obligation to ensure

Swedish competitiveness. In the longer term, and as electrification increases and the production of fossil-free fuels increases, there are greater opportunities for a complete phase-out of fossil fuel petrol and diesel. These measures are described in this section through two different packages according to table 7.1.

Table 7.1 **Action package for the phasing out of fossil fuel and diesel**

Package 1: Increased production of fossil-free fuels	**Package 2: Acceptance of the fuel policy**
Development and production of new fossil-free fuels will continue to be promoted (see section 7.5.1).	The reduction obligation is temporarily adjusted to lower the fuel price (see section 7.2.3)
Phasing out of coal, oil and fossil gas to help achieve the climate goal of emission neutrality by 2045 (Section 7.2.3)	Analysis of safe and acceptable phasing out of fossil petrol and diesel for road vehicles (see section 7.1.2)
A broad instrument investigation is added so that Sweden's commitments in the EU are reached in a cost-effective and socially efficient way (section 7.2.3)	
Analysis of a developed reduction obligation that also includes electricity from public charging stations (section 7.2.1)	

The policy must continue to promote the development and production of new fossil-free fuels

The EU's policy instruments for fossil-free fuels mean that emissions are reduced throughout the Union, but also contribute to creating demand for a growing market for fossil-free fuels throughout the European market. European demand is favorable for Swedish producers who are well ahead in the production and development of biofuels and electrofuels. In order to enable a gradual phasing out of fossil fuels in Sweden, production of fossil-free fuels also needs to increase. Also in the report Sweden's climate strategy (KN2023/03828)

it is emphasized that biofuels will play an important role in the climate change, especially when it comes to transport which, at least during a transitional period, is particularly difficult to electrify, such as long-distance road, sea and air transport. The report also highlights that, in addition to providing climate benefits, domestic production of biofuel can be important for supply security, especially if it is based on domestic raw materials, and that the same argument applies to electrofuels. The report therefore suggests that good conditions should be created for a competitive, industrial production of renewable biofuel and fossil-free electrical fuels in Sweden.

Overall, the government assesses that all fossil-free energy types should be given good conditions. Important starting points are i.a. to secure long-term and stable rules of the game for the market. The government believes that the policy should

continue to promote development and production of new fossil-free fuels Skr. 2023/24:59
and intends to analyze this issue further.

7.6 Sustainable value chains

Inefficient use and management of natural resources causes approximately half of the climate impact according to the UN's International Resource Panel. A sustainable supply of raw materials that replaces oil and fossil gas with recirculated hydrocarbons and recycled material in a circular and bio-based economy will therefore be central to a long-term sustainable climate transition. That companies have access to reliable and fossil-free
value chains are also a prerequisite for Sweden to succeed in the green transition with strengthened competitiveness. EU industry is today largely dependent on the import of many raw materials and is in some cases very vulnerable in the supply chain. China and other countries are the main suppliers of the metals and minerals that the green transition requires in increasingly large volumes. Access to sustainably produced critical raw materials is therefore increasingly important for all sectors of the EU economy.

Sustainability and a low climate footprint are increasingly highlighted as a quality aspect, and consumers place increasingly high demands on sustainability in their consumption. Therefore, the companies also make demands on their suppliers. When climate footprints are reported in accordance with commercial standards, the entire value chain of companies is generally included. When Swedish and European companies change towards sustainability and freedom from fossil fuels, those who want to be part of these value chains and act in the internal market must also do so. In this way, the sustainable choices of European consumers have a global impact. Swedish companies are in all parts of the value chain and can gain competitive advantages from being far ahead in sustainability work. Through a long industrial tradition of research, innovation and cooperation, Sweden has a head start when the world's business community adjusts its value chains to freedom from fossil fuels. Sweden has good conditions for attracting strategic investments that strengthen the sustainability and resilience of value chains.
An increasingly fierce international competition for these investments requires that the government continuously considers measures to improve the investment climate for both Swedish and foreign companies throughout the country. During a round table discussion with industry players, it was emphasized that the future lies in developing the circular economy and sustainable value chains in order to continue to be a climate leader. Sweden and Swedish companies are leading the way, and Swedish exports of climate-smart products and new technology solutions can reduce emissions in other countries.

7.6.1 Fossil freedom and circularity go hand in hand

The government's assessment: A change in the use of resources is necessary for the green transition and to strengthen Swedish competitiveness. An ambitious waste policy is necessary to reduce environmental and climate impacts from inefficient use of resources. The government will work to take measures which mean that the use of coal, oil and fossil gas is phased out both as

fuel and as a raw material. In some applications or uses, this will take time. Sweden should work to ensure that the EU's circular economy policy, including product legislation, becomes useful tools for phasing out fossil inputs.

The reasons for the government's assessment

In order to achieve freedom from fossil fuels in the economy, fossil inputs need to be phased out and replaced by other inputs. The government will work to take measures which mean that the use of coal, oil and fossil gas is phased out as fuel as well as raw material. In some applications or areas of use, this will take time. The fossil-free economy will need to be circular, bio-based and resource-efficient, and the transition to circular business models is central to reducing the need for primary resources, in e.g. the steel, chemical and cement industries.

The Climate Policy Council recommends in the 2023 report that the government should make society less sensitive to future resource price shocks, e.g. through measures for more efficient energy, material and product use and diversified supply. The Swedish business community has long worked with resource efficiency and is driving the development. For many companies, the potential of the circular economy lies in increased competitiveness through a secured supply of raw materials, increased resource efficiency and risk minimization. Sweden has a great potential to use biomass from forests and agriculture to replace fossil resources (see below in section 7.6.2).

Sweden's national strategy for circular economy

Sweden's national strategy for a circular economy points out the direction to change production, consumption and business models to non-toxic, fossil-free and circular material cycles. The vision is a society where resources are used efficiently in non-toxic circular flows and replace primary materials. Consideration must be given to the need to supply primary materials to enable climate change and material recycling. A prerequisite for a changeover to take place is that business and other actors have a driving force to change to increased circularity.

The EU is very active in the area of circular economy and climate

Developments in the area of circular economy and product regulation have gained momentum in the EU recently, within the framework of the green deal and under the updated EU strategy for circular economy, with new legislative proposals on batteries, packaging and eco-design for sustainable products, but also about textile waste, food waste, single-use plastics, construction products and end-of-life vehicles. In the proposals for new and tightened legal acts that are now being developed, Sweden should work to ensure that the EU's policy for circular economy and product become useful tools for phasing out fossil inputs.

Increased circular plastic

handling Plastic is an important material that has many areas of application both now and in the future. The global production and consumption of plastics has increased exponentially since the 1950s and is predicted to triple by 2060. An important reason for the increasing plastic production is the shift from reusable

products to disposable products. However, plastic brings with it several challenges Skr. 2023/24:59
within climate and environmental policy. In order to reduce emissions from
electricity and district heating production, plastic handling must become more
circular (see section 10). To achieve a circular economy for plastics, plastic
products need to be designed to be reusable and recyclable and the actual
recycling of plastic waste needs to increase further. Within the EU, negotiations
are underway on packaging and packaging waste, and from a global perspective,
negotiations are underway on a new legally binding global agreement against
plastic pollution. In recent years, the Swedish Environmental Protection Agency
has also been given an expanded role in the work to reduce the negative impact
that plastics and microplastics have on the environment. The Swedish
Environmental Protection Agency has, among other things, a work with national
plastics coordination, and the authority makes efforts for the entire life cycle of
plastics, e.g. sustainable design, standardization, reuse, alternative materials, recycling and reduced plastic leakage

The value of increasing the circular management of different material streams
is addressed in several different sections of this climate policy action plan:
bioeconomy (7.6.2), critical raw materials (7.6.3), textiles (7.6.5), carbon dioxide
through capture and use (7.9), end-of-life vehicles (9.3), durable products, plastics
and packaging (10.1), food waste (7.6.10) and buildings and excavations (10.2),
but the circular perspective is relevant in all use of materials and products.

7.6.2 A sustainable, competitive and growing bioeconomy

The government's assessment: A growing circular bioeconomy has an important role in the climate transition and has positive significance for sustainable regional development and rural development, as well as being an important element in the work to strengthen the national self-sufficiency. The bioeconomy investigation has produced proposals for a strategy for a sustainable, competitive and growing Swedish bioeconomy (SOU 2023:84). The investigation's proposal is now being prepared in the Government Office.

The reasons for the government's assessment: The Swedish bioeconomy
is dominated by the forestry industry and the products created with the forest as
raw material, approximately two-thirds of the bioeconomy's added value comes
from the value chain that begins with timber production. This includes forestry as
well as pulp and paper production, wood products, the construction sector and
bioenergy in various forms. However, the single largest added value is produced
within the food industry. Agriculture also has a significant share, while the fishing
industry's share of value added is smaller. Other sectors' combined share of the
bioeconomy's added value amounts to approximately 15 percent. According to
Statistics Sweden, the bioeconomy accounted for 8.1 percent of Sweden's total
value added, 20.9 percent of the total export value, and the bioeconomy companies
for 11.9 percent of the total turnover in Swedish companies in 2021. The number
of people employed in the bioeconomy, in terms of the number of employees ,
was almost 345,000 people, which corresponds to 6.4 percent of the total number
of people employed. Swedish companies in the value chains in which the green
industries are included develop innovations that contribute to global climate
benefits.

A growing circular bioeconomy has an important role in the climate transition and has positive significance for sustainable regional and rural development, as well as being an important element in the work to strengthen the national self-sufficiency. The bioeconomy reinforces and interacts with the circular economy through renewable production and resource-efficient use of organic residual streams from forestry, agriculture, the fishing industry, the food chain and from organic process waste. The bioeconomy also focuses on aspects that are not directly covered by the circular economy, such as creating new chemical building blocks, functionality and properties of products based on the biological cycle. Several actors within the bioeconomy take care of and use a large part of the residual flows that arise in production. In the forest industry in particular, the use of residual flows is significant, and there is very little of the raw material that enters industry that is not used. Within other parts of the bioeconomy, there is great potential to use more and a greater proportion of residual flows. Greater use and processing of available raw materials from commercial fishing and growing aquaculture have the potential to develop in order to meet the need for renewable raw materials and create more resource-efficient flows without increasing the take of wild-caught fish.

The Riksdag announced to the government in 2019 that the government should develop a bioeconomy strategy including measures to increase incentives for the production of biofuels. In June 2022, the then government decided on the committee directive A national bioeconomy strategy – a tool for the green industrial transition. The investigation has taken the name Bioeconomy investigation.

According to the directive, the inquiry must draw up proposals for a strategy for a sustainable, competitive and growing Swedish bioeconomy and, if necessary, submit proposals for measures to promote the development of the bioeconomy. The aim is to promote sustainable growth, renewal and employment throughout the country, to contribute to environmental and climate benefits and to create a strengthened capacity for livelihood and reduced vulnerability in society, based on biomass from the forestry, agricultural and fishing industries as well as residual raw materials in food processing. The investigator shall, among other things, produce proposals for a national strategy, one or more follow-up targets and, if necessary, measures for a sustainable, competitive and growing bioeconomy, as well as analyze the feasibility of and, if the investigator deems it appropriate, propose measures that promote efficient production of liquid biofuels based on domestic raw materials in Sweden, including proposals for long-term production support for the production of liquid sustainable renewable fuels. Negative effects on the conservation of biological diversity must be minimized. The assignment on promoting the production of biofuels was reported in March 2023 (SOU 2023:15). The task of producing proposals to a strategy for a sustainable, competitive and growing Swedish bioeconomy was reported in December 2023 (SOU 2023:84). The investigation's reports are now being prepared in the Government Office.

7.6.3 Secured supply of critical raw materials

The government's assessment: A safe and sustainable supply of raw materials for Swedish companies should be secured. This applies above all to metals and minerals that are critical and strategic according to the EU regulation on critical raw materials and that are necessary in the production of e.g. wind turbines, batteries, food and transport infrastructure. The circular use of innovation-critical metals and minerals should be strengthened.

The reasons for the government's assessment

The demand for critical and strategic raw materials has never been higher than today. In addition, due to extensive investments in the green transition and the defense industry, in light of Russia's invasion of Ukraine, demand is expected to increase sharply in the coming years. Inputs critical to climate change are concentrated in West Asia, especially China. This makes access to critical raw materials vulnerable to geopolitical risks and supply chain disruptions.

A secure supply of metals and minerals

In the final report A secured supply of metals and minerals (SOU 2022:56) it is emphasized that Sweden has good geological potential regarding both industrial minerals and critical raw materials. Some examples are graphite and lithium which are needed for battery manufacture, rare earth metals for the manufacture of permanent magnets and tungsten for special alloys and hard metal manufacture. Both traditional metals such as iron, copper or zinc, as so-called innovation-critical metals, are increasingly needed for society and to cope with the industrial transition from fossil-based to fossil-free processes. Much of this raw material is available in Sweden. Sweden accounts for almost all of the EU's extraction of iron ore. The Swedish extraction of lead and zinc corresponds to approximately 40 percent of the extraction within the EU, while gold, silver and copper correspond to just under 20 percent. It is estimated that the value of the mineral sector's exports corresponds to eight percent of Sweden's total exports.

To create a sustainable supply of necessary raw materials, a combination of measures is needed. The government assesses that there is a need for a safe, sustainable and increased raw material supply in Sweden of all metals and minerals (see also section 7.6.4) that are necessary for business in food production and in the production of e.g. wind turbines, electric vehicle batteries and other products that will increase as the world transitions to fossil-free. Technically, there are solutions that work on an industrial scale, but the big challenge is to scale these solutions up into functioning and reliable systems. An investment is needed to define, develop and implement quality-assured and volume-wise sufficient raw material and product flows. The government believes that it is particularly important with regard to so-called critical and strategic metals and minerals.

European Critical Raw Materials Act

The European Critical Raw Materials Act (CRMA) aims to ensure the EU's access to a secure and sustainable supply of critical raw materials, and to strengthen the various steps along the entire value chain. Reliable and comprehensive raw material value chains are a prerequisite for the EU to achieve the goals in, for example, the EU's industrial strategy and the European Green Deal.
This is needed for the EU to succeed in the green transition and for Europe's future industrial competitiveness to be able to increase. CRMA contains, among other things, measures relating to permit processes such as the special rules for a route of entry for companies wishing to apply for permits via a designated contact point and deadlines. The regulation also affects provisions in a large number of existing environmental acts, because i.a. recycling capacity in the Member States should increase. It is likely that the proposal will entail the need for changes in the Swedish permit process, but the extent of changes required depends on the final outcome of the negotiations (see also section 7.3 on permit processes). The government welcomes the ambition behind CRMA. Secure access to sustainably produced raw materials is a prerequisite for success in climate change.

The government further believes that it will be necessary to increase production within the EU from both primary and secondary sources as well as a maintained and developed access to global markets in order to secure the EU's supply of raw materials. The government believes that the regulation and the Swedish implementation have the potential to become an important tool in that regard.

7.6.4 Fossil-free value chain for batteries

The government's assessment: The development of the work with a sustainable and competitive battery value chain in both Sweden and Europe should be prioritized in order to, among other things, secure the industry's raw material supply and need for highly qualified competence along the entire value chain. It should be created good conditions for the vehicle manufacturers' key investments in the form of establishments, above all for the development and production of batteries in Sweden. Sweden's export and investment council (Business Sweden) has therefore been given a task to strengthen the coordination of efforts for large establishments in the automotive industry's green transition.

The reasons for the government's assessment

Sustainable batteries are a key technology for the transition to a fossil-free energy and transport system. The development of sustainable battery production is not only important for reaching the climate goals, but also enables the emergence of a competitive industry that creates sustainable growth and jobs along the entire battery value chain. Sweden has a strong position with access to e.g. raw materials, fossil-free electricity at competitive prices, expertise and policy instruments that promote continued electrification with high environmental requirements. In addition, Sweden has strong players along the entire value chain for batteries – from mining via manufacturing of active materials, production of battery cells, vehicle manufacturing and applications in the power system to recycling. It is central to secure raw materials and

the supply of skills to meet the needs of industry.

The European Battery Alliance The

European Commission aims to make Europe a global leader in sustainable battery production and use. The European Battery Alliance (EBA) was launched in 2017 by the European Commission, EU countries, industry and the scientific community. The alliance is also supported by the European Investment Bank (EIB). The goal is to develop an innovative, competitive and sustainable battery value chain in Europe. In 2018, the Commission adopted a Strategic Action Plan on Batteries which sets out a comprehensive framework of regulatory and non-regulatory measures to support the entire battery value chain. The alliance's industrial development program, EBA250, is managed by the company EIT InnoEnergy and currently brings together more than 800 industry and innovation actors along the entire value chain. Many Swedish players are represented and in all parts of the value chain. Sweden should continue to be an active member of the EBA.

Enhanced coordination of efforts for large establishments in the automotive industry's green transition

It is important to create good conditions for realizing the vehicle manufacturers' key investments in the form of establishments. Swedish vehicle manufacturers carry out extensive investments in the development and production of batteries. Some examples of such larger establishments are Volvo Car Group and Northvolt AB's joint gigafactory and research and development center for batteries in Gothenburg, the Volvo Group's battery factory in Mariestad and Scania Aktiebolag's battery investment in Södertälje. Sweden's export and investment council (Business Sweden) has therefore been given a task to strengthen the coordination of efforts for large establishments in the automotive industry's green transition.

7.6.5 Increased circular handling of textiles and textile waste

The government's assessment: It should be easy for households to reuse textiles and leave textile waste for recycling.
Waste from textiles should be prevented. The Swedish textile sector's transition towards circular business models is important not only from a climate and environmental point of view, but also for Swedish business development. Therefore, the government has decided on separate collection and a requirement that the municipality must provide information that promotes increased reuse of textiles.

The reasons for the government's assessment

There is great potential to reduce the climate and environmental impact from textiles by increasing circular handling. In the Commission's Action Plan for the Circular Economy (2020) and the 2021 update of the EU's industrial strategy, textiles are identified as an important product value chain where there is an urgent need for and a strong potential to change to sustainable and circular business models. Companies, consumers and authorities in the EU are already focusing on increasing sustainability and circularity in this sector, but the transition is slow and

the sector's environmental and climate footprint is still large. The European Commission has recently submitted a proposal to the European Parliament and Council Directive amending the Waste Directive (2008/98/EC) which focuses on textile and food waste. The proposal includes EU requirements for producer responsibility for textiles, which will likely be introduced in Sweden in the long term. The government welcomes the proposal because the areas covered have a major impact on the environment and climate.

Increased reuse and recycling of textiles

The investigation into producer responsibility for textiles states that producer responsibility for textiles forms part of the transition to a circular economy, but additional policy instruments and political, industry-wide and cross-industry as well as consumer-driven initiatives are needed for a more efficient resource use of the textile fiber through increased reuse and recycling in the textile value chains. On December 14, the government decided on separate collection and a requirement that the municipality must provide information that promotes an increased reuse of in accordance with the memorandum from the Government Office to which textiles have been referred.

Sweden and France have submitted an invitation to discuss the possibilities of including textiles in the Basel Convention. Textile waste and illegal transport of textiles is a growing global problem for human health and the environment. The Basel Convention regulates global waste transport, and if textiles are included in the convention, it can lead to reduced amounts of textiles ending up in landfills in third countries, instead of the material going to reuse or recycling and thus being used more resource-efficiently.

7.6.6 Good reporting of climate impact is central to the transition

The government's assessment: Good reporting of the effects of climate measures is central to conducting an effective climate policy. The task that Statistics Norway has been given to produce statistics to measure the climate effect of exports contributes to this.
The Swedish Environmental Protection Agency and the Norwegian Economic Institute have been tasked with producing guidance with methods for assessing the effectiveness of climate policy and the effect on global emissions should be drawn up, as a basis for the government's and authorities' work to improve the effectiveness of climate policy.

The Environmental Objectives Committee (SOU 2022:15) assesses that Statistics Sweden should produce statistics on the climate benefits of exports. The government's proposal is consistent with this assessment.

The referral bodies: *The Swedish Food Agency, the County Administrative Board in Västra Götaland County* and *the County Administrative Board in Södermanland County* are positive about the assignment the Environmental Policy Committee gives to Statistics Sweden.

Statistics Sweden is positive about the proposal to produce new statistics together with *the Environmental Protection Agency* to support an assessment of the climate benefits of Swedish exports. *Statistics Sweden* also highlights the lack of international standards to monitor the climate benefits of exports and

that it becomes important to evaluate whether the statistics can meet the quality requirements for official statistics. However, *the Environmental Protection Agency* would like to state that this type of estimation results in great uncertainty that will not be able to be resolved with statistics and conventional scenario methodology. *Gothenburg's municipality* therefore stresses the importance of developing the method as it is currently not sufficiently reliable. *The Climate Municipalities* and *the Nature Conservation Society* also comment that many of the methods proposed by the Environmental Goals Committee lack a legally secure basis for measuring data. The Nature Conservation Society therefore recommends that unsafe methods should be avoided as it may have a negative effect on Sweden's legitimacy in international contexts.

Both *Statistics Sweden* and *the Environmental Protection Agency* point out that additional resources need to be allocated to the authorities that are proposed to be assigned additional tasks, as the authorities do not have the opportunity with current resources to carry out the proposals put forward by the committee.

The reasons for the government's assessment: The government shares the Environmental Objectives Committee's assessment that the emissions are global in nature and that Sweden's responsibility therefore extends further than within Sweden's territory. Sweden should continue to primarily reduce its territorial emissions in order to reach the climate goals, but it is important that Sweden utilizes the opportunities available to reduce the climate impact from ships and flights departing from Sweden, to increase the climate benefit of exports and reduce the climate impact of consumption. However, the government considers that more documentation is needed in these areas.

Companies operating in Sweden contribute both to Sweden's climate impact from consumption and to the climate impact from exports. In cases where Swedish products have a lower climate footprint than products from the rest of the world, these can contribute to a reduced global climate impact. In addition to contributing to reducing Sweden's territorial emissions, Swedish companies thus have the opportunity to reduce global emissions by creating value chains with net zero emissions or with net negative emissions for both domestic consumption, for export and in their operations abroad. Sweden's business sector accounts for approximately 154 million tons of emissions in 2021, of which 78 million tons of carbon dioxide equivalents from products and services that go to Sweden's consumption and 72 million tons that go to exports. In addition to that, there are studies that show that Swedish exports provide a climate benefit because Swedish exports on average have a lower climate impact than the global average.

The government has given Statistics Sweden the task of proposing a method for following up statistics on the effect of exports on global emissions, based on the proposals presented by the Environmental Objectives Committee. The government has commissioned the Swedish Procurement Agency to update its tool for analyzes of the environmental and climate impact of public purchases. The government has also given the Swedish Environmental Protection Agency and the Norwegian Economic Institute the task of jointly developing guidance with methods for assessing the effectiveness of climate policy (dnr KN2023/04098).

These documents should be able to be used by authorities and the government to repeatedly evaluate and report on the effectiveness of the climate policy pursued and to propose measures and instruments that reduce Sweden's global climate footprint.

7.6.7 Consumer demands drive the green transition

The government's assessment: Consumers should have good opportunities to make sustainable choices. Companies should be given the conditions to measure and report their climate impact in an objective and transparent manner.

The reasons for the government's assessment

At the top of every value chain is a consumer who makes conscious choices in his consumption. Ecolabelling is an important tool to enable consumers, but also for e.g. public procurers, to make environmentally sustainable choices. The Swan participates in the work with the vision that the Nordic region should be the world's most sustainable and integrated region by 2030 and increasingly in EU work.

On 22 March 2023, the Commission presented its proposal for a directive on green claims. The proposal complements the bill for a directive on more consumer power in the green transition through better protection against unfair business practices and better information by establishing criteria on environmental claims and eco-labels aimed at consumers that must be met in order to be placed on the EU's internal market.

The proposal will strengthen consumers' opportunities to make well-founded decisions to reduce the environmental and climate impact from consumption.
The proposal thus contributes to reaching national climate and environmental goals.
The proposal is part of the implementation of the Commission's green offer and is based on the Commission's action plans for a circular economy and for consumer policy. The government welcomes the ambition to harmonize the requirements for environmental labeling and counter misleading environmental claims.
According to the government, the directive needs to be designed so that it ensures a high climate and environmental ambition. It is important to the government that the rules involve a well-balanced balance between strong consumer protection, effective environmental protection and the interests of business people.

Companies must be able to measure and report their climate impact in an objective and transparent manner

According to the revised sustainability directive, companies must produce a sustainability report including the climate impact from the company's entire value chain.
In Sweden, a large proportion of the large companies, state-owned companies and AP funds are already working on applying these standards to structure their climate work. Companies, other organizations and consumers must have the right decision-making basis to be able to reduce their climate footprint in line with the 1.5 degree target. However, there is currently a lack of a national database that would enable small and medium-sized companies to measure their emissions in a more cost-effective way and provide this information to other companies and customers, as an opportunity to be part of value chains for net zero emissions and to increase their qualitative competitiveness.

There is therefore a need to collect statistics to facilitate the work of business with sustainability reporting, financial actors' investment decisions and to be able to follow up the work with

climate change at national level. Statistics form an important part of the Skr. 2023/24:59
impact audits of investments that must take place afterwards with the aim of
securing the outcome of the investments and contribution to the transition to a
society with low greenhouse gas emissions. Today, for example, the frameworks
around Green bonds make significant demands on allocation to various
investments, expected and actual effect. Given society's ambitions and the
climate policy goals, both international and national, it is important that the
standardization of the sustainability reports linked to the Annual Accounts Act
(1995:1554) (ÅRL) provides the conditions for following up and evaluating
business climate and environmental work. Here are the requirements that will
be set in the EU's new regulations on sustainability reporting, European
Parliament and Council Directive (EU) 2022/2464 of 14 December 2022
amending Regulation (EU) No. 537/2014, Directive 2004/109/EC , directive
2006/43/EC and directive 2013/34/EU regarding companies' sustainability
reporting (Corporate Sustainability Reporting Directive, CSRD) from and
including 2024 important. CSRD includes a new mandatory standard for
sustainability reporting, ESRS (European Sustainability Reporting Standards),
which is currently being developed.

Science Based Targets initiative

The Science Based Targets initiative (SBTi) is a collaboration between the
Carbon Disclosure Project, the United Nations Global Compact, the World
Resources Institute and the World Wildlife Fund for Nature. The collaboration
aims to help companies set "science-based targets" to reduce greenhouse gas
emissions. Tillväxtanalys has, within the framework of its mission to evaluate
and analyze the effects of the state's efforts for sustainable national and
regional growth, analyzed the companies' strategic sustainability work. In a
study, the SBTi initiative is described and its potential to contribute to a green
transition, and the Swedish SBTi companies and their climate goals are
mapped. The authority's tentative conclusions are that if SBTi is to constitute
an effective complement, clearer guidelines and requirements for companies
to report their greenhouse gas emissions in a comprehensive and comparable
manner are required, as well as an improved opportunity to evaluate the
companies' development against the goals they set. Businesses will further
depend on politics to achieve their goals. Both companies and politicians are
served by a dialogue about how they can work together for a more effective
climate policy that simultaneously protects companies' competitiveness.

7.6.8 Climate declarations and limit values for buildings' climate impact

The government's assessment: The climate declarations of buildings should be expanded to meet the requirements that may follow from EU regulations and to include more building parts and processes while limiting the administrative burden.

The Housing Agency's proposal (Boverket 2023:20) is partially consistent with the government's assessment. The proposal means that the scope of climate declarations is expanded and that limit values for the climate impact of buildings are introduced by 2025 at the latest.

The reasons for the government's assessment: According to the Housing Agency's environmental indicators, the construction and property industry accounted for domestic greenhouse gas emissions of approximately 10 million tonnes of carbon dioxide equivalents from a life cycle perspective in 2020, which corresponded to 21 percent of Sweden's domestic emissions. The industry's imports also contribute to large emissions abroad, corresponding to approximately 6 million tonnes of carbon dioxide equivalents. The requirement for a climate declaration for the construction of buildings, which was introduced on 1 January 2022, is an important information tool to gather the industry for reduced climate impact from a value chain perspective. Climate declarations improve the information imbalance that exists between the client and construction product manufacturers and can contribute to a reduced climate impact from the construction sector. Climate decorations for buildings are an important tool to provide better conditions to reduce the climate impact from construction, facilitate markets for sustainable building solutions and provide the opportunity for various actors to steer towards measures that reduce greenhouse gas emissions.

Seen from an EU perspective, Sweden and the Nordic countries are at the forefront of the work with climate declarations. So far, the Swedish climate declaration does not cover earthworks, installations, interior surfaces and fixed furnishings, even though they account for a large part of the climate impact from imported goods. Nor is the climate impact from operating energy and maintenance included. This can lead to sub-optimizations in the construction phase. Nor negative emissions from e.g. wood and bio-based materials are included (see section 11.7). The Housing Agency has proposed a plan for how the rules on climate declaration can be developed to cover the entire life cycle and more building parts.

The Housing Agency has investigated the possibility of introducing limit values for climate impact from buildings in Sweden and proposed that limit values should be introduced in 2027 (Boverket 2020:13). The proposal has been forwarded. The Housing Agency has also been tasked with investigating how this can be accelerated and proposed constitutional proposals on limit values for the climate impact of buildings, which can be introduced on July 1, 2025 at the earliest (Boverket 2023:20). In the European Commission's proposal for the European Parliament and the Council's directive on the energy performance of buildings (EPBD), it is proposed that the impact of new buildings on the climate should be calculated from a life cycle perspective and reported in the form of an indicator. The government considers that the climate declaration should be expanded to adapt to EU regulations and to include more building components and processes while limiting the administrative burden.

By setting limit values for the climate impact of new buildings, the industry could adjust in a uniform way, while companies that go ahead and deliver better climate performance than the limit value can be rewarded by the clients. The threshold value could also promote circular innovations in the value chain and technology shifts in the production of building materials, as additional costs for these measures are small for the end user, while they are significant for the materials industry. The issue of limit values based on climate declarations is discussed within the framework of the negotiations on the EPBD, and partially similar limit values are proposed to be introduced in Sweden by the Housing Authority.
The European Commission is also planning new initiatives within the framework of the new road map for how carbon dioxide emissions from the entire life cycle of the building can be reduced until 2050, the so-called Roadmap for the reduction of whole life carbon of buildings. The government intends to forward the Housing Authority's proposal on

limit values for buildings' climate impact during new construction (Boverket Skr. 2023/24:59 2023:20) to then prepare the proposal in the Government Office.

The current revision of the Construction Products Ordinance can also contribute to the development of the market for recycled and reused materials and to a greatly reduced climate impact from construction products. Among other things, the regulation is expected to enable harmonized test methods of reused construction products and that it will be mandatory for producers to report the climate impact of construction products.

7.6.9 A more efficient use of housing and premises as a complement to new construction

The government's assessment: The building stock should be used more efficiently to enable the creation of more homes and premises in addition to new construction, and thereby indirectly reduce the climate impact.

In the budget bill for 2024, the government has proposed a temporary stimulus to municipalities that adopt detailed plans that enable the conversion of premises into housing.

Growth analysis proposals mean that institutional obstacles to climate-efficient use of existing building stock need to be investigated.
The government's assessment partially agrees with Tillväxtanalys's assessment.

The reference bodies are generally positive about Tillväxtanalys' proposal and no reference body disapproves of it. *The property owners* believe that this is a particularly prioritized issue. Promoting a more efficient use of existing building stock brings climate benefits. The property owners therefore call on the government to immediately intensify work on promoting efficient use of existing building stock. *The construction companies* view the proposal positively, provided that the scope of the proposal is broadened to also include resource management and regulatory conditions when rebuilding or changing operations. Furthermore, Byggföretagen believes that requirements for rebuilding or changing a building should be designed so that the opportunities to continue using properties that have otherwise been demolished increase. Both buildings and facilities are covered.

The County Administrative Board in Halland County would like to point out in particular that it is problematic that energy-saving measures are often classified as maintenance. This impairs the landlords' ability to finance such measures with rent increases. The same applies to conservation measures and reuse which should also be encouraged.

The reasons for the government's assessment

The need for housing is historically high. Utilizing the building stock that already exists is both resource- and climate-smart and an important complement to building new to create more homes. It could also reduce the area that is in need of heating, and thus indirectly reduce emissions. There are also extensive socio-economic benefits from a more efficient use of the property stock. Conversion from, for example, offices to residences can

contribute to increasing the supply of available housing and at the same time create more vibrant city centres.

More efficient use of premises can complement new construction The conditions for housing construction and the housing market have deteriorated rapidly. The Housing Authority's forecast is that the number of housing starts will decrease from 71,000 in 2021 to approximately 27,000 in 2023. Of these, additional 25,000 through new construction and 2,000 through remodeling. The need for housing is not the same as the need for new production, but can also be met with the help of a better functioning housing market, with more efficient moving chains, increased conversion of premises into housing and by facilitating the renting of housing by private individuals.

On average, office premises are used only 10 percent of the year's hours according to the Royal Academy of Sciences (IVA). As a result of the covid-19 pandemic, the possibilities for remote work have also increased. Work is ongoing with the business community to make certain office premises more flexible and to renovate, rebuild or increase the sharing of existing premises, with a particular focus on the building stock in fast-growing areas. There is also an increasing interest among private individuals in renting out their home.

The Housing Authority has revised the concept of redevelopment in the Planning and Building Act

It is only a small part of the building stock that is newly produced each year. In the existing stock there are buildings with varying degrees of need for renovation and rebuilding. The obstacles that have been identified in connection with rebuilding have mainly been about the fact that it is difficult to make assessments of the level of requirements and that the regulations are unclear. An overview of the problem has been made by the Housing Authority in the report Overview of redevelopment in PBL (2021:19). In the report, an account is made of whether and in what way the regulation of redevelopment can be clarified in the Planning and Building Act and neighboring statutes. By clarifying and facilitating the application of the legislation in redevelopment, these processes can be facilitated and redevelopment stimulated. The report has been forwarded and is now being prepared in the Government Office. The ongoing revision of the directive on the energy performance of buildings will have an impact on how the requirements for remodeling are formulated.

Subletting and the system of owner-occupied apartments can contribute to more efficient use of housing

In June 2023, the government commissioned a special investigator to, among other things, propose how the rules on private renting of housing can be changed to facilitate subletting. The aim is to promote better utilization of the existing housing stock. Furthermore, in May 2023 the government commissioned a special investigator to consider an expansion of the system of owner-occupied apartments and the introduction of a legally regulated model for rent-to-own housing. The aim is to make it possible for more people to own their own accommodation and to increase the diversity of housing forms in Sweden. Such investigations are expected to become an important basis for the government's continued work in facilitating the renting of housing by private individuals.

Conversion projects that require changes to the detailed plan run the risk of being put on hold because it takes too long or requires too many resources in relation to the number of new housing that can be created. The government has therefore proposed in the budget bill for 2024 a temporary stimulus to municipalities that adopt detailed plans that enable the conversion of premises into housing. In December 2023, the government decided on the regulation (2023:903) on support to municipalities for detailed plans that enable single-family housing and conversions from premises to housing.

7.6.10 Strengthen the state of knowledge and measures for reduced food waste, including food losses

The government's assessment: A reduction in food waste and losses early in the food chain contributes to reduced environmental and climate stress and counteracts inefficient use of resources in the food chain. Knowledge of amounts and causes of food losses and food waste should increase so that the right interventions and measures can be put in place. The government has therefore given the Swedish Food Agency the task of carrying out an evaluation of the efforts to date within the action plan.

The reasons for the government's assessment: Food waste and losses occur along a long value chain with many actors involved. Reduced food waste and losses mean a reduced environmental and climate impact from food production from farm to table. Similarly, resource efficiency in the value chain increases. The Swedish Agency for Agriculture has commissioned several investigations into food losses early in the chain. These can in some cases be significant, e.g. it is estimated that the losses on the farm of beef and pigs as well as milk in Sweden correspond to approx. 9 percent of the combined climate impact of animal husbandry, and 1.6 million Swedes' annual potato consumption never reaches the plate.

In order to reduce wastage and losses, the right efforts and measures must be taken. The need for collaboration is significant between the various links in the food chain because efforts and measures not taken instead lead to increased wastage in neighboring links. The Swedish Food Agency, in collaboration with the Swedish Agricultural Agency and the Swedish Environmental Protection Agency, leads the work within the Action Plan for reduced food waste until 2030. The participation of several authorities reflects the complexity of the issue. The purpose is i.a. to improve the state of knowledge and cooperation between authorities and actors in the industry to reduce food waste and losses early in the food chain. The State Board of Agriculture's investigations provide a good basis for in-depth work together with actors in the food chain. Available statistics on food waste are limited in some cases. An increased level of detail is needed to be able to carry out requested analyses, for example what proportion of food waste is unnecessary food waste and thus possible to reduce and what this actually consists of. The government has given the Swedish Food Agency, together with the Swedish Agricultural Agency and the Swedish Environmental Protection Agency, the task of carrying out an evaluation of the efforts to date within the action plan. The evaluation must be reported on 28 February 2024.

Within the framework of the Commission's proposal for the revision of Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and on the repeal of certain directives (the Waste Directive), which was presented in July 2023, there are proposals for joint binding targets for food waste which must to be achieved by the Member States by 2030 at the latest, as well as clarified requirements for Member States' national action programmes. The proposal is under negotiation in the council. The proposal is part of the EU's Green Deal and the EU's strategy From farm to table, where one of the goals is to reduce food losses and the amount of food waste. Within the Swedish environmental target system, there are also two stage targets for the year 2025, with the aim of reducing food waste so that the total food waste is reduced by at least 20% by weight per capita. An increased share of food production must also reach stores and consumers in 2025.

7.7 Competence supply

The green transition means a structural transformation in large parts of Swedish business life. It places demands on changed processes and new technology and competence in new locations, not least linked to large company establishments and company expansions. An important issue for the implementation of climate policy is therefore that there is access to labor with the right skills.

It is needed i.a. engineers, researchers, installers and operating personnel with technical know-how in the new technologies and industries that are emerging, but also strengthened competence in digitization for the development of technology as well as more efficient and climate-smarter processes and business models. Competence also needs to be built up both in the private and public sector and in several industries such as the manufacturing industry, transport and construction. Workforce and skills are also needed in commercial and public service and welfare.

Competence is needed at both upper secondary school, university of applied sciences, university and postgraduate level. As a nation of knowledge, Sweden has great advantages from a workforce with high competence and innovative companies in industries that can grow by developing and commercializing sustainable solutions. At the same time, trained labor is already in short supply within various occupational groups, e.g. connected to energy, electrical engineering, batteries and digitization. It may be of strategic importance that public and private Swedish actors actively participate in the EU projects that set the standard for skills provision within the internal market, for example the common European data area for skills.

Small and medium-sized companies also generally have less resources and more difficulty attracting the skills needed to develop their products and adjust their operations so that they become relevant to customers' structural transformation. Those who are employed in Swedish companies today need to have different skills than those who were recruited a number of years ago, and current staff may need further training and skills development.
There is therefore a need for a well-functioning competence supply including education, research, international competence and incentives for competence development. A well-functioning one

Competence supply is also dependent on a broad recruitment base and Skr. 2023/24:59
that the potential of both men and women is taken advantage of.

A good supply of skills requires a combination of forces from many different actors. Since August 1, 2022, the regions and Gotland municipality must determine goals and priorities for regional skills supply work according to the Act (2010:630) on regional development responsibility. for the
In this way, the regions have an important task of contributing through strategic work at the regional level to a well-functioning supply of skills for business and the public sector.

in
Authority collaboration for competence provision also fulfills an important function by establishing joint authority structures to work with the competence issue.

An important part of competence provision is validation. Validation means that a person's skills are mapped and assessed in a structured way, regardless of how, where or when they were acquired. Validation today takes place both within komvux and the university of applied sciences as well as within universities and colleges.
In addition, there is industry validation for which the industries are responsible.
The authority for the university of applied sciences is tasked with, taking into account the validation regulation (2022:1549), following, supporting and coordinating the development of validation nationally and regionally in the field of education and in working life.

In addition, several large industrial investments are made in regions where not only the skills in demand are lacking, but also where the total workforce needs to grow, e.g. In north of Sweden. In these cases, the regions need to attract individuals with relevant skills from other regions in Sweden, but also internationally. However, the skills shortage is also large in other regions. Competence cannot always be found in Sweden, which means that it is necessary to attract competence from other countries and get international students and researchers with in-demand competence to remain in Sweden

as well as broadening the recruitment base. It is important that Swedish higher education institutions have the conditions to be able to attract international talent to education at both basic level and advanced level as well as to postgraduate education and that there are no obstacles to recruiting teachers and researchers who can contribute to a world-class Swedish university and business life. Being able to attract foreign investment and international competence is a prerequisite for continuing to be at the forefront of climate change and for Sweden's sustainable growth and competitiveness. In order to attract new labor, attractive communities and residential areas need to be developed with well-functioning public and commercial services and well-developed infrastructure throughout the country. Temporary accommodation that easily leads to socially substandard environments should also be avoided.

Good knowledge development and competence about climate adaptation within the land-based industries is important. The climate has a direct impact on these industries. Agriculture, animal husbandry, forestry, fishing, aquaculture and reindeer herding are some of the societal sectors that are most clearly affected by a changing climate. The Swedish University of Agriculture researches and educates widely in areas related to climate issues, and is ranked as the 29th best university among 1,591 higher education institutions in the world for education related to the UN's sustainability goal 13 – combat climate change by The Times Higher Education Impact Rankings 2023.

7.7.1 The supply of competence must be secured

The government's assessment: Sweden needs more people with solid knowledge in science, technology, engineering and mathematics, and therefore a so-called STEM strategy that spans the entire education system should be developed. In order for this to be successful in the long term, i.a. that both women and men choose these educational paths.

The reasons for the government's assessment

Society and the labor market are increasingly characterized by the transition to a fossil-free society and a circular economy. An important prerequisite for the climate transition is that Sweden continues to be a leading knowledge nation where the potential of both women and men is taken advantage of and that innovative companies throughout the country create added value in green solutions. The ongoing transition means that the demand for labor with skills in, among other things, digitization, automation and electrification, as well as how they are applied in different industries, will increase.

This particularly applies to the needs that arise as a result of companies establishing themselves and expanding in northern Sweden, but also in other parts of the country. High-quality education and research are absolutely crucial for Sweden's prosperity. Through green innovations and world-leading education and research, the conditions are created for the new jobs of the future and strengthened competitiveness in the industry.

STEM strategy that spans the entire education system

Sweden needs more people with solid knowledge in natural sciences, technology, engineering and mathematics to cope in the competition with other countries. If Sweden cannot address the skills shortage that exists, Sweden risks being overtaken by countries that invest heavily in research and development. In addition, the throughput of these educations needs to be improved and the proportion of women in several educations should increase. The government therefore intends to develop a so-called STEM strategy (from the English *science, technology, engineering* and

mathematics), which spans the entire education system from pre-school to graduate education and research.

Continued expansion of the number of education places within vocational adult education and the university of applied sciences

In many cases, the employers concerned need professionally trained labour. Investments in education are therefore important for Sweden to take a leading role in climate change. Access to the right skills is a central factor for the electrification of industry and society at large to be able to be carried out, not least so that the automotive industry can adapt and so that the battery industry can be built up as a new industry in Sweden. Climate change also requires new knowledge in a number of different areas and strengthened competence at several levels, both in business and the public sector. There is a significant need for competence at upper secondary school and university of applied sciences level in many of these areas. The government

continues to expand the number of places within regional vocational training and Skr. 2023/24:59
the university of applied sciences to meet the great skills needs throughout the country.

Assignment to the Authority for the University of Applied Sciences on Swedish competitiveness and the energy and climate transition

The government has given the Authority for Polytechnics the task of analyzing and reporting how the polytechnic's education offering may need to be adapted in the longer term due to the energy and climate transition in relation to the labor market's future skills needs and Swedish competitiveness. Furthermore, the authority must report in what way the university of applied sciences' courses contribute to climate change.

The authority must particularly consider how, within the scope of the assignment, it is possible to focus on more people trained in the growth-promoting field of STEM (science *technology engineering* and *mathematics).* The assignment must be reported no later than September 6, 2024.

Strengthen the engineering country Sweden

Sweden's prosperity has historically rested on a strong innovative power in the individual and in the business world. In order to continue to maintain Sweden as a country of innovation and engineering when competition is getting tougher in the outside world, investments are required in e.g. technical educations. In this way, Sweden can take a leading position in the industries that contribute to the global climate transition, for example in the emerging battery industry.
The number of people trained in relevant fields must increase, and the government therefore proposes that civil engineering courses be expanded in the coming year 2024 in order to make

it possible for more people to be able to study such educations, the prerequisites for studying qualification-giving educations and university introductory educations, e.g. base year educations, strengthened. For it to be sustainable in the long term, it is required that both men and women choose these educational paths.

In order for the students to be equipped with the knowledge and abilities required for the future professional practice, the quality needs to be increased by enabling more teacher-led time and access to educational environments that provide the conditions for conducting teaching that prepares the students for their future professional life. High quality also strengthens the throughput so that Sweden can get more engineers. The government

therefore proposes in the budget bill for 2024 an increased compensation amount for science and technology.

The rapid technological development and the transition to a fossil-free energy system will also mean that the opportunities for transition and further education for those who have already read e.g. an engineering education needs to be improved. The government therefore proposes in the budget bill for 2024 an investment in education at advanced level so that more people can further their education and acquire skills in areas such as batteries, electrification and other areas where technological development is progressing rapidly.

Strengthened opportunities for change mid-career

The green transformation also requires a transformation of skills in the existing workforce. The great need for competence means that also

the possibilities for adjustment and further education at universities and colleges need to be improved. In order to facilitate adjustment through education in the middle of working life, a new adjustment study support was introduced from 2022. All education in Sweden that gives the right to study funds also gives the right to adjustment study support. It can e.g. be educations at polytechnics, universities, komvux and folk high schools. The most requested training initiatives are courses for continuing education and further training of professionals at university level as well as short courses with training places at university of applied sciences level. Support may be provided for education that can be assumed to strengthen the individual's future position on the labor market, taking into account the needs of the labor market. The support will thus counter skills shortages in both business and welfare and strengthen Sweden's competitiveness.

In order to improve the opportunities for further education for professionals with specialist skills, the government has proposed an investment in short courses for professionals in the budget bill for 2024. Initially, the focus should be courses with a focus on batteries, technology and green transition.

7.7.2 Competence provision for large company establishments and company expansions

The government's assessment: Targeted efforts should be carried out if necessary to strengthen the supply of skills in connection with large company establishments and company expansions in those parts of the country where skills shortages become limiting for the green transition. It should be ensured that people with the right education have the opportunity and incentive to move to places where their skills are in demand.

The reasons for the government's assessment: New industrialization is underway with large company establishments and company expansions in several parts of the country, not least in Norrbotten and Västerbotten counties. The lack of skills affects both business and the public sector. Both counties are characterized by low population growth and low unemployment, which is why special efforts are justified to increase immigration and ensure the supply of skills.

In December 2021, the government tasked the Employment Service with strengthening, developing and intensifying the agency's work nationally, regionally and locally with the aim of contributing to an improved and more efficient supply of skills in connection with large company establishments and company expansions, as well as offering service and support to jobseekers and employers and to the regions and municipalities concerned.

The working methods and methods that the authority considers to be successful must be able to be scaled up and contribute to the authority's work with more effective matching in general. Arbetsförmedlingen has subsequently also, as a part of the work, established a national coordination function for competence supply at large company establishments and company expansions throughout the country. According to the Employment Agency's regulation letter for 2023, the authority must continue to develop the work with skills provision for large company establishments and company expansions. The employment age

national coordination function for competence provision at large Skr. 2023/24:59
company establishments and company expansions have been working since the turn of the year to find working methods and methods to streamline matching and contribute to meeting the recruitment needs that arise in connection with large establishments and expansions. The Employment Agency's office for transformation and matching primarily works with the supply of skills to the municipalities in Norrbotten and Västerbotten counties that are currently in the middle of or facing large business establishments and business expansions in connection with the green transition. What these municipalities have in common is that the industrial investments are of such dignity that they create a societal transformation where the effects and skills shortages, according to the Employment Agency, cover the whole of society.

There is a need for a special investment in vocational education within municipal adult education at upper secondary level in the case of business establishment or business expansion in primarily sparsely populated counties, but secondarily also in the case of business establishment or business expansion that are large in a national comparison, or thirdly that are large for the municipalities that have or face them. The government is therefore proposing a new state subsidy for this purpose, which will apply from 2024.

Other authorities also have important roles in facilitating the supply of skills for large company establishments and company expansions.
The Agency for Growth is tasked with assisting regions and municipalities with notices and changes in the business world, as well as with larger business establishments and business expansions. Cooperation between authorities for competence provision therefore continues to fulfill an important function.

In order for the supply of skills to be secured, attractive housing and living environments must be developed. When new labor and skills have to be recruited from other places and countries, it becomes a big challenge for the municipalities to quickly plan, build and manage new housing and good living environments. The Government Office has therefore assigned an investigator to promote the coordination of government efforts that seem to enable sustainable community building and rapid population development in Norrbotten and Västerbotten counties, in the societal transformation that is taking place due to larger company establishment and company expansions.

7.7.3 Retain and attract foreign competence

The government's assessment: It is central to climate change to retain and attract both international and domestic demand
competence because lack of access to competence today is an obstacle for companies. The policy needs to be developed in order for Sweden to become more attractive to people who possess important skills in demand for the implementation of the climate transition.

Growth analysis proposal: The government's assessment agrees with Growth analysis proposal.

The referral bodies: The referral bodies are generally positive about the proposal. *The Swedish Transport Administration* assesses that the civil engineering sector should be covered by a national strategy to retain international and domestic

talents. *The County Administrative Board in Norrbotten County* emphasizes that the strategy must take into account that the needs look different in the country.

The reasons for the government's assessment

Sweden is part of a European and global labor market for many top skills. The supply of skills is therefore affected by labor immigration and migration abroad. The competence cannot always be found in Sweden, which means that it is crucial to attract talent from other countries. Highly qualified labor immigrants are important for the internationalization of the business world, for companies looking for top skills or for those recruiting for the shortage force. Lack of access to skills is one of the main obstacles for Swedish companies to be able to grow and be competitive and for Sweden to be able to attract foreign investment. The ability to retain and attract competence has been affected, among other things. of taxes, the work permit process, the housing situation, conditions for entering the labor market for accompanying women and men, the availability of international schools for accompanying children, the education system and the opportunities to recruit from abroad.

Foreign students also represent a great potential for the supply of skills, as a large proportion of those who take out a master's degree or a master's degree are immigrants from other countries (around 27 and 41 percent, respectively, in the academic year 2021/22). The corresponding figure among doctoral students was 41 percent in 2022. The students can contribute important skills, diversity and new perspectives to Sweden's transition and competitiveness.

Policy should be developed for how Sweden is to become more attractive to people who possess important skills for the implementation of climate change.

Cooperation between authorities to attract and retain international competence

Business representatives, authorities and regions have raised the need for increased coordination of authorities' various processes and work in order to attract and establish internationally in-demand skills and their families. To improve opportunities for companies to hire and retain foreign workers, the government proposed in the 2024 budget bill strengthened coordination of government agencies' processes and work linked to attracting and retaining internationally in-demand skills.

7.8 Research and innovation

Sweden is a proud industrial nation whose prosperity is largely based on good access to raw materials, the inventiveness of engineers, competent labor and entrepreneurship. The public sector has a long tradition of contributing by investing in research and innovation. Powerful efforts in these areas create more jobs, increase prosperity and Sweden's

ability to handle societal challenges. The research drives and develops climate- and environment-friendly technologies that enable Sweden to reach national and international climate commitments faster and more efficiently, e.g. the environmental quality goals, Agenda 2030 and Fit for 55,

Innovation is about meeting needs in new and better ways. In order to cope with the climate transition and achieve freedom from fossil fuels with a developed welfare and competitiveness, innovation is therefore a key; then new technology can be developed, new solutions tested and new models for collaboration introduced. Swedish innovation capacity is repeatedly ranked high in international comparisons, for example in the EU's annual compilation European Innovation Scoreboard.

The Swedish business community is a hotbed for prosperity and innovation and driving climate change. The government will be an aggressive partner in supporting business's transition and innovation work to meet the climate challenge. Even within the EU, the strong
connection between innovation and change is being noticed. In the European innovation agenda, it appears that technology-intensive innovation is of decisive importance for the implementation of the green and digital transition. The EU's framework program for research and innovation, Horizon Europe, includes major investments in tackling climate change. In the same spirit, the Program for a Digital Europe (Digital) also has a clear focus on green and digital transition

There are several areas of development in Swedish innovation policy which is of particular importance for climate change, not least
– development of new, ground-breaking technology that can be used in new solutions and processes
– cross-sector innovation collaborations that benefit from integrating expertise from several areas of expertise to develop solutions that can be applied broadly in society
- regulatory framework that is designed so that it is open to and allows social development and change, removes obstacles, and gives space for companies to choose and develop forms of business and products given these conditions.

7.8.1 Research and innovation for rapid and effective climate change

The government's assessment: Research and innovation are crucial for a quick and effective climate transition and for reaching the climate and environmental goals. The government intends to present a research and innovation bill and an energy research bill during the mandate period.

The reasons for the government's assessment

Research and innovation bill

Research and innovation are crucial to obtain knowledge and solutions for areas such as climate change, the transition to a

circular and bio-based economy and to create growth. The government intends to come back with a research and innovation bill that sets out the direction for research policy going forward.

Research and innovation in the energy field

Energy research must be focused on enabling an effective climate transition and strengthening Swedish competitiveness. A new energy research bill is being put forward, which means that energy research is fundamentally restructured, for all fossil-free energy types where nuclear power has an obvious place.

7.8.2 Polar research

Government assessment: Polar research provides unique insights into the Earth's climate system and early warnings of global climate change, as the Arctic and Antarctic are more sensitive to change than other areas. The government has previously, in Sweden's strategy for the Arctic region (skr. 2020/21:7), expressed that continued research, environmental monitoring and observation systems in and about the Arctic are important to contribute more knowledge to manage climate change.

The reasons for the government's assessment: The polar regions are particularly vulnerable to climate change. The Arctic region is warming several times faster than the global average. Conversely, the changes in the Arctic climate affect the rest of the world. Sweden has world-leading polar research and competence to conduct operations in the polar regions.
Sweden should work for limited warming in accordance with the goals of the Paris Agreement. In line with the Strategy for the Arctic region (skr. 2020/21:7), research, environmental monitoring and observation systems in and about the Arctic are to be developed and the international collaboration on polar research and climate research to be further developed.

7.8.3 Strategic research investments in emerging technology areas and innovation

The government's cr**assessment:** Strategic innovation collaborations and environmental monitoring contribute to a faster and more effective impact of climate change at the societal level.
Research and innovation in emerging technology areas is of great importance strategic importance.

The reasons for the government's assessment

Strategic cross-sector innovation collaborations for climate change at the societal level

Cross-sector strategic investments in innovation can contribute to necessary technological leaps. There is a great need to quickly go from idea to solution that can then be scaled up for a broad impact in society.

Examples of cooperation are the strategic innovation programs run by the Swedish Agency for Innovation Systems, the Swedish Energy Agency and the Research Council for the Environment, Land Industries and Community Development.
In 2021, the government tasked these three authorities with developing the work with strategic innovation programs for transformative change and sustainable development, so-called Impact Innovation. The new programs meet societal challenges in three overarching areas: 1) Production, consumption and value chains within the planet's borders. 2) Well-functioning and attractive communities. 3) Good and equal health. Within these three areas, actors from different sectors, industries and disciplines have defined common challenges, so-called *missions,* which include ambitious and measurable objectives for system change. The first programs within Impact Innovation are planned to start in the spring of 2024 and eventually replace the current strategic innovation programs.

Another example is cross-sector collaborations that the regions carry out for innovation and green transition.

International collaborations, in and outside the EU, will also be very important for e.g. a strategic monitoring of the environment. Within the framework of the EU's innovation and research program Horizon Europe, there are e.g. important cross-sectoral work programs for calls in the climate area, mainly within cluster 5 Climate, energy and mobility, cluster 4 Industry, digitalisation, space issues and cluster 6 Food, bioeconomy, natural resources, agriculture and environment. In order to contribute to strategic surveillance of the outside world and strengthen international collaborations outside the EU, the government's innovation and research council is a strategic resource that is available at a number of embassies.

Emerging technology

The Advanced Digitization program was initiated in 2021 with the vision that Sweden and the Swedish business community should be among the foremost in the world, partly in terms of the development of digital technology in selected areas of strength, and partly in quickly introducing and seeing the effects of new technology in various industries and sectors of society. The program is managed by the Agency for Innovation Systems and is a long-term investment that is run in cooperation between the state and business, where half of the funding is public funds and half is co-financing from business. The program, with six overarching goals, contributes to an aggressive Swedish technology agenda with a focus on research, development and innovation to develop the next generation of advanced and powerful technology solutions to cope with the green transition.

Until May 2023, the program had carried out ten calls for proposals. The interest has been large and far exceeded the program's current scope.

The government has therefore given the Agency for Innovation Systems the task of strengthening the innovation and research program Advanced digitalisation with a final report in March 2028. The program is a complementary initiative to other efforts within the authority that aim to strengthen Sweden's position internationally with regard to the next generation of advanced and powerful digital solutions.

The authority must carry out efforts aimed at developing and exploiting new digital technology through increased cooperation, research and innovation, strengthening Swedish competitiveness and enabling a sustainable transition. The assignment must be carried out in close collaboration with actors from business, research financiers, institutes and universities. The venture must be co-financed by the business community with at least an equivalent share.

The European Commission's proposal for a regulation on net zero industry means that member states must establish so-called regulatory sandboxes with the aim of promoting innovation. Regulatory sandboxes are spaces where actors, under a simplified regulatory framework, can have the opportunity to test new production processes, products, services and business models in order to create effective rules of the game for markets and the public sector. The competent authority must, in cases where there is an opportunity in national law or in EU legislation, be able to grant exemptions from the current regulations in order to promote the purpose of the regulatory sandbox.

Strengthened competence in electrification and battery technology

Competence in electrification and battery technology is important for climate change. The government is making a strategic research investment at Uppsala University, Lund University and Chalmers University of Technology AB to, together with business, strengthen the opportunities to develop a strong research and education environment in electrification and battery technology in the long term. The research initiative aims to provide the selected universities with the conditions to recruit key competences

for example researchers and teachers in a field where international competition is high. It complements the educational investment that is also made within, among other things, the engineering courses to meet the skills needs resulting from the industry's green and digital transformation (see section [7.7] on skills supply).

Secured competence supply in the field of radiation safety

More fossil-free energy is needed for the continued electrification of society, which is a cornerstone of the government's policy towards the climate goals. With the government's investments in nuclear power technology, several research areas need to be strengthened and the competence required in the field of radiation safety and radiation protection needs to be maintained. This concerns, among other things, issues around severe accidents, nuclear non-proliferation, radiation biology, radioecology and radiation dosimetry. The Radiation Safety Authority is tasked with taking the initiative to i.a. basic and applied research to contribute to the development of national competence. Through the budget bill for 2023, funds were added to strengthen the authority's competence and in the field of radiation safety. The government has further proposed in the budget bill for 2024 that funds be added to ensure the national supply of competence in the field of radiation safety due to the changed and increased need for competence resulting from the development of new nuclear power.

7.9 Separation, use and storage of carbon dioxide

Separation and storage of carbon dioxide (CCS, Carbon Capture and Storage) and separation and use of carbon dioxide (CCU, Carbon Capture and Utilization) are important technologies that will be needed both in Sweden and the rest of the world in order to meet the climate goals that the countries have set . CCS applied to fossil and biogenic emissions are two different main tracks in climate change.

CCS applied to carbon dioxide emissions of fossil origin means avoided emissions because the carbon dioxide is removed from the atmosphere and stored permanently in the bedrock. It is an emission-reducing measure which, according to the climate policy framework, may be used to count towards the climate goals if no other reasonable alternatives are available. CCS on fossil emissions may be needed in several sectors, e.g. petrochemical industry and cement manufacturing. CCS applied to carbon dioxide emissions of biogenic origin is called bio-CCS. Bio-CCS gives rise to a negative carbon dioxide emission and is therefore also considered as a possible supplementary measure to reach the climate goals (see section 6.4). Sweden today has a large combustion of biogenic fuels where bio-CCS could be applied.

When CCS is applied to carbon dioxide captured directly from the atmosphere, it is called DACCS (Direct Air Carbon Capture and Storage). The technology is in an early stage and thus costly. DACCS also produces negative emissions, but in Sweden the focus has so far been on bio-CCS.

When fossil carbon is phased out, it is estimated that there will be a shortage of carbon in certain value chains. At CCU, the separated carbon dioxide is used in processes and products instead and can contribute to emission reductions by replacing new fossil inputs. CCU can thus be an important technology for supplying industry with the necessary flows of carbon atoms to replace fossil inputs and thus be part of a circular and sustainable value chain (see section 7.6). Depending on how long the carbon dioxide is stored in the product, it can also contribute to reducing emissions from the original fossil input, but normally the carbon dioxide returns to the atmosphere after use, unlike permanent storage through CCS. Sustainability and climate benefits of CCU technology are regulated in the Renewable Energy Directive.

Although the technology has been known for a long time, CCS has not been developed on a large commercial scale. At the same time, CCS is singled out by both the international energy council IEA and the UN climate panel IPCC as a prerequisite for reaching the Paris Agreement's temperature target.

7.9.1 The prerequisites for CCS are strengthened

Government's assessment: Carbon capture and storage (CCS) technology should be used when relevant to achieve emission reductions through CCS on fossil emissions and to achieve negative emissions through the capture and storage of carbon dioxide from renewable sources (bio-CCS). Additional means of control for

CCS and carbon capture and use (CCU) for emissions from the electricity and district heating sectors and process-related emissions from industry should be considered. The Energy Agency has therefore been tasked in the regulation letter for 2023 to investigate and propose control measures for CCS and CCU. Electricity used for the capture of carbon dioxide for storage should, if it is compatible with EU regulations, be exempt from energy tax.
Necessary agreements or agreements on the storage of carbon dioxide in third countries should be concluded. Possibilities for storage in Sweden should continue to be investigated. Sweden's Geological Survey (SGU) has therefore been tasked with investigating suitable locations for permanent storage of carbon dioxide in Sweden.

The reasons for the government's assessment

CCS is an important technology

CCS is singled out by both the International Energy Agency (IEA) and the UN Climate Panel (IPCC) as a prerequisite for reaching the Paris Agreement's 1.5-degree goal. Storage of captured carbon dioxide is regulated at EU level by Directive 2009/31/EC of 23 April 2009 on the geological storage of carbon dioxide.
The directive has been implemented in Swedish legislation through the regulation (2014:21) on geological storage of carbon dioxide.

CCS technology is relevant for large point emissions, i.e. direct emissions of environmental pollutants limited to a number of major sources. However, as technology develops and costs decrease, even smaller facilities may become relevant. The entire CCS chain, i.e. separation, transport and storage, is already applied today, but the application is still limited. The possibilities for continued technology development and thereby lower costs are assessed as good.

Investment support for CCS is available through Industriklivet and the Innovation Fund

There is currently support for both fossil CCS and bio-CCS within the framework of Industriklivet. Industriklivet has so far granted support to both fossil CCUS and bio-CCUS within the framework of Industriklivet. Industriklivet has so far granted support to around 80 projects related to CCUS, in both the bio and fossil fields. Bio-CCS makes up about 60 projects and fossil CCS makes up about 10. Support has also been given to a handful (6 pcs) of CCU projects. The projects vary from preliminary studies and research to feasibility studies and can also be given to investments. Industriklivet has been an important steering tool for getting CCS work started in Sweden (see section 12.3 on Industriklivet).

At the EU level, there are various supports - e.g. through the Innovation Fund and the research program Horizon Europe. Within the framework of the Innovations fund, it has, among other things, Granted support for a bio-CCS project in Stockholm.

CCS for fossil emissions

In order to reach the Swedish emission target of net zero emissions by 2045 and negative emissions thereafter, the CCS technology will most likely have to be used on fossil emissions from cogeneration plants as well as process and basic industries. For example, it is not currently assessed

are there any other reasonable alternatives to reduce emissions from Skr. 2023/24:59 the calcination process in cement production, which means that CCS is the main track for the Swedish cement industry to reach basically zero emissions.

Companies covered by the EU ETS do not have to pay for fossil carbon dioxide emissions that are captured and stored permanently. For the application of CCS to fossil sources, the relative price of capturing the emissions compared to the price of emission rights within the EU ETS therefore plays an important role. The price of emission rights within the EU ETS is not always considered to provide sufficient incentives for investments in CCS. Investments in CCS technology are expensive, but there are deemed to be certain learning effects. A control instrument can both advance the implementation of the technology and reduce the costs of large-scale investment in the long term. The Energy Agency has therefore been tasked in the regulation letter for 2023 to investigate and propose control measures for CCS and CCU (I2022/02383/ KN2023/02556). In terms of CCS, the work must aim at all emissions from the electricity and district heating sector as well as from industry that can otherwise be expected to remain even in the long term, but a particular focus must be on industry's remaining process-related emissions, e.g. cement production and refineries. The assignment must be reported no later than 30 December 2023 (see section 7.9.3 below regarding CCU).

Exemption from energy tax on electricity for CCS

On 29 June 2023, the memorandum Exemption from energy tax on electricity for the capture of carbon dioxide (Fi2023/02107) was forwarded, proposing a tax exemption on electricity used for the capture of carbon dioxide for storage.
The proposal aims to complement other measures to promote the establishment of CCS in Sweden. It could also in some cases reduce the risk of an unwanted impact on the power balance. The proposal involves tax exemption for both bio-CCS and fossil CCS. It should be analyzed whether the reduction should be extended to also cover CCU. The case is being prepared within the Government Office.

Bilateral agreements for the export of carbon dioxide for permanent storage in another country

Certain legal obstacles remain for CCS technology to be fully used.

Regardless of whether the separated carbon dioxide is of biogenic or fossil origin, it must be transported to final storage after any intermediate storage. As there are not yet any storage locations in Sweden, storage in another country is currently necessary. Norway, Denmark, Great Britain, the Netherlands and Iceland have started work to store carbon dioxide, of which Norway has come the furthest.

The London Protocol regulates dumping and incineration at sea. Until 2019, Article 6 of the London Protocol completely prohibited the transport of carbon dioxide intended for storage under the seabed by another state. Article 6 was already revised in 2009 to enable this, but the amendment has not yet entered into force as not enough states have ratified it. Year 2019 agreed
however, the parties to the London Protocol on a provisional application of the revised version of Article 6. The state that wishes to apply the amendment provisionally needs to submit a declaration to the International Maritime Organization (IMO) and a bilateral agreement or

agreement needs to be established between the exporting and the storing country. Sweden ratified the amendment in November 2020 and submitted a declaration of provisional application on 30 September 2022.

The European Commission states in its report on the implementation of Directive 2009/31/EC on the geological storage of carbon dioxide (CCS Directive) published on 24 October 2023 that existing EU legislation is sufficient as agreements/ agreements between countries within the EU and the EEA to fulfill the London Protocol .

Sweden is still in discussions with Norway and Denmark about an agreement or agreement for the export of carbon dioxide. Sweden will review the possibility of entering into agreements with more countries. With more players in the market for final storage, the opportunities to bring down costs for the final step in the value chain are improved.

Storage in Sweden

Knowledge of possible storage locations in Sweden is still small. According to SGU, there are geological conditions and good potential for geological storage in Sweden. However, to ensure safe and efficient storage, identified storage locations in Sweden need to be investigated further. There are also a number of challenges and obstacles to actualizing storage in Sweden.

In the regulatory letter for 2023, SGU has been tasked with investigating and investigating suitable locations for permanent storage of carbon dioxide in Sweden and analyzing the conditions for the operation of the storage locations.
Interim reporting must take place no later than 15 December 2023 and 15 September 2024. Final reporting must take place no later than 15 March 2026.

The European Commission has highlighted CCS as a key technology in its proposal for a regulation on Net Zero Industry (NZIA). The proposal proposes a Union-wide target for carbon dioxide storage capacity, with an annual storage capacity of at least 50 million tonnes of carbon dioxide in 2030. According to the proposal, member states must also contribute data on possible locations for carbon dioxide storage as well as information on ongoing carbon dioxide storage projects. NZIA is under negotiation.

7.9.2 Bio-CCS needs incentives

The government's assessment: Bio-CCS should receive continued incentives both for investment and for operation. Support for bio-CCS can be given through Industriklivet and through operating support in the form of so-called reverse auctioning. The starting point is that, if cost-effectiveness in the measure can be achieved, during the mandate period make a decision to further increase the auctioned volumes. The ambition is to conduct at least two auctions during the mandate period. In the budget bill for 2024, the government has proposed that the government be authorized to enter into financial commitments in 2024 that entail future allocations of a maximum of SEK 36,000,000,000 in 2026–2046. Sweden should work for member states to be able to credit bio-CCS within the EU's climate legislation and for incentives to be created for bio-CCS at EU level as well. A voluntary market for negative emissions such as bio-CCS should

be made possible. Sweden should work for an effective certification framework of Skr. 2023/24:59 EU level for uptake and capture of carbon dioxide.

The reasons for the government's assessment

Industrial activity and operating support provide important incentives for bio-CCS in Sweden

The government continues the investment in bio-CCS. Bio-CCS creates negative emissions that are needed to reach our climate goals. Sweden has good conditions for bio-CCS as there are several large point sources with emissions of carbon dioxide of biogenic origin at cogeneration plants and the paper and pulp industry. Compared to fossil CCS where companies have an economic incentive to sequester and store the carbon dioxide through the opportunity cost of emissions – which is the price of emission rights within the EU ETS – bio-CCS has lacked such incentives. In the report Sweden's climate strategy (KN2023/03828) it is proposed that the conditions for large-scale bio-CCS in Sweden be investigated. Given that the prerequisites are deemed to exist, the state should make quantitative commitments on public financing of bio-CCS or alternatively partially finance the necessary investments.

The government has a high ambition regarding the number of tonnes of biogenic carbon dioxide to be captured and stored by 2030. Support for e.g. preliminary studies and investments have been able to be given through Industrikivet for both fossil CCS and bio-CCS. About 20 Swedish facilities have been granted support within the framework of Industriklivet for feasibility studies and pilots regarding the conditions for bio-CCS at existing facilities.

To strengthen the financial incentives for bio-CCS, the government has therefore introduced operating support. Through the 2022 budget bill, funds have been set aside for operating support for bio-CCS through a so-called reverse auction.
A first reverse auction with a contract duration of 15 years is planned to be announced in 2024 with payment in 2026-2040 provided that the European Commission approves this notified state aid. The first payment will be made after the storage of carbon dioxide, which is estimated to take place from the year 2026. The starting point is that, if cost-effectiveness in the measure can be achieved, during the term of office a decision to further increase the auctioned volumes. The ambition is to conduct at least two auctions during the mandate period. The Riksdag has authorized the government to enter into financial commitments for operating support for bio-CCS in 2024, which entails the need for future grants of a maximum of SEK 36 billion 2026–2046.

Incentives and rules for accounting at EU level

Future legislative proposals at EU level are expected to contain proposals aimed at creating financial incentives for bio-CCS (see section 5.3).

The legislation is also expected to contain proposals for which part of the EU's climate framework bio-CCS should be recorded in. Sweden is at the forefront of the field and needs to continue to push so that the development of legislation and financial incentive systems leads to cost-effective goal fulfillment, including that the legislation must be able to be applied even before 2030 when the first facilities for negative emissions may come into operation.

The voluntary market should be enabled

Many companies both in Sweden and globally have made various forms of climate commitments on a voluntary basis. To meet these commitments, companies are often willing to pay for emission reductions or negative emissions made by other actors. This opens up a new potential income stream for companies planning to invest in, for example, bio-CCS.
A voluntary market for negative emissions through bio-CCS should be enabled. Even actors who receive state support for bio-CCS should be allowed to sell negative emissions on a voluntary market. The buyer of negative emissions should be allowed to claim these for their own voluntary climate goals. Sweden will report the negative emissions that occur on Swedish territory in its national accounting. It should therefore be required that companies that receive support agree with buyers of negative emissions that they report in their climate report that these contribute to Sweden's ability to reach its climate goals and that the negative emissions cannot be used to achieve another country's climate goals unless Sweden and the country in question have not agreed to transfer these negative emissions according to Article 6 of the Paris Agreement.

A voluntary market for negative emissions through bio-CCS is being established. There, actors within, for example, bio-CCS can sell negative emissions. In the report Sweden's climate strategy (KN2023/03828) it is proposed that conditions are created in law for privately financed bio-CCS to be credited to the financier as additional emission reductions and not recorded as part of national target fulfillment. Which accounting rules for bio-CCS and other supplementary measures should apply should be clarified taking into account developments within the EU and internationally (see section 6.4).

On 30 November 2022, the European Commission presented a proposal for a regulation on a certification framework for uptake and
carbon dioxide capture (CRCF) which includes both natural and technical measures. The certification framework must ensure high quality of the measures for absorption and capture of carbon dioxide and contribute to
additional incentives and a broader funding base.
The certification framework is deemed to be able to influence the conditions for investment in bio-CCS, and Sweden should, in the further negotiations, work to ensure that the certification system becomes effective, useful, transparent and maintains a high level of environmental integrity, and contributes to meeting the member states' commitment within the framework of Fit for 55.

7.9.3 CCU can also contribute to the climate goals

The government's assessment: Separation and use of carbon dioxide (CCU) can contribute to climate change in a broader perspective. When carbon atoms are to be phased out as a raw material, the carbon atoms will instead have to come from biogenic streams and from captured carbon dioxide.
Uncertainties surrounding CCU's role and function in climate work should be minimized. The Energy Agency should therefore also follow the development of CCU.

The reasons for the government's assessment In a fossil-free future, the availability of coal will decrease at the same time that carbon atoms as input goods for industry will continue to be necessary. The use of captured carbon dioxide (CCU) has the potential to contribute to the development of new products and new services based on recycled carbon dioxide as well as to replace primary fossil hydrocarbons in existing products. Biomass will probably not be enough to cover the demand for sustainably produced carbon in various applications and recovered carbon dioxide through CCU is a potential alternative source. Support for CCU projects in industry can today be given within the framework of Industriklivet for research and investment, pilot and demo projects and feasibility studies.

The carbon atom is an important input in a number of different processes in, for example, the chemical and refinery industries, which currently mainly come from fossil sources. Instead of starting from hydrocarbons that are refined from oil, captured carbon dioxide can be combined with hydrogen to form hydrocarbons, or through other reactions can be built up into desired substances. There are also companies in other sectors that intend to reuse captured carbon atoms to produce new types of products, such as aviation and vehicle fuel.

According to the Energy Agency's current status report from 2022, Swedish industry is primarily interested in capturing and using carbon atoms of biogenic origin to improve the climate performance of products.

The climate benefit of CCU depends on a number of different factors linked to the carbon atoms and the production of the final products in which the carbon atoms are building blocks. These factors include the origin of the carbon atoms, the climate impact from other inputs, the time that the carbon atoms are bound in the product, displacement and/or substitution effects and which alternatives available to use the carbon atoms. The European Commission's proposal for a certification framework for carbon capture and capture (CRCF) can in this context play an important role in contributing to increased demand for long-lived products that are based on biogenic carbon or carbon captured from the atmosphere.

In the regulation letter for 2023, the Swedish Energy Agency has been tasked with investigating and proposing control measures for CCS and CCU. In terms of CCU, the authority must analyze the long-term climate effects and potential for CCU to contribute to Sweden's climate goals and propose policy instruments. The assignment must be reported no later than December 30, 2023. The report will be an important step in clarifying CCU's climate benefits.

The National Center for CCS should also follow the CCU

In December 2020, the Swedish Energy Agency was commissioned to be the national center for CCS (I2020/03419) and thereby promote an effective application of CCS in Sweden.

The national center must follow the technical, economic and political developments in the CCS area both nationally and internationally.
The center shall identify, analyze and, if necessary, investigate and submit proposals for measures regarding technical, financial and legal obstacles for Swedish actors to be able to apply CCS. It must also investigate issues related to accounting and reporting of carbon dioxide emissions vis-à-vis, among other things The UN Climate Convention (UNFCCC), the national climate goals and

The EU's emissions trading system (EU ETS) and how the entire CCS chain can be made as climate and energy efficient as possible.

The development of CCU has gained momentum since the assignment of national the center was given The center should also monitor the development of the CCU.

8 The industry

The industry plays a central role in the Swedish economy and for Sweden's competitiveness. The Swedish business community is the engine of the climate transition and must be given the conditions to be a leader in the green transition. In the report Sweden's climate strategy (KN2023/03828), it is stated that the state has a responsibility in the climate transition to ensure that societal functions that facilitate the transition are functioning well.
Society needs to function well despite the stress and challenge that the phasing out of the fossil fuel economy entails. This requires policies within a very broad spectrum, such as economic policy, regional development policy, distribution policy and education policy.

The industry accounts for approximately one fifth of Sweden's gross domestic product (GDP) and a competitive industry is therefore of great importance for Swedish prosperity. At the same time, industry in Sweden accounts for just over a third of the territorial emissions of greenhouse gases, and reducing these is therefore crucial to achieving the climate goals. Emissions have decreased by approximately 24 percent since 1990 as a result of fuel changes and energy efficiency improvements. However, most of the process-related emissions remain.

Companies need incentives and conditions to change. In the internal market, the incentives are mainly created by the EU's trading of emissions rights. Over 90 percent of emissions from industry are regulated within the EU's emissions trading system (EU ETS). The EU ETS provides the credible and long-term price signal that companies need to be able to make a commercial transition to freedom from fossil fuels.

The EU ETS has, since the system was introduced in 2005, been revised on several occasions. Tightened targets, increased linear reduction factor, decision to cancel emission rights and other revisions have meant that the number of available emission rights has decreased and will decrease even faster in the future.

Industry plays an important role not only by reducing its own emissions but also by e.g. produce fossil-free products that can replace fossil goods and that can be recycled and reused to a greater extent than today. The transition to a circular and bio-based economy is considered a tool and enabler for climate change (see also section 7.6). Through an increased export of climate-smart goods, Swedish companies can contribute to more jobs, economic growth, increased competitiveness and global climate benefit by replacing fossil goods and spreading new climate-smart technology.

Swedish companies have embraced climate change. Within the framework of the government initiative Fossil-free Sweden, 22 industries have adopted roadmaps that describe how they will work to contribute to Sweden's climate goals and

create fossil-free competitiveness for your own business. During a Skr. 2023/24:59 roundtable discussion on May 16, 2023 with industry players emphasized that Sweden has very successfully developed Swedish resources and become a technology leader through innovation, competence and collaboration.

Participants cited stable access to cheap and fossil-free electricity and more predictable and efficient permitting processes as two particularly important areas for action. Also at the national climate meeting on 16 June 2023, the importance of a competitive industry that is a leader in the green transition was highlighted.

Large industrial establishments and expansions are taking place all over Sweden. The Swedish business community must be given the conditions to be a leader in the green transition. The public sector contributes and facilitates by creating the right conditions for these establishments and expansions so that further investment decisions in fossil-free operations come about. The government will collectively work with climate, environment, energy, business, infrastructure and regional development issues to create the conditions for new business establishments and business expansions throughout Sweden that contribute to sustainable growth, competitiveness, increased self-sufficiency and reduced emissions. The government also proposes that 10 million kroner be added to grant 2:4 Investment promotion within spending area 24 Entrepreneurship with the aim of strengthening Business Sweden's government mandate to attract and facilitate investments in Sweden (prop. 2023/24:1 issue area 24).

8.1 Industry's climate transition

The government's assessment: Industry's climate transition should be supported by removing obstacles and creating conditions for fossil-free investments in existing industry and the establishment of new fossil-free production.

The reasons for the government's assessment: Through the tightening of the EU's emissions trading system (EU ETS), there is now an effective policy instrument that requires the industry's emissions to be reduced quickly. The focus of the government's policy should be on removing remaining obstacles and creating the conditions for climate change. The business climate should continue to promote the start-up of new and innovative companies in the business world, as well as encourage companies to increase and adjust their production and to employ more people both locally and regionally.

Companies responsible for the largest emissions in the sector have taken steps towards meeting the goals for their business's climate transition. For example, industries that account for more than 50 percent of the industry's total emissions have indicated that they have started permit review as part of restructuring all or parts of their operations (see section 3.4). A large proportion of the actors that account for the largest emissions have also received support for conversion from i.a. Industrial life (see section 8.3).

The most important prerequisites for the changeover and proposals for measures in these areas are described in section 7. For industry, it involves, among other things, on shortened permit processes (section 7.3), capital provision (section 7.4), electricity at competitive prices (7.5), sustainable value chains

(7.6) and competence provision (Section 7.7). Table 8.1 shows a compilation of measures and prerequisites for the industry's transition. The policy also needs to ensure that the conditions are long-term to avoid uncertainties. A strong resilience is important which increases the ability to prevent, resist and recover from future crisis. The goal is a stable and growing industrial base in Sweden, including attractive and prosperous sub-suppliers, parallel to existing global value chains.

Table 8.1 **Measures and prerequisites for the industry's transition, divided into three packages based on how they contribute to the transition**

Package 1: Prerequisites	Package 2: State aid	Pack 3: Rules and Strategies
Abbreviated permit processes (see section 7.3)	Industrial life is important for climate change in Sweden and globally (see section 8.3)	The EU ETS is designed to promote efficient pricing of industry emissions (see section 7.2)
A well-functioning capital supply (see section 7.4)	Climate action contributes to climate change throughout Sweden (see section 8.4)	The EU's green industrial policy should be strengthened to promote fossil-free industry competitiveness (see section 8.2)
Access to fossil-free energy (see section 7.5)	Carbon capture, storage and use (CCUS) is promoted (see section 7.9)	A strategy is drawn up for the new industrialization and the social transformation in Norrbotten and Västerbotten County (see section 8.6)
Climate-neutral value chains (see section 7.6)		The work of taking forward fossil-free standards are developed (see section 8.7)
Competence supply to meet the industry's major needs (see section 7.7)		

8.2 The EU's green industrial policy

The government's assessment: Sweden should push for the EU to promote a competitive restructuring of industry. Sweden should work to ensure that the EU's emissions trading system (EU ETS) continues to set prices carbon dioxide emissions from industry in an efficient manner. The EU industrial plan for the green given should together with other existing EU initiatives help promote the competitiveness of European companies and support the rapid transition to climate neutrality. Sweden should push for

that legislation that prevents conversion, competitiveness and Skr. 2023/24:59 self-sufficiency to be revised.

The reasons for the government's assessment

A small, export-dependent country needs to develop continuously in order to remain relevant on a global market. The EU is an important arena, where many of the industry's framework conditions are laid down.

The tightened emissions trading system puts a price on emissions from industry

Over 90 percent of greenhouse gas emissions from industry are regulated within the EU emissions trading system (EU ETS). The EU ETS has, since the system was introduced in 2005, been revised on several occasions. Tightened targets, increased linear reduction factor, decision to cancel emission rights and other revisions have meant that the number of available emission rights has decreased and will decrease even more rapidly in the future, which in turn led to the prices of emission rights during the late 2010s rising from previous levels of around five euros per tonne of carbon dioxide to be around 80 euros per tonne during the beginning of the 2020s. In March 2023, the price rose above 100 euros per ton for the first time. The revision of the EU's emissions trading system (EU ETS), which entered into force in 2023, means, among other things, that the target for the EU ETS is tightened to emissions being 62 percent lower in 2030 compared to 2005 instead of the previous 43 percent. This means that the annual supply of emission rights for the period up to 2030 will decrease faster, but also that two separate adjustments to the emission ceiling will be made. Other changes that increase the incentives for conversion are that the free allocation of

emission allowances for sectors covered by the Carbon Border Adjustment Mechanism (CBAM) are phased out by 2034.
The levels of benchmarks governing free allocation are being tightened, and there are requirements to implement energy efficiency measures to gain full access to free allocated allowances. When these tightenings of the emissions trading system are implemented, the incentive to implement emission reductions is further strengthened. The EU ETS is a well-functioning control instrument and Sweden should work to ensure that the EU's emissions trading system continues to price carbon dioxide emissions from industry in an efficient manner.

The EU's industrial plan also strengthens Swedish industry

The EU's industrial plan for the green deal (Green Deal Industrial Plan for the Net-Zero Age) was presented on 1 February 2023 and contributes to the industry's transformation by strengthening the conditions for the development of net-zero technology. The purpose of the plan is that it should contribute to, among other things, shorter permit processes and shorter processing times in application processes, increase the capture of carbon dioxide through so-called CCS technology, ensure the supply of skills to the industry and facilitate the market introduction of new technology. The goal of the plan is to create better conditions for expanding the EU's manufacturing capacity of the net zero technology and the net zero products needed to reach the EU's ambitious climate goals.

On 16 March 2023, the Commission presented the proposal for a regulation on net zero industry (Net Zero Industry Act). The proposal is part of the Green Party's industrial plan for net zero age. The Net Zero Industry Regulation aims to scale up the production capacity of key technologies that are crucial to achieving the EU's climate goals of a 55 percent reduction in greenhouse gas emissions compared to 1990 emissions and climate neutrality by 2050, as well as ensuring a resilient energy system and promoting job creation.

The government welcomes the parts of the proposal that make the EU more attractive for green investments and the production of net zero technologies and reduce vulnerabilities in the value chains. Simplified and shorter permit processes and strengthened competence are important factors for climate change in the EU.
The proposal is under negotiation.

The European Critical Raw Materials Act raises the importance of critical raw materials

The European Critical Raw Materials Act (CRMA) aims to ensure the EU's access to a secure and sustainable supply of critical raw materials, and to strengthen the various steps along the entire value chain, including recycling. The regulation is described in more detail in section 7.6 Sustainable value chains.

Simplification of rules for a long-term sustainable climate policy

The EU's environmental legislation has developed over many years and, according to many industries, is difficult to understand and parts can be obstacles for companies that want to change.

The legislation is important for environmental protection and for the conditions of competition within the EU to be equal, but can affect the possibility of investments required to cope with parts of the green transition, e.g. expansion of electricity grids, industrial establishments and expansions, sustainable and active forestry, infrastructure and mining. Sweden should i.a. address the obstacles to growth, competitiveness and climate ambitions posed by EU environmental legislation in cases where the requirements are not justified. Sweden supports the ongoing work to carry out a review (REFIT) of EU legislation with the aim of reducing the regulatory burden. The review is important to strengthen the EU's competitiveness and growth. Sweden should work to ensure that - within the framework of the REFIT program - the relevant legislation in the energy and environmental area is collectively reviewed and processed to ensure an efficient and competitive implementation of Fit for 55. Future EU legislation in the environmental area should, in addition to the core objectives, with the proposals take into account the needs of the industry to be able to implement the climate transition as well as the EU's competitiveness and preparedness.

8.3 Industrial life is important for climate change in Sweden and globally

The government's assessment: There is a continued need to review and possibly develop the instrument to ensure that Industriklivet continues to be an effective tool for achieving emission reductions from the industrial sector and promoting an industrial sector that is competitive and growing in a fossil-free economy. In the budget bill for 2024, the government proposes a strengthening of Industriklivet.

The reasons for the government's assessment: Industriklivet was introduced in 2018 and is one of the government's most important instruments for industry's climate transition (expenditure area 20, allocation 1:18 Industriklivet). In the budget bill for 2024, the government proposed that an additional SEK 100 million be added the grant. Industrial life contributes to climate benefits both in Sweden and abroad and includes all steps in a project, from research and innovation to investments, which means that support can be given to large industrial investments at various stages up to and including the investment in the full-scale facility with new technology that has not yet been is commercialized. Projects that have received support so far include large parts of the process-related emissions from industry in Sweden, through a strengthening of Industriklivet there are increased opportunities to support industries that are approaching the investment phase. So far, there are 175 unique actors who have received support in several different branches of technology. In particular, the long-term commitment from the state is considered to be the prerequisite that makes companies dare to invest themselves in technology that accelerates the green transition. The entire journey from idea to finished product is important. Large-scale investments, such as Industriklivet, can contribute to this.

With the help of fossil-free energy at competitive prices, new production methods can be put into use, which have the potential to eliminate large emissions from e.g. the steel, mineral and chemical industries. In heavy industry, especially the steel industry, emissions can be reduced to a large extent through electrification and the use of fossil-free hydrogen.

There is a continued need to review and possibly develop the instrument to ensure that Industriklivet continues to be an effective tool for achieving emission reductions from the industrial sector and promoting an industrial sector that is competitive and growing in a fossil-free economy.

Other tools than pure investment support can be considered, such as so-called Climate contracts (Carbon Contracts for Difference). Climate contracts are a project-based financial instrument to reduce uncertainty for investors linked to the carbon dioxide price and thereby facilitate the scaling up and market introduction of new technology. Climate contracts can be a tool to reduce market risk in certain sustainable investments such as CCS. The government intends to follow the development of the instrument at EU level.

Industrial life should continue to support strategically important initiatives within industry that contribute to climate change, such as investments in the production of biofuels, fossil-free hydrogen and batteries as well as

innovative bio-based solutions, chemical recycling of plastics and others recycling. Exporting companies are crucial for strengthening Sweden's competitiveness and for the industry to be a leader in the green transition and should continue to be able to receive support.

8.4 Klimatklivet contributes to the climate transition throughout Sweden

The government's assessment: The Klimatklivet is a control tool for the climate transition in the whole of Sweden. The government has therefore proposed in the budget bill for 2024 that the grant be strengthened and extended.

The reasons for the government's assessment: Klimatklivet is investment support for local and regional measures with the aim of reducing climate-affecting emissions (expenditure area 20, allocation 1:16 Climate investments). The climate step was introduced in 2015 and has been greatly strengthened over the years. The climate step provides support for measures that reduce emissions and for the expansion of charging infrastructure. In the budget bill for 2024, the government proposed that allocation 1:16 Climate investments (Klimatklivet)
within expenditure area 20 Climate, environment and nature will increase by SEK 800 million in 2024. The allocation is estimated to increase by SEK 2 billion in 2025 and SEK 2.5 billion in 2026. The climate step has enabled investments that can facilitate the green transition of industry by, for example, influencing access to various raw materials. It involves, among other things, about support for new technology, market introduction, hydrogen production, biogas production, transition to bio-based solutions or conversion to circular flows. Municipalities, regions and other organizations can also apply for support from Klimatklivet.

Other measures that have come about thanks to Klimatklivet are expansion of district heating networks, increased renewable cogeneration production and
energy efficiency improvements within smaller industries that are not part of the EU's emissions trading system, which contributes to reducing the need to import fossil fuels, cutting power peaks and increasing the robustness of Sweden's energy system.

The climate step is also a control tool for restructuring the transport sector, (see section 9.3.3) and contributes to the transformation of agriculture (see section 11.6).

8.5 Fluorinated greenhouse gases (F-gases)

The government's assessment: Fluorinated greenhouse gases (F-gases) should be phased out as soon as there are competitive alternatives and illegal trade in F-gases should be stopped. The recently adopted EU regulation on F-gases creates the conditions for such a development. The government intends to analyze which further cost-effective measures in the area can be taken to contribute to achieving the climate goals and Sweden's commitments towards the EU.

The reasons for the government's assessment: F-gases are a group of very Skr. 2023/24:59
potent greenhouse gases that are mainly used in refrigeration and air conditioning systems, in heat pumps, in electrical switches and in solvents. F-gases have historically replaced i.a. ozone depleting substances
which was previously used as i.a. refrigerant. The total F-gas emissions amount to approximately two percent of Sweden's emissions of greenhouse gases. In October 2023, a preliminary agreement was reached between the EU institutions to tighten Regulation (EU) 517/2014 of the European Parliament and of the Council on fluorinated greenhouse gases (the F-gas Regulation) and on the repeal of Regulation (EC) 842/2006 and Regulation of the European Parliament and of the Council (EC) No. 1005/2009 on substances that deplete the ozone layer (Ozone Regulation). The revision contributes i.a. to the EU's new climate goals and implementation of the Montreal Protocol's Kigali amendment. Sweden, as the country holding the EU presidency in the spring of 2023, has been a driving force in the negotiations.

Emissions of F-gases have started to decrease in Sweden. When the F-gas regulation is implemented, the use and emissions of F-gases will decrease faster and be phased out at EU level. The government assesses that even if the emission reduction rate will increase, there may be room to further accelerate the phasing out in Sweden with cost-effective measures in Sweden in the area. An analysis should be carried out of how further measures for the phasing out of F-gases in Sweden can contribute to achieving Sweden's climate goals and commitment to the EU's ESR regulation in a cost-effective manner.

8.6 Strategy for the new industrialization and social transformation in Norrbotten and Västerbotten County

The government's assessment: There is a need to continue to support the work with the large business establishments and business expansions that are ongoing in Norrbotten and Västerbotten counties for the benefit of the climate transition. In order to succeed with this industrial changeover, it is necessary to, among other things, infrastructure, housing and educational opportunities quickly come into place to attract labor to these communities. The government intends to draw up a strategy for the new industrialization and societal transformation in Norrbotten and Västerbotten counties, where there are now several parallel and extensive industrial investments that need
realized at a rapid pace.

The reasons for the government's assessment: In the counties of Norrbotten and Västerbotten extensive new industrialization linked to fossil-free production and electrification is underway. When new industries establish themselves in northern Sweden, this part of the country can become a leader in the global climate transition. By being at the forefront of new innovative climate technology, there are competitive advantages for Swedish business and entrepreneurship. The investments in northern Sweden are key investments for the transformation of the industry with a focus on raw materials and products early in the value chain and thus constitute input goods that are crucial for the entire

the country's industrial transition and competitiveness. In order to succeed with this industrial changeover, however, it is necessary to, among other things, infrastructure, housing and attractive living environments as well as educational opportunities quickly come into place to attract labor to these communities. Many actors work based on different roles and responsibilities to support the work with the industrial investments and the societal transformation that takes place as a result of them. The transition requires a well-functioning collaboration between national, regional and local level and that the efforts made are coordinated and complement each other in an effective manner.

The government has tasked the Agency for Growth (KN2023/03505) to coordinate the work at national level to support and create good conditions for the ongoing new industrialization and societal transformation in Norrbotten and Västerbotten counties. A letter investigator has also been tasked with promoting the coordination of government efforts that seem to enable sustainable community building and rapid population development in Norrbotten and Västerbotten counties, in the societal transformation that takes place due to larger business establishments and business expansions (LI2023/02853).

The government also intends to draw up a strategy for new industrialisation and the social transformation in Norrbotten and Västerbotten counties. The strategy must include efforts in strategic areas as well as cooperation between the state, the business community, the municipalities and regions concerned. Societal transformation and new industrialization need to keep pace. The strategy will take advantage of the experiences of the coordinator for the sustainable transformation of the business world and the transformation of society in Norrbotten and Västerbotten counties (KN2023/00603). The strategy must be based on the revolutionary changes that large company establishments and company expansions bring.

8.7 Standardization for climate change

The government's assessment: Strengthened Swedish participation in European and international standardization strengthens the opportunities for impact for Swedish technology and Swedish solutions and thus export opportunities for Swedish companies. Standardization is an important tool for supplementing legislation and enabling business to develop materials, goods and services that are necessary in the climate transition. The work of the Chamber of Commerce's council for innovative and climate-focused standardization should be taken advantage of and further developed.

Reasons for the government's assessment: Standardization is a strategic tool for Swedish technologies and solutions to quickly spread widely on both the national and international markets to increase the availability of climate-efficient solutions that accelerate a fossil-free and circular transition. Concerned authorities should actively participate in the development work with standards as a complement to the legislation and thus promote a rapid climate transition. Standards ensure that the goods and services we use are reliable and meet the requirements placed on them, as well as taking into account the environment and our safety.

Regulations on products and production processes as well as requirements in public Skr. 2023/24:59 procurement, can thus be applied in a more efficient way.

Both globally and at the European level, discussions are ongoing about the role of standardization and possibilities in the implementation of the climate transition in line with the EU's green commitment, including the transition to a resource-efficient, non-toxic and circular and bio-based economy. On a global level, negotiations are underway for a globally binding agreement on plastic pollution, which may entail a need for standardization. Several new EU legal acts have been adopted or are currently being negotiated, e.g. in terms of batteries, eco-design for sustainable products as well as packaging and packaging waste. These legal acts will need to be supplemented by standards in order to be implemented. In the area of critical metals and minerals and sustainable mining, standardization on reuse and recycling is high on the agenda both in the EU and internationally. International standardization work is underway, but one is missing
comprehensive approach to sustainability issues for the entire life cycle. Standardization work is currently underway in the area of circular economy, which deals with standards for e.g. recycling and reuse. A prerequisite for circular flows is traceability of materials, which will become an important area of standardization in the future.

Swedish companies and industries have for many years had a leading role in international standardization bodies. For example, Sweden leads a secretariat within CEN (Comité Européen de Normalisation, the largest of the European standardization organisations) for the development of standards in the area of plastics.

In the standardization work, it is thus of high relevance for the environmental and climate transition that the responsible authorities participate to an increased extent in the development work with standards as a complement to the legislation. The Standardization Association has had the task of drawing attention to and working to increase the competence of relevant authorities about the possibilities and conditions of standardization at national and international level.

In August 2021, the Chamber of Commerce was tasked with establishing an advisory body to promote innovative and climate-focused standardization. At the end of May 2023, the authority submitted its final report from the work. The results and experiences from the council's work are prepared within the Government Office.

9 Transportation

Good accessibility is of great importance for competitiveness, economic development and welfare throughout Sweden. To achieve it is a well functioning and efficient transport system important. At the same time, the transport sector has a significant climate impact that corresponds to a third of Sweden's emissions. In order to reach Sweden's climate goals and commitments within the EU, the transport sector needs to develop in contributing to the climate transition.

The direction for the transport sector's climate transition is made clear

The direction forward is clear; road transport must be restructured, essentially through electrification. Over the next few years, the pace of the transition needs to increase and this action plan presents measures to speed up the electrification of both light and heavy vehicles (section 9.2).
At the same time, it needs to become practically and economically possible for more people to use electric vehicles, regardless of the type of business and regardless of where and how you live. The government is therefore presenting a package of measures for charging and refueling infrastructure throughout the country (section 9.3 and section 7.5.2). For the existing vehicle fleet and vehicle types where electrification has not progressed as far or is not possible, fossil-free fuels play a deci
At the same time, the policy must therefore continue to promote the development and production of new fossil-free fuels (section 7.5.2) but also to phase out fossil fuels (section 7.2). In addition, measures are also presented to make the transport system more efficient, which can contribute to important emission reductions while improving accessibility in society (section 9.4).

Compared to road transport, the aviation and shipping sectors have a longer path to zero emissions in principle. Further measures are therefore needed to develop climate change in aviation and shipping. The plan presents measures to increase the use of fossil-free fuels, to change to
zero-emission flights and zero-emission ships and to enable more efficient route planning for air and sea transport (Sections 9.5 and 9.6).

In sections 9.1 to 9.6, a plan is presented for how emissions should be reduced to basically zero emissions in the transport sector. In addition, the emissions that occur throughout the value chain also need to be reduced. Section 7.6 describes measures to change to climate-neutral value chains.

Business shows the possibilities of the transport transition

Sweden is developing through the transport sector's climate change. Around the country is carrying out investments in battery factories and the automotive industry is switching its production to electric vehicles, new aircraft and ships is developed, and the production of fossil-free fuels and additional fossil-free electricity is established. At the same time, vehicles are designed so that components and materials can be reused and recycled to a greater extent. In a round-table discussion that the government held on 2 May 2023 with various actors from the transport sector, it emerged, among other things, that conversion work requires that there are predecessors and that Sweden is an important home market for the industry. Going ahead means that new innovative solutions can be tested and that Sweden can become a showcase for climate-smart technology and mobility solutions. This strengthens Swedish competitiveness and creates
Swedish jobs. The Swedish automotive industry has a strong position in the EU and has the potential to become a leader in the green transition. Through high climate ambitions, the Swedish manufacturers have the potential to also push other manufacturers in the transition. At the national climate meeting held on 16 June 2023, the possibilities of the transformation of the transport sector were also underlined. In order to cope with the transition, a number of actors underlined that a number of prerequisites need to be in place, i.a. that the charging infrastructure needs to continue to be expanded, that the lead times in the permit processes need to be shortened, that electricity production and electricity networks must

be expanded and that biofuels are an important part of the solution alongside Skr. 2023/24:59
the electrification. The actors saw great potential in connecting climate and
competitiveness issues. The measures in this section are based to a large extent
on the input received by the government as well as background reports and
recommendations from authorities.

9.1 Comprehensive governance for a fossil-free transport sector

The overall goal of the transport policy is to ensure a socially efficient and long-term sustainable transport supply for the citizens and businesses throughout the country. In addition to the overall goal, there is a functional goal about accessibility and a consideration goal about safety, the environment and health.

As part of the climate policy framework, there is a stage target bound by the Riksdag for domestic transport's greenhouse gas emissions, which is also a stage target under the transport policy consideration target. The target means that greenhouse gas emissions from domestic transport, except for domestic aviation which is part of the EU's emissions trading system, must be reduced by at least 70 percent by 2030 at the latest compared to 2010 (the stage target for domestic transport). Emissions from domestic transport make up more than half of Sweden's emissions within the responsibility allocation regulation (ESR) and a third of Sweden's total greenhouse gas emissions. The transport sector's climate transition is therefore of crucial importance in being able to achieve both Sweden's commitment to reduce emissions within the ESR by 50 percent by 2030, compared to 2005, as well as Sweden's long-term climate goal of net zero emissions by 2045. In this section, the government's overall management to achieve these is reported goals in the field of transport.

9.1.1 All the way to essentially zero emissions of greenhouse gases in the transport sector

The government's assessment: Emissions of greenhouse gases from domestic transport need to be basically zero by 2045 at the latest in order for Sweden to be able to reach the long-term climate goal. This should mainly be done through an electrification of the transport sector, but also through increased use of fossil-free fuels and increased transport efficiency.

The reasons for the government's assessment: Clarity and long-term climate work are important for necessary investment decisions to be implemented. The Climate Policy Council states in its annual report from 2019 that the government should draw up a time-bound action plan to achieve fossil-free transport beyond 2030.

In order to reach Sweden's long-term climate goal by 2045, all sectors need to adjust based on their conditions in order to contribute to the long-term climate goal. The Environmental Objectives Committee already stated in its report A climate policy framework for Sweden (SOU 2016:21) that it is expected

are residual emissions in 2045 and 2050 in the agricultural sector, from industrial processes, from incineration of waste and from diffuse emissions.

Within the transport sector, technologies for electrification already exist and the conditions for progressing faster than other sectors are good.
Electrification has also gone faster than expected. Fossil-free fuels will play an important role for the categories of vehicles, ships and aircraft where climate change has not yet progressed as far and where there are particular difficulties regarding electrification. The transition must take into account the varying territorial conditions in the country so that the goal of basic accessibility can be maintained even in sparsely populated and rural areas. In addition to this, the government assesses that measures to increase transport efficiency in the transport sector can further contribute to reducing both transport costs and emissions. In the transformation of the transport sector, consideration needs to be given to preparedness and that exceptions may be needed for e.g. certain blue light and military transports.

The government shares the Climate Policy Council's assessment that a plan is needed for how the transport sector can contribute to Sweden's climate goals for 2045 and, through this climate policy action plan, wants to further contribute with clarity and a long-term perspective for the transport sector's climate transition.
Overall, the government assesses that domestic transport, unlike some other sectors such as agriculture and parts of industry, has the potential to achieve essentially zero emissions of greenhouse gases by 2045. Against this background, the government intends to design the national climate policy on the basis that the emissions from domestic transport in principle should reach zero emissions of greenhouse gases by 2045. This overall approach is fleshed out in the following sections (9.2–9.6).

9.1.2 Strengthened coordination of the transport sector's climate transition

The government's assessment: The coordination of the transport sector's climate transition needs to be strengthened. An authority should be given the task of coordinating the sector's work to adjust so that the transport sector reaches essentially zero greenhouse gas emissions by 2045 at the latest.

The reasons for the government's assessment: The transport sector's climate transition spans a large number of authorities' areas of responsibility, i.a. vehicles, fuels, transport infrastructure, community planning, ships and aviation as well as research and innovation. In order to take the transformation of the transport sector further in the direction of essentially zero emissions, the work needs to be coordinated. The Climate Policy Council proposes in its annual report for 2022 that the coordination of the authorities' contribution to the transport sector's climate transition should be strengthened. The Climate Policy Council believes that a coordination function can be created either by giving a coordinating task to an existing authority, by making changes in the authority structure or by creating a coordination function with a strong and clear mandate. In a report from December 2022, the State Office also calls for clearer control and coordination of the authorities' climate work (Statskontoret 2022:14).

The government considers that it would be positive for the transport sector's Skr. 2023/24:59
readjustment about the coordination between authorities increased. Against this
background, the appropriate authority should be tasked with analyzing and coordinating
the work of the relevant authorities on an ongoing basis and from an overall perspective
in order to adjust the transport sector to essentially zero emissions. It involves, among other things,
about identifying obstacles and providing suggestions on how these can be dealt with.
Other authorities with responsibility for various parts of the transport sector's transition
should support the responsible authority based on their respective areas of responsibility.

9.1.3 International climate cooperation in the field of transport

The government's assessment: Sweden should take an active role in international climate cooperation in the field of transport in order to push for a global transformation of the transport sector to essentially zero emissions
and for increased exports of Swedish products and services with little climate impact.

The reasons for the government's assessment: Sweden is relatively far ahead in the transformation of the transport sector compared to other countries in the world. Swedish manufacturers of fossil-free fuels as well as vehicles, ships and aircraft are also far ahead in the transition. By strengthening and developing international cooperation in the field of transport, Sweden's prominent position in the field can be consolidated and contribute to speeding up the transformation of the transport sector globally. A faster pace in the transport sector's global climate transition is important for the Paris Agreement's 1.5 degree target to be reached, but also facilitates the export of products from Swedish companies.

In order to speed up the global work, Sweden should continue to work within international climate cooperation in the field of transport. Internationally
there are several initiatives where e.g. countries, sometimes together with business and civil society, join forces around key issues in the field of transport. These international collaborations complement work that takes place in the UN bodies where global regulations are decided. Sweden is already part of several initiatives to accelerate the transition towards essentially zero emissions in all types of traffic. The government believes that Sweden should take an active role in these, and possibly also in new collaborations, in order to adjust the transport sector to basically zero emissions and create a demand for Swedish export companies.

9.2 The electrification of the vehicle fleet

The electrification of the vehicle fleet is of great importance for greatly reducing the global emissions of greenhouse gases. Road transport accounts for approximately one fifth of global greenhouse gas emissions and the number of vehicles using fossil fuels has increased globally over the past decade as a result of economic development. At the same time, there has been significant technological development for both light and heavy electric vehicles and

several major vehicle manufacturers have far-reaching plans for the production of vehicles with neither emissions of greenhouse gases nor air pollution from the tailpipe, so-called zero-emission vehicles. The technology is thus in place to reduce emissions from road vehicles all the way to basically zero emissions, but the transformation of the vehicle fleet needs to accelerate.

The EU is taking a leading role in the transition to zero-emission vehicles

At the European level, there has been extensive policy development in recent years. The EU's carbon dioxide requirements for light vehicles have been tightened and from 2035 only passenger cars, light trucks and light buses that are zero-emission vehicles may be sold. The Commission has also proposed a tightening of the carbon dioxide requirements for heavy vehicles, which are now being negotiated. The EU's directive on the promotion of clean and energy-efficient vehicles also implies minimum levels for the proportion of environmental vehicles in public procurement.

The EU's carbon dioxide requirements for road vehicles affect all new sales within the EU and therefore have a significant effect on greenhouse gas emissions in Sweden and in the EU. As it is expensive for vehicle manufacturers to produce several types of vehicles for different markets, the EU's carbon dioxide requirements for vehicles also have an important global impact. However, the EU's policy instruments are only aimed at new sales and do not fully control Sweden's climate goals or EU commitments. There is therefore a need for supplementary governance at national level.

Sweden is far ahead and has good conditions to speed up electrification

Sweden has the highest proportion of electric cars in new car sales of passenger cars within the EU and Swedish vehicle manufacturers are world leaders when it comes to introducing electrified trucks and buses. However, the existing vehicle fleet is still dependent on fossil fuels. There are several control instruments in Sweden that complement the control at the EU level and create incentives to realign the vehicle fleet. The vehicle tax for new light vehicles has been linked to carbon dioxide emissions since 2006, so that vehicles with higher emissions have a higher tax. Since 2018, certain light vehicles are additionally covered by so-called malus, which means that vehicles with high emissions of carbon dioxide receive an increased tax for three years. The green car benefit reduction rules are designed to speed up the introduction of low-emission cars. The government's environmental car definition regulates what is to be considered an environmental car and governs the authorities' choice of cars and is applied by many municipalities. Climate premiums stimulate the introduction of both electric trucks and buses.

Measures to develop the possibilities for the conversion to zero-emission vehicles

A reduction in the reduction obligation for road transport has been decided (see section 7.2.3) to make it easier for households in the current recession. The reduced use of fossil-free fuels means that the need to electrify Sweden's vehicle fleet increases in order to contribute to reaching Sweden's climate goals and commitments within the EU.

The transition needs to take place in two interconnected tracks: new sales

of vehicles need to switch to essentially zero-emission vehicles at the same time that
older vehicles are being phased out. This section therefore presents measures aimed at accelerating the transition to zero-emission vehicles through increased support and regulatory changes, while measures are taken to phase out older vehicles. A summary of these measures can be found in table 9.2.

Table 9.2 **Action package for the conversion to zero-emission vehicles**

Package 1: Enhanced incentives for the purchase of zero-emission vehicles	**Package 2: Rule changes to promote zero-emission vehicles**	**Package 3: Phasing out of older vehicles**
Climate premium for light electric trucks (see section 9.2.2)	Changed driving license rules for electric trucks under 4.25 tonnes (see section 9.2.3)	Scrapping premium introduced (see section 9.2.1)
Climate premium for heavy vehicles (see section 9.2.4)	Vehicle labeling based on efficiency and life cycle emissions (see section 9.2.5)	

Together with a rapid, comprehensive and comprehensive expansion of the charging infrastructure (see section 9.3), the electrification of the transport sector develops and enables the sector to reach all the way to basically zero emissions by 2045 at the latest.

9.2.1 Scrapping premium for passenger cars with a combustion engine

The government's assessment: A temporary scrapping premium should be introduced for older cars with a combustion engine. The government has therefore proposed in the budget bill for 2024 that funds be added to the purpose.
The premium should be conditional on the purchase or leasing of an electric car.

Trafikanalys's proposal is partially consistent with the government's assessment. Trafikanalys, however, suggests that the scrapping premium should not be conditional on the purchase or leasing of an electric car.

Referral bodies views: *Riksförbundet M Sweden, Halmstad Municipality, the World Wildlife Fund (WWF), Umeå Municipality, Malmö Municipality, Älmhult Municipality* and *the County Administrative Board in Halland County* approve the proposal for a temporary scrapping premium. *The County Administrative Board in Halland County* considers it positive that *Trafikanalys* proposes that the premium be paid out broadly and not made conditional on a new purchase. *Transport companies* and *Energy companies Sweden* considers that the exact design should be investigated further. In order to increase the climate effect, *the 2030 Secretariat* proposes that the premium be made conditional on other measures that reduce emissions.

The Norwegian Road and Transport Research Institute points out that it is not clear how the proposal affects the total emissions from a life cycle perspective, as the proposal may contribute to a higher demand for newly manufactured cars. *The county board in Norrbotten county* and *Storuman municipality* are critical of the introduction of a scrapping premium. *The County Administrative Board in Norrbotten County* believes that the proposal is expensive and that the climate effect is

brief. *The municipality of Storuman* assesses that a scrapping premium risks reducing the supply of cars on the second-hand market.

The reasons for the government's assessment

The proportion of electric cars in new car sales has increased rapidly in recent years, but around 90 percent of Sweden's passenger car fleet still consists of petrol and diesel cars. In order to reach the climate goals for 2030 and Sweden's commitments within the EU, in addition to measures that change new car sales, measures that increase the incentives to phase out older cars with internal combustion engines are also needed. Such incentives enable the transport sector to reach all the way to essentially zero emissions sooner than would otherwise have been the case.

Scrapping premium rejuvenates the vehicle fleet

A temporary scrapping premium can help to realign the vehicle fleet. A scrapping premium means that incentives are given to phase out older cars from the fleet. The premium thus contributes both to phasing out the oldest cars, which as a rule have the greatest emissions of greenhouse gases and air pollution, and are also worse from a road safety perspective, as well as creating exchange chains that are expected to provide incentives for newer cars on the market with zero emissions and higher safety.

Conditional premium for the purchase or leasing of zero-emission vehicles

Trafikanalys assesses that the premium should not be conditional on the purchase of a low-emission replacement car, electric bicycle or public transport tickets. It is motivated by the fact that a low-emission replacement car will in most cases be used, due to the fact that the cost of a new car is high, and thus no new, better car is added to the market as a result of the condition. Households' use of bicycles or public transport is also not expected to be affected by making the premium conditional, according to a survey study from Trivector. The government shares large parts of *Trafikanalys's* assessment, but shares the same opinion as *the 2030 secretariat*

that the climate effect of the premium can be strengthened and that the cost-effectiveness of management can be increased through conditions. The government believes that the premium only should be paid out if the scrapping is followed by the purchase or leasing of an electric car. This means a direct climate effect when an older car with a combustion engine is replaced by a zero-emission vehicle.

9.2.2 Hit-and-miss climate premium for light trucks powered by electricity

The government's assessment: A temporary support to companies, municipalities and regions should be introduced to stimulate the market introduction of electric light trucks. The government has therefore proposed in the budget bill for 2024 that funds be added to the purpose.

The reasons for the government's assessment: Light trucks play an important role for Sweden's companies, not least small and medium-sized companies, and they are growing rapidly in number. Roughly 80 percent of the light trucks are owned by companies, and the largest owner industry is the construction sector. The electrification of light

trucks are moving forward, but the development is not going at the same pace as for passenger cars. Electric light trucks accounted for 15 percent of new sales in 2022, which can be compared with 32 percent for passenger cars.
Traffic analysis assesses that market development is still in the development phase but on its way into the growth phase (Electric road vehicles - ownership, regional analysis and possible development to 2030 Report 2022:1).

It is important that all vehicle categories convert to essentially zero-emission vehicles. The government therefore assesses that a temporary targeted market introduction support for the electrification of light trucks should be introduced, which is also included in the government's budget proposal for 2024.
The support must only be directed to companies, municipalities and regions in order not to create incentives for private individuals to choose heavier vehicles or a vehicle that is not suitable for passenger transport.

9.2.3 Changed driving license rules for electric trucks under 4.25 tone

The government's assessment: An opportunity should be created for people with driving license authorization B to be able, under certain conditions, to drive vehicles with a total weight that does not exceed 4,250 kilograms if the vehicle is powered by electricity, biogas or hydrogen gas for the transport of goods that are driven without a trailer. The government should work to change the EU's driving license directive so that an exception can be introduced and intends to review the possibility of introduce such a possibility even before a revision is in place.

The Swedish Transport Agency's proposal is essentially in line with the government's assessment. However, the government believes that trials should be introduced in Sweden for exemptions from current weight restrictions for vehicles powered by electricity, biogas or hydrogen.

Referral bodies: The views of the referral bodies differ greatly. Several authorities, including *the Borås District Court, the Public Prosecutor's Office, the Work Environment Agency, the Norwegian Police Agency, the Norwegian Transport Research Institute* wholly agree and *Traffic Analysis* in the Swedish Transport Agency's assessment, especially with regard to the difficulties in controlling regulatory compliance. *The Swedish Work Environment Agency* emphasizes that work environment risks can arise if the requirements for knowledge and education are lowered. *Kommunal* believes that a national training requirement for emergency drivers should be drawn up for the vehicle category, *the National Organization in Sweden (LO)* points to safety risks for both drivers and other road users. *The Swedish Transport Workers' Union* believes that it would be easier to hire unauthorized drivers and that lower professional skills increase the risk of traffic accidents. Additional issues raised are e.g. insurance issues and that the exception may lead to a sub-optimization of the electric vehicle's design.

From a climate perspective , *the Energy Agency, the Environmental Protection Agency* and *the Swedish Transport Agency* look positively on the introduction of the exception as it can facilitate the electrification of a significant vehicle segment. A number of industry players, including *Mobility Sweden, BioDriv Öst, DB Schenker, DHL, ICA Sweden, IKEA, Näringslivets Transportråd, Swedish Trade, Swedish Collective Traffic, Swedish Taxi Association, Sweden's Hauling Company* and

The transport companies highlight the need to introduce the exception to enable electrification. *The 2030 Secretariat* and *Green Mobilists* also recommend that the exception be introduced, as do *the City of Gothenburg* and *the National Association of Individual Roads (REV).*

The reasons for the government's assessment: The EU driving license directive allows, through a national exception, that vehicles with a total weight not exceeding 4,250 kg powered by alternative fuels can be driven on a B driving license that has been held for at least two years, if the extra weight of the vehicle is exclusively due to the propulsion system's extra weight and the load space is not larger than for a conventional vehicle of the same size. The government shares the Swedish Transport Agency's assessment that the exception in its current form is difficult to introduce into Swedish legislation. However, the government assesses that, in order to accelerate the electrification of light trucks, conditions should be created to be able to drive electric vehicles and vehicles that run on alternative fuels with a total weight that does not exceed 4,250 kg with a B driving license. A significant proportion of the freight transport carried out today with vehicles in this segment is carried out by drivers with a B driving licence, but when the total weight exceeds 3,500 kg, a C driving license is required. This makes rapid electrification difficult, as there is a shortage of drivers with a C license, and it also means increased costs to hire drivers with a C license for transport that is usually carried out by drivers with a B license. Against this background, the government intends to work for the exception in the driver's license directive to be revised so that better conditions are created to be able to introduce the exception.

As it is urgent to rapidly accelerate the electrification of light trucks, the government, while waiting for the revision of the driver's license directive to be completed, has tasked the Swedish Transport Agency with designing a trial operation where companies, authorities or other organizations can apply for exemptions from the driver's license act (1998:488) in order to their drivers who have held a driving license with authorization B for at least two years must be able to drive lorries, without trailers, which are powered by alternative fuels and whose total weight exceeds 3,500 kg but not 4,250 kg. The trial operation must be simply designed, not limited to a certain number of actors and must begin no later than July 1, 2024. The trial operation must be designed so that even small actors have the opportunity to participate. The assignment must be reported by March 8, 2024 at the latest.

9.2.4 Enhanced climate premium for heavy vehicles

The government's assessment: Continued support is needed for the market introduction of electric trucks, environmental trucks and electric buses.
The government has therefore proposed in the budget bill for 2024 that funds be added to the purpose.

Traffic analysis's proposal is consistent with the government's assessment.

Referral bodies: *The county board, Transport companies and Green Mobilists* support the proposal to investigate an extension of the climate premium for heavy trucks and investigate an increased level of support.
The World Wildlife Fund (WWF), the County Administrative Board of Jönköping County, Stockholm Municipality's Environmental and Health Protection Committee, AB Volvo, Teknikföretagen, Einride, Stockholm Municipality's Traffic Committee, Sweden's Transport Company, Stockholm Environment Institute (SEI), Gothenburg Municipality,

The Procurement Authority, Drivkraft Sweden, the County Administrative Board in Norrbotten County, the County Administrative Board in Uppsala County, Malmö Municipality and *Energiföretagen Sweden* are positive to the proposal. *The 2030 secretariat* believes that the premium should be increased and remain in place until there are concrete emission figures for new buses and trucks. *The County Administrative Board in Halland County, Energigas Sweden, Einride, the County Administrative Board in Gävleborg County* and *Halmstad Municipality* would like the climate premium to apply until 2025 and 2026.

The reasons for the government's assessment

The market introduction of environmentally friendly trucks and buses has progressed in recent years and the number of electric heavy vehicles is increasing, although not at the same rate as passenger cars. Swedish manufacturers are leading in this development. At the same time, electric heavier trucks and electric regional and long-distance buses make up a very small part of both the total vehicle fleet as well as the share in new sales. To support the market introduction of these new technologies, the government has proposed in the budget bill for 2024 that the allocation for climate premiums for electric trucks, environmental trucks and electric buses be strengthened. Together with the expansion of charging infrastructure for heavy vehicles, which needs to go in step with the market introduction of vehicles, the government assesses that the introduction support can lead to a faster electrification of trucks and buses, and thus contribute to reaching Sweden's climate goals and EU commitments.

The demand for heavy-duty electric trucks is increasing, but the additional cost is still large The

Klimatpremien's support for heavy-duty electric trucks was started in 2020 and since then both demand and supply have grown and applications have increased from 62 vehicles in 2020 to 403 vehicles in 2022. The purchase price for a heavy electric truck is significantly higher than the corresponding conventional truck and the market share for heavy electric trucks in new sales amounted in 2023 to just under 3 percent.

The function of the electric bus premium as a market introduction support should be maintained

The electric bus premium has existed since 2017, and until February 22, 2023, 756 vehicles have been awarded support. The support has gone exclusively to city buses (so-called class I buses), where electric operation is now well established on the market.
The Swedish Energy Agency assesses that the total ownership costs of an electric city bus and a diesel-powered bus show small differences, even without an electric bus premium. In new traffic agreements for city traffic, electric buses are often seen as the obvious choice, both for emission and noise reasons, but also for the electric buses' lower operating and maintenance costs. The Energy Agency makes the assessment that regardless of the possibility of investment support, the public transport operators will continue to invest in city electric buses. However, the supply of electric regional and long-distance buses (class II and III) is currently very small and the market introduction of these buses has just begun.

The government has therefore decided to phase out the support for urban electric buses (class I) until 30 June 2025, but that the support can still be given to regional and long-distance buses (class II and III).

The EU's state aid rules govern more clearly against heavy vehicles that run on electricity or hydrogen

The climate premium is market introduction support and it is therefore important that the support is adjusted based on developments in the vehicle market. According to requirements in the General Block Exemption Ordinance (GBER), a vehicle that is to receive government support needs to be a zero-emission vehicle or a so-called clean vehicle, which means that the vehicle needs to be at least partially powered by electricity or hydrogen. This means that trucks powered by bioethanol and vehicle gas, including biogas, from 1 January 2024 can no longer be subsidized according to GBER. The vehicle gas used in Sweden consists predominantly of biogas and the bioethanol is produced from renewable raw materials.

Trucks powered by bioethanol or biogas thus contribute to reducing greenhouse gas emissions compared to vehicles powered by diesel, vehicle gas of fossil origin or other fossil fuels. The government will analyze what opportunities exist to give these vehicles continued support.

9.2.5 Vehicle labeling based on efficiency and life cycle emissions

The government's assessment: A vehicle label for light vehicles should be introduced to promote consumers' choice of climate-smart vehicles. In addition to emissions from the tailpipe, the label should also report the vehicle's energy efficiency and life cycle emissions. It should be analyzed how calculations of life cycle emissions for vehicles can be improved, as well as how the vehicle labeling can be designed in an easy-to-understand way.

The Energy Agency's proposal is consistent with the government's assessment.

The reasons for the government's assessment: Consumer choice is decisive for which vehicles are brought to the market. In addition to the fact that controls make it more favorable to choose a zero-emission vehicle, it is important that consumers are provided with the best possible information about the vehicle's environmental and energy characteristics at the time of purchase in order to be able to make informed choices. The EU's fuel information directive requires that information on fuel consumption and carbon dioxide emissions be provided when marketing new passenger cars. In addition, the Energy Agency has been tasked with improving the guidance to consumers regarding light vehicles' energy use and carbon dioxide emissions during sales and marketing. The authority has proposed a mandatory label which, in addition to the requirements arising from EU legislation, also includes the vehicle's energy efficiency and life cycle emissions. In parallel, the industry organization Mobility Sweden has introduced a voluntary vehicle label where the emissions from the exhaust pipe are shown.

As a larger proportion of new sales consist of vehicles without tailpipe emissions, interest is also growing in other environmental and energy characteristics of the vehicle, such as energy efficiency and life cycle emissions. The government therefore considers it important that both the emissions from the tailpipe, the vehicle's energy performance as well as its emissions

during the entire life cycle appears in sales and marketing of Skr. 2023/24:59
vehicle. The government believes that the vehicle marking should be introduced for light vehicles to begin with where the comparability between vehicles is high. Based on the Energy Agency's proposal, it should be analyzed how calculations of life-cycle emissions for vehicles can be improved, as well as how the vehicle labeling can be designed in an easy-to-understand manner. Based on experience with the vehicle marking, it should be considered whether the marking should also be extended to other vehicle categories in the long term

9.3 Charging infrastructure for road transport

An extensive electrification of road transport is required for the transport sector to be able to achieve essentially zero emissions of greenhouse gases, and this needs to be carried out on a large scale and at a high pace. That there is access to charging stations with the right power, at the right place and at a reasonable price is crucial for this development. It should be easy to charge in close proximity to the home, regardless of the type of accommodation. There should also be reliable, robust and high-capacity fast charging along major roads throughout the country, as well as at e.g. depots and terminals to enable the electrification of heavy vehicles. The number of rechargeable vehicles that need charging is expected to increase sharply in the coming years. This places demands on the continued expansion of charging infrastructure that goes in step with vehicles entering the market.

The market will not single-handedly take Sweden towards a rapid, coordinated and economically efficient expansion of appropriate charging infrastructure throughout the country. There are several significant obstacles that need to be overcome to enable a well-functioning charging infrastructure. These can be categorized into three main categories: – insufficient coordination and mobilization of actors
– insufficient profitability and lack of business models –
infrastructural obstacles such as insufficient access to land and network capacity.

The measures in this section are structured in three packages that reflect these three barrier categories.

Table 9.2 Package of measures for charging infrastructure throughout the country

Package 1: Strengthened governance, coordination and mobilization of actors	**Package 2: Effective support for investments and operations**	**Package 3: Enables a fast and efficient development**
Coordinated and efficient management and follow-up (see section 9.3.2)	Support for property owners (see section 9.3.3.)	Network connection is facilitated (see section 9.3.6)
Principle of access to loading is investigated (see section 9.3.3)	More accurate supports (see section 9.3.4)	Conditions for land access are improved (see section 9.3.7)

Simplify for communities (see section 9.3.3)	Measures for nationwide charging infrastructure are analyzed (see section 9.3.4)	
Electricity from public charging stations is included in the reduction obligation (see section 7.2.3)	Charging infrastructure for heavy vehicles (see section 9.3.5)	Electric road systems can complement stationary charging infrastructure (see section 9.3.8)

These measures complement the governance and financial support that exists for the expansion of charging infrastructure today. To give an overall picture, existing regulations and ongoing assignments are described below.

Existing regulations and support for expansion of charging infrastructure

There are several regulations to speed up the expansion of charging infrastructure at EU level. The Alternative Fuels Infrastructure Regulation (AFIR) sets binding requirements for member states
the expansion of public charging infrastructure along the road network, both for light and heavy vehicles. The EU also sets requirements for charging infrastructure in and near buildings through the EU directive for the energy performance of buildings (EPBD), where the directive is being revised. The requirements to install or prepare for the installation of charging infrastructure in parking lots apply to new construction and major renovations. There are also requirements for member states to simplify and remove obstacles to facilitate the installation of charging infrastructure.

According to the recently renegotiated renewables directive, the member states must also allow fuel companies to credit electricity sold in public charging stations when fulfilling the reduction obligation. This gives the fuel companies an incentive to push for the expansion of
charging infrastructure to maximize the amount of electricity sold in public charging stations that they can credit. This will change the control effect of the reduction obligation and may turn it into a powerful tool for expanding the charging infrastructure (see section 7.2.3).

There are several support systems to enable this expansion. EU support can be applied for expansion of public charging infrastructure, i.a. from the Fund for a Connected Europe (CEF) and to some extent from the European Regional Development Fund (ERDF) regarding the Upper Northland program which includes Norrbotten County and Västerbotten County. At the national level there are The climate step which i.a. finances charging infrastructure. Within the framework of this support system, the Environmental Protection Agency and the county administrations map where the market needs support for public charging infrastructure through county-wise open consultations. A call for tenders is then opened. The best tenders in a geographical area have the opportunity to receive support of up to 70 percent of the investment cost. It is also possible to apply for a grant from Klimatklivet for charging infrastructure for e.g. cars, trucks, buses, airplanes or ships. In addition, the Swedish Transport Administration handles support with a higher level of support for the expansion of public fast charging stations in certain locations adjacent to major roads. The aim is to ensure basic access to charging infrastructure for rapid charging of electric vehicles throughout the country

and cover the "white spots" on the map where public charging stations otherwise Skr. 2023/24:59
not built.

For heavy goods transport, the expansion of charging and refueling infrastructure has begun through support for regional electrification pilots with the aim of accelerating the electrification of regional heavy goods transport by road. The support is administered by the Energy Agency, and so far 140 charging stations across the country have been granted funds, and the authority is planning a decision on support for a further hundred charging stations for heavy vehicles in 2023.

To make it easier for households and companies to electrify their vehicles, there are various types of investment support for so-called non-public charging stations. For private individuals who install a charging point in connection with a home that the person owns, a tax reduction is given. For condominium associations, companies and other organizations, the Swedish Environmental Protection Agency can, through Klimatklivet, provide support called "Ladda bilen" for the installation of charging stations at homes, workplaces or depots. In May 2023, the Riksdag decided on temporary tax exemption for the benefit of laddel at the workplace (prop. 2022/23:84, bet. 2022/23:SkU18, rskr. 2022/23:201).
Temporary tax exemption for the benefit of charging at the workplace aims to facilitate the transition to a fossil-free vehicle fleet and favor work trips with rechargeable vehicles over other less sustainable alternatives.

Support via Klimatklivet, the Ladda bilen support and the tax reduction for charging infrastructure have in total provided support for over 150,000 charging points.

Relevant assignments

In addition to existing support programs, the Energy Agency and the Swedish Transport Administration have been tasked with drawing up an action program for a rapid, coordinated and economically efficient expansion of purposeful public and non-public charging infrastructure as well as tank infrastructure for hydrogen for light and heavy vehicles. The assignment included i.a. to analyze the responsibilities and roles of various actors in the expansion and, if necessary, make proposals about and how responsibilities and roles can be clarified, for example between municipalities, property owners, businesses and authorities. In February 2023, the Energy Agency and the Swedish Transport Administration presented their first interim report (Energy Agency report 2023:06) with analysis and proposed measures. In November 2023, the authorities submitted their proposal for an action program (The Energy Agency's report 2023:23). In parallel, work is ongoing on a government assignment where the Energy Agency,
The Energy Market Inspectorate, the Swedish Grid Agency and the Swedish Transport Administration must follow up society's electrification and the development of the electricity system, including electricity production. Within this framework, the Energy Agency is tasked with producing statistics regarding public and non-public charging infrastructure and assessing whether there are deficiencies in the expansion of charging infrastructure and tank infrastructure for hydrogen that constitute obstacles to the electrification of the transport sector.

In order to be able to make forecasts and assessments of how electrification develops and to design appropriate control instruments to accelerate electrification, it is important that there is relevant, reliable and

available statistics. Therefore, Trafikanalys has been commissioned by the government to develop statistics in the transport area regarding electrification.

9.3.1 The direction for the expansion of charging infrastructure

The government's assessment: Electric transport should be made possible throughout the country through a rapid, coordinated and economically efficient expansion of appropriate charging infrastructure. In the budget bill for 2024, the government has proposed that funds be added for the purpose.
The expansion of charging infrastructure should take place at such a rate that it contributes to a rapid electrification of the transport sector. An important starting point should be that it should be easy to charge in close proximity to the home, regardless of the type of accommodation. The electrification of heavy transport should be promoted through the expansion of charging infrastructure on e.g. depots and terminals and through the possibility of fast charging along major roads throughout the country. In the budget bill for 2024, the government has proposed that funds be added for the purpose.

The reasons for the government's assessment: Currently, 80–90 percent of electric car charging takes place through non-public charging. The possibility of charging close to home is therefore of great importance for more people to choose an electric car. For heavy vehicles and light commercial vehicles, it is possible to charge at e.g. depots and terminals centrally. At the same time, access to public charging infrastructure for light and heavy vehicles throughout the country is a prerequisite for the electrification of road transport. The charging infrastructure for heavy transport is in an early development phase, but a major expansion will be required in the near future, both at, for example, different types of depots and terminals and along transport routes, to enable rapid electrification.

The rate of expansion of charging infrastructure has increased in recent years, but it needs to be ensured that the expansion of charging infrastructure in the coming years can take place at such a rate throughout the country that Sweden meets the binding requirements of AFIR, that it contributes to the electrification of the transport sector and that new and changing needs are captured.

The market for public charging is open to various actors who invest in charging infrastructure. In order to enable the transformation of the transport sector, it is important to cooperate between the state, business and other actors, e.g. municipalities, regions and academia. The means of control should be developed and coordinated to promote a rapid and effective expansion of charging infrastructure as well as economically efficient electrification of transport.

9.3.2 Coordinated and effective management and follow-up

The government's assessment: There is a need for clarified and strengthened coordination of work with charging infrastructure.
The Swedish Energy Agency should be tasked with coordinating issues regarding charging infrastructure. The Energy Agency should coordinate efforts aimed at

to promote a user-friendly and expedient development, as well as Skr. 2023/24:59
mobilize relevant actors and should also be given joint responsibility for charging
infrastructure statistics and be supported by other relevant authorities in these parts. The
government has proposed that the authority be provided with resources for this purpose in
the budget bill for 2024. In addition to this,
the responsibility for support for charging infrastructure is gathered in a clearer way than in
day.

The Energy Agency's and the Swedish Transport Agency's proposals are consistent with the government's assessment.

The reasons for the government's assessment: The expansion of charging infrastructure involves many actors. Land, access to electricity of the right power, business models for operation and maintenance and in some cases investment support are needed. The charging must be simple and accessible and the user information must be easy to understand. Loading must also be smooth regardless of the payment solution used and it must be clearly and transparently priced for all users. Both the business community and the authorities emphasize the importance of increased coordination at several levels and between different actors in order for the transition to take place quickly and efficiently. Clarity and long-termism in planning, regulations, financing and licensing are again important factors for the speed and success of the transition. The Energy Agency's new role aims to ensure that the transition takes place from a holistic perspective by streamlining and coordinating efforts to speed up the expansion of a purposeful and user-friendly charging infrastructure. Better coordination will have an important role in contributing to Sweden meeting the requirements in AFIR and facilitating the Housing Authority in its work with analysis and implementation of EPBD.

Clear and unified support

The government shares the picture highlighted by several actors - that a clarified and strengthened national coordination responsibility for charging infrastructure is needed. Collecting support more clearly increases clarity for the actors who seek support or guidance. It also makes it easier for smaller municipalities and businesses with fewer resources to get access to information and support.

Support for charging infrastructure is currently distributed among three different authorities: the Swedish Environmental Protection Agency, the Swedish Transport Agency and the Swedish Energy Agency. The government states that this is perceived by many actors as an obstacle to rapid and efficient expansion and assesses that it would be beneficial and more effective to collect guidelines and support for charging infrastructure in a clearer way. In the first place, support for charging infrastructure for heavy vehicles should be collected. This would mean that the state's handling of the support can be made more efficient and that the rate of expansion increases. It would also increase the possibility of a more uniform assessment of needs and contribute to clarity for the actors seeking support. In connection with this, existing support should be reviewed with the aim of simplifying for the applicants and streamlining and speeding up the expansion of charging and tank infrastructure for electrification.

Need for reliable data and statistics

Reliable data and statistics on both the public and non-public charging infrastructure are important to analyze current and future needs.
In order for the state to be able to support a socio-economically efficient expansion of appropriate charging infrastructure in the right place throughout the country, reliable data and analysis of what the needs look like for different types of charging, regional and local differences and more are required.

Today, there are no official statistics for charging infrastructure, but the government has tasked the Energy Agency, the Energy Market Inspection, the Swedish Grid Business Administration and the Swedish Transport Administration to establish a joint follow-up of society's electrification for the period 2022–2024, where part of that task is the production of statistics regarding charging infrastructure for road transport. A plan has been drawn up for this. Within the framework of the coordination responsibility, the Energy Agency should coordinate questions about charging infrastructure and be given overall responsibility for statistics in the area of charging infrastructure.

Information, dissemination of knowledge and promotion of local implementation

In order to ensure the expansion of a socially efficient and effective charging infrastructure, efforts are required to inform and support public and private actors to contribute to the expansion of charging infrastructure within their areas of operation. There are a number of actors who need to gain a better understanding of their role in relation to the expansion of charging infrastructure. An example of the need for knowledge dissemination is to
actors highlight ambiguities and different interpretations of regulations. Within the framework of the extended coordination responsibility, the Energy Agency should therefore take a proactive role in supporting the municipalities with information and knowledge to promote the expansion of charging infrastructure. This could, for example, be about assisting the municipalities' work in promoting the expansion of charging infrastructure for residents and businesses or supporting the municipalities in providing impartial advice to residents and local companies regarding the electrification of the road transport sector.

Mobilization of relevant actors

The expansion of charging infrastructure requires the mobilization of actors who have not previously been involved in delivering charging services to the transport sector. For example, property owners need to rapidly improve charging options for their tenants. Previous experiences from the Klart för laddplats initiative show the need for the state to actively mobilize key actors, in this case housing companies.

Within the framework of the extended coordination responsibility, the Energy Authority should mobilize housing and property companies for a vigorous expansion of home and depot charging. This measure would also strengthen a possible introduction of access to the charging principle, see section 9.3.3.

9.3.3 Easy to charge electric vehicles regardless of accommodation type

The government's assessment: It should be easy to charge electric vehicles regardless of the type of accommodation. It should therefore be investigated whether and how the principle of *access to*

charging could be introduced in Sweden. The availability of charging close to Skr. 2023/24:59
the home needs to be greatly strengthened. In the budget bill for 2024, the government
proposes that Klimatklivet be strengthened i.a. For this purpose. It should also be analyzed
how property owners can get better conditions for
installation of charging points, for example by making better use of the opportunities
available in the EU's state aid rules. The prerequisites for
to installing charging infrastructure for community facilities managed by a
community association should be improved. An investigation has been appointed to,
among other things, analyze whether the current regulations are appropriate and, if there
is deemed to be a need for it, submit constitutional proposals.

The reasons for the government's assessment

Access to home charging a prerequisite for electrification

The possibility of charging at home is important for it to be attractive to have an electric vehicle. In addition to the practicality of charging at home, the cost is usually significantly lower than with public charging alone.

Home charging accounts for the majority of private motorists' charging and the ability to charge at home is central to more people being able to own and drive an electric car. For villa and small house owners with control over their parking space, it is generally unproblematic to install their own charger at the home.

Private individuals today also have the opportunity to receive a tax reduction corresponding to 50 percent of the cost of installation and materials. For those who rent or otherwise have the right to use a parking space, as a rule consent is required from the person who provides the parking space. This applies e.g. in households in multi-apartment buildings but also owners of single-family houses who have parking in community facilities managed by a community association.

Regarding residents who have parking spaces within community facilities managed by a community association, the government has appointed an investigation which, among other things, must analyze whether the current regulations are fit for purpose and, if there is deemed to be a need for it, submit necessary proposals that simplify the installation of charging infrastructure within the framework of community facilities managed by a community association (dir. 2023:80). For residents of apartment buildings who rent or otherwise use a parking space, consent is generally required from the person providing the parking space to install a charging station. It is important that requests for charging station installation are not rejected without acceptable reasons and that the processing of the application does not take too long.

In the cities, municipal street parking on public land is used as parking for residents in the area. There is usually no charging infrastructure in these parking lots. Access to affordable home charging for urban residents can be improved. In order to make it easier for the municipalities, the government has tasked the Swedish Transport Agency with carrying out a review of the regulations that are relevant to the charging of parked vehicles on public land. The assignment must be reported by April 5, 2024 at the latest.

Access to charging should be investigated

The government intends to investigate the needs, possibilities and consequences of implementing the principle of access to charging in Sweden. The aim is to strengthen

the possibilities for residents in multi-apartment buildings to get access to charging in connection with the home.

The support is reviewed to also support larger property owners

The EU's state aid rules have previously meant that many larger property owners have been able to receive a significantly lower support share of the cost of installing non-public charging points compared to other Amendments charging infrastructure measures. in The EU's General Block Exemption Regulation (GBER) means that this percentage can be increased so that the support can cover 20 percent of the cost for large companies, and 50 percent for small companies. The government intends to analyze how the regulation (2019:525) on state aid for the installation of charging points for electric vehicles can be reviewed to make better use of the opportunities available in the EU's state aid rules.

Requirements from the EU for property owners to install charging infrastructure

In the directive on the energy performance of buildings (EPBD), the EU requires the member states to determine requirements for charging infrastructure and to take measures so that charging infrastructure is developed in and near buildings, e.g. by simplifying and clarifying regulations linked to charging. The directive is now under negotiation and the European Commission has proposed tightening of the requirements, i.a. through increased requirements for the installation of charging infrastructure in car parks at premises and in new construction and major renovations of housing. Furthermore, the commission proposes that all member states should implement the provision that strengthens the possibilities for residents of apartment buildings to have access to home charging, the principle of access to charging. The final design of the proposal will be decided in the tripartite negotiations currently underway between the Commission, the Council of the European Union and the European Parliament, and it is therefore not clear how it will turn out.

9.3.4 Access to public fast charging for light vehicles throughout the country

The government's assessment: The expansion of public charging infrastructure should increase. The government has therefore proposed in the budget bill for 2024 that the Klimatklivet investment support be strengthened, i.a. for this purpose. Support for charging infrastructure should continue to be made more efficient so that support goes to a cost-effective expansion of charging infrastructure on the right place and of the right type in every part of the country. Relevant authorities should analyze how an appropriate and nationwide charging infrastructure of fast chargers can be ensured.

The reasons for the government's assessment

The challenges for the expansion of public charging are somewhat different from the obstacles that characterize the expansion of charging infrastructure at homes. Public chargers along major roads usually have high power to enable rapid charging of vehicles that park for a short time. Charging stations

with high power may require measures and adaptations of the electricity network to increase Skr. 2023/24:59
the capacity, which means long lead times for network connection (see section 9.3.6).
The expansion of public charging infrastructure often has greater challenges in terms
of land access, which places demands on landowners to work proactively (see section
9.3.7). Other obstacles are a lack of information about functionality and availability,
complicated payment solutions with unclear price information and temporary peaks in
demand in certain places in the country during traffic-intensive periods of the year.
Additional challenges concern access to public charging throughout the country.
Establishments in the less-trafficked road network run the risk of not existing as the
costs become high in relation to the revenues, even though these charging points are
important from a system perspective. Relevant authorities should analyze how an
appropriate nationwide charging infrastructure of fast chargers can be ensured. All in
all, this places demands on cost-effective policy instruments and measures.

Public charging infrastructure throughout the country

For public fast charging, there is currently an EU regulation on the expansion of
alternative fuels (AFIR) which imposes binding requirements for expanded charging
infrastructure along the road network, see further the introduction to section 9.3. At
national level, there is government support to promote the expansion of fast charging
throughout the country. In addition to a basic geographic coverage of charging
infrastructure along major roads, there may in future be a demand for higher charging
effects, more charging points per charging station and measures to ensure high
reliability and redundancy in the system in case any charging point is lost.

9.3.5 Charging infrastructure for heavy vehicles

The government's assessment: The expansion of an appropriate charging infrastructure for heavy transport should increase to keep pace with market development. In the budget bill for 2024, the government therefore proposes an increased investment in support for such charging infrastructure. Support levels should be reviewed to maintain high cost-effectiveness.

The reasons for the government's assessment: Charging infrastructure for heavy
transport is a prerequisite for rapid electrification and the expansion needs to be
accelerated to support the market introduction of heavy electrified transport. In the
budget bill for 2024, the government therefore proposes that the appropriations for
such charging infrastructure be strengthened and extended. Expansion of charging
infrastructure for trucks is needed for e.g.
depots, terminals and along roads throughout the country, starting with regional freight
transport, and then gradually forming continuous routes throughout the country. Sales
of electric trucks are in their infancy, but are increasing rapidly. Through the
government's investment in charging infrastructure in the budget bill for 2024, conditions
are created to meet rapid market development with an expedient

expansion of public and non-public charging infrastructure for heavy vehicles.

In the AFIR, there are binding requirements for the member states to ensure the
scope and capacity of the public charging infrastructure for heavy vehicles

vehicle. Along TEN-T roads, there must be a coherent network of charging stations for heavy vehicles from 2025 with progressively stricter requirements until 2027 and 2030.

Through the support for regional electrification pilots for heavy traffic, the expansion of public rapid charging stations is faster and enables hauliers and transport companies to switch to electric vehicles. So far, 139 charging stations at strategic locations throughout the country have been granted and are planned to be in operation by 2024 at the latest. This level enables Sweden to be the forerunner that the industry is asking for. Initially, there was a need for high levels of support in order for actors to build out charging infrastructure for heavy vehicles, even though the demand is small. As the proportion of electric vehicles (and thus the demand for charging) increases, the support levels should be adjusted to maintain high cost efficiency.

Network capacity and land access are still important obstacles that need to be removed for a rapid expansion of charging infrastructure for heavy transport.

Electrification of city buses has been going on for a long time and there are different types of charging solutions that complement depot charging.
Charging infrastructure that supports the electrification of regional and long-distance buses is also important, and the government is following developments.

9.3.6 Network connection of charging infrastructure is facilitated

The government's assessment: Connection of charging infrastructure to the electricity grid should be facilitated.

The reasons for the government's assessment: Several actors have raised long lead times for grid connection and access to power in the electricity grid as obstacles to the expansion of charging infrastructure. The problems are mainly associated with public fast charging and depot charging for trucks. The electricity grids may need to be upgraded in some places to enable many vehicles to be able to charge in the same area, but long lead times for upgrading the electricity grid can also be a challenge in places where many vehicles need to charge at the same time with lower power. The information about where there is access to capacity is perceived as insufficient and in some places there may be free capacity but which has been booked by a customer who has applied for more power than is being used at the moment. This means that actors plan for the construction of charging points without knowing the conditions to ensure sufficient capacity. Overall, the expansion of charging infrastructure risks being slowed down.

A neighboring issue is the possibility of relieving the electricity grid during power peaks with the help of demand flexibility and solutions with electric vehicles that are connected to the electricity grid (vehicle to grid), which can be driven by, for example, trade in support services or conditional agreements. This can relieve the electricity grid at power peaks and thus enable the expansion of charging infrastructure in areas with limited available power. The government assesses that this can be cost-effective.

The conditions for the actors who want to connect charging infrastructure should be improved. The government has therefore appointed an investigation which, among other things, is tasked with producing knowledge base on network connection of charging infrastructure

structure and give suggestions for possible measures to shorten lead times, Skr. 2023/24:59 including that the planning of charging infrastructure should be able to take into account the conditions of the electricity grid to a greater extent (dir. 2023:80).

Network development plans and tools that illustrate the situation in the electricity network can be used to promote dialogue between different actors and increase the conditions for expanding charging infrastructure more quickly than today at predictable costs.

9.3.7 Conditions for land access are improving

The government's assessment: Obstacles to access to land for charging stations should be analyzed with the starting point that the conditions for obtaining land access should be improved.

The reasons for the government's assessment

Land access for charging in urban areas There

should be access to land for charging stations in urban areas. In order to facilitate the expansion of charging infrastructure, it needs to be analyzed if there are obstacles to land access and how these can be removed. There will be a need for places on both state, municipal and private land.

For commercial traffic, it is important that there is fast charging inside the built-up areas, something that currently tends to be placed outside on the main roads. The municipalities have an important function in this, for example when it comes to creating the conditions for various actors to establish public charging on municipal land.

The expansion of charging infrastructure will primarily be established in existing parking lots, but some public charging infrastructure may contribute to new land claims. Private and public land and property owners are affected both when charging is established in existing parking spaces and when new areas are taken up. The Energy Agency should, within the framework of its coordination mission, guide municipalities to make it easier for charging operators to establish public charging on municipal land. Private landowners also have an important role in the issue of making new land available for charging.

Land access for charging along major roads An increased

expansion of above all public rapid charging for light and heavy vehicles along the major roads will mean new land claims. For especially heavy vehicles, places where they stop to rest are important for charging, for example the larger rest areas that are adapted for trucks and offer a wider range of services. It is currently unclear whether there is a legal possibility to make land available for charging at, for example, the Swedish Transport Administration's staging areas for heavy vehicles or at rest areas. The legal possibilities need to be analyzed further with the aim of giving the Swedish Transport Administration the conditions to contribute to an appropriate expansion of the charging infrastructure.

9.3.8 Electric road systems can complement other charging infrastructure

The government's assessment: Electric roads can become a complement to other charging infrastructure for both light and heavy electric vehicles. Work on the exchange of experience through the innovation partnerships with Germany and France should continue.

The reasons for the government's assessment: The electrification of the transport sector places high demands on a rapid expansion of charging infrastructure and electricity networks. Dynamic charging, i.e. charging while driving on an electric road, can become a complement to stationary charging. Charging while driving can mean higher energy efficiency because the battery volume can be smaller and the need for high charging power is reduced compared to stationary fast charging. The possibility of being able to charge with lower power is positive both from a power grid perspective and for the lifespan of the batteries. Electric roads could enable smaller batteries and a reduced need for stationary charging.

Internationally, there is interest in electric roads that enable the charging of both light and heavy vehicles. Such technology can have environmental and economic benefits as more vehicles can use the infrastructure.

Different technologies for electric roads are being tested in more and more countries. The government follows developments in the area and the exchange of experience through the collaboration on electric roads that exists within the innovation partnerships with Germany and France is part of this work. Overall, electric roads may have the potential to facilitate electrification.

In the decision on the National Plan for 2022–2033, it appears that the planning to build Sweden's first permanent electric road on the Hallsberg–Örebro stretch is being completed. In August 2023, the Swedish Transport Administration communicated that, given higher costs than expected, the authority was canceling the procurement, but that the electric road project would continue. In the planning decision, the Swedish Transport Administration is also tasked with continuing the planning of electric roads and, based on the previous expansion plan, identifying suitable routes. A proposal for a possible stage must be reported by the authority by December 2024 at the latest. In June 2023, the government tasked the Swedish Transport Administration with producing orientation documents for the period 2026–2037. The assignment includes submitting a status report of the electric road assignment as well as a cost assessment for a first stage (LI2023/027374).

9.4 Increased transport efficiency

In addition to electrification, more efficient vehicles and sustainable fossil-free fuels, there is a potential to reduce transport emissions of greenhouse gases with measures that increase transport efficiency. With increased efficiency, access to electricity for other purposes also increases, which can contribute to a faster climate transition for society as a whole.

Increased transport efficiency means that accessibility for people and goods throughout the country is achieved without more vehicle kilometers traveled (traffic work), taking into account the transport policy principles. Increased transport efficiency is achieved in several ways, for example through longer and heavier vehicles, increased degree of filling, route optimization, coordinated freight

transports, freight transport systems that use more modes of transport (increased Skr. 2023/24:59
intermodality), digitization, but also through transport-efficient physical planning
that shortens distances and thus creates the conditions for people and
businesses to meet transport needs and accessibility with less traffic work. In
this way, the transports carried out can be as efficient as possible from an
energy, environmental and economic perspective in order to achieve
accessibility, sustainability and competitiveness throughout the country. With
a more efficient use of vehicles, infrastructure and fuel, the climate goals can
also be reached at a lower socio-economic cost.

The government emphasizes that the conditions for increased transport efficiency differ between different parts of the country. Within and between cities there are often better opportunities for e.g. increased public transport, coordinated freight transport, transfer to more efficient modes of transport than in sparsely populated and rural areas. For example, the transport infrastructure is often more developed for alternatives other than car traffic within and between cities. The incentives for coordinated travel and transport are also stronger in cities as the space on streets and roads is more limited and congestion and accessibility problems are more common. Active transports is a sustainable and healthy way of transport. Cycling also contributes to reduced emissions of greenhouse gases if it replaces transport with fossil fuels. Regions and municipalities have an important role in enabling people who want to cycle or walk to workplaces, schools and other community services. The state also contributes to this work, for example through the tax relief for cycling benefits, the work of the National Cycling Council and the distribution of support to projects that promote cycling.

To increase transport efficiency, efforts and measures are required from many sides, not least at local and regional level. This multi-level governance entails a number of challenges for climate policy, and relevant actors at different levels need the conditions to steer towards increased transport efficiency and reduced climate impact. Transport infrastructure planning is part of this, where government co-financing (see section 9.4.2) is an important part. In addition to this, citizens and businesses need better conditions to make smart transport choices (Sections 9.4.3–9.4.6).

Overall, this section presents measures aimed at increasing transport efficiency in two packages that reflect the challenges described above.

Table 9.4 Package of measures for increased transport efficiency

Package 1: Transport infrastructure planning	Package 2: Economic instruments and control
Co-financing of stages 1- and 2-actions (see section 9.4.2)	A distance-based system for heavy road transport (see section 9.4.3)
Road transport with longer and heavier vehicles (see section 9.4.5)	Investment support for the transfer of goods transport (see section 9.4.4)
More efficient rail transport (see section 9.4.6)	

9.4.1 Increased transport efficiency contributes to cost-effective goal achievement

The government's assessment: High transport efficiency is important to reach climate policy, economic policy and transport policy goals in a cost-effective manner. Therefore, transport efficiency should increase.

The reasons for the government's assessment: Increased transport efficiency means that accessibility for people and goods throughout the country is achieved without more vehicle kilometers (traffic work) taking into account the transport policy principles. Increased transport efficiency creates the conditions for people and businesses to meet their needs for accessibility and transport with less traffic work. Such a development is desirable because increased traffic work comes with high social costs in the form of e.g. accidents, noise, congestion, air pollution, emissions of greenhouse gases and other environmental impacts.

Cost-effective measures that contribute to increased accessibility without increasing traffic work should therefore be prioritized.

The availability of sustainably produced biofuels and other sustainable fossil-free fuels is limited. Measures that contribute to increased transport efficiency reduce the need for these fuels, which can contribute to reaching the climate goals at lower costs for companies and private individuals.
High transport efficiency is also important for reducing society's vulnerability and increasing its resilience in the event of fuel shortages, unexpected fuel price increases and similar events, which have been brought up recently. Furthermore, an increased use of rechargeable vehicles will greatly increase the extraction of certain metals and minerals, which from a resource point of view makes it justified to work for increased transport efficiency
where accessibility can be achieved with fewer vehicles, where appropriate, for example through more sharing services and increased use of public transport.

Measures that lead to high accessibility for people and goods throughout the country are important for both individuals and companies and are a basic prerequisite for Swedish competitiveness. Increased traffic also comes with a range of societal costs, such as accidents, noise, congestion, air emissions, greenhouse gas emissions and infrastructure costs. Measures that lead to increased transport efficiency while taking accessibility into account have significant socio-economic potential.

9.4.2 Co-financing of stage 1 and 2 measures

The government's assessment: The prerequisites and conditions for state co-financing of cost-effective and additional stages 1- and 2-
measures according to the four-step principle should be clarified. Tasks should be given to one or more authorities to draw up a catalog of measures for economically viable and cost-effective steps 1 and
2- measures with a focus on stage 2 measures that can contribute to reducing the need for more costly infrastructure measures.

Trafikanalys' proposal corresponds to some extent with the government's Skr. 2023/24:59 assessment.

The referral bodies are mainly positive about the proposal. *The Public Health Agency, Green Mobilists, the County Administrative Board in Norrbotten County, the County Administrative Board in Skåne County, the County Administrative Board in Uppsala County, the County Administrative Board in Västmanland County* and *the County Administrative Board in Östergötland County, the Authority for Community Protection and Preparedness, the Environmental Protection Agency, Region Stockholm, Region Västerbotten, Swedish Public Transport, Sweden's Municipalities and Regions (SKR), Swedish Growth Agency, Agency for Innovation Systems, 2030-The secretariat, Cykelfrämjandet* endorses the proposal. *The County Administrative Board in Uppsala County* believes that the proposal strengthens the conditions and clarifies the conditions for state co-financing of stage 1 and 2 measures and enables investments that promote types of traffic with low climate impact at local level which cannot currently be prioritized. *The Transport Board* agrees with the importance of the four-step principle having a real impact. *The County Administrative Board in Skåne* County believes that it is necessary for the transition that the four-step principle becomes a natural part of the Swedish Transport Administration's working methods and instructions.

None of the referral bodies disapprove the proposal, but *the Swedish Transport Administration* considers that it is doubtful to expand the opportunities for state co-financing in general, but it should be more targeted if it is to happen.

The reasons for the government's assessment: The four-step principle has guided transport policy since the 1980s and was developed to save resources and limit the need for building transport infrastructure.
The principle means that possible improvements in the transport system must be tested in stages from 1–4.

The first step involves considering measures that may affect the need for transport and travel as well as the choice of mode of transport. Examples of measures: locations, land use, taxes, fees, parking fees, subsidies, cooperation, travel-free meetings, speed limits, coordinated goods distribution, information, marketing, itineraries and programs and so on.

The second step involves implementing measures that lead to a more efficient use of the existing infrastructure. Examples of measures are redistribution of areas, bus lanes, signal prioritization, ITS solutions, coordinated train schedule, increased frequency of trips, logistics solutions and
travel planner.

If necessary, the third stage is carried out, which involves limited renovations. Examples of measures are reinforcements, trimming measures, load-bearing measures, widening, bypass tracks, platform extensions, dredging in fairways, level crossings and

setup tracks.

The fourth step is carried out if the need cannot be met in the three previous steps and deals with new investments and/or major reconstruction measures. Examples of measures are new railways, double track, bypass, new motorway, waterway investment, central combi terminals, roundabouts and new station locations.

Generally speaking, increased application of step 1 and 2 measures is expected to contribute to better resource management as the measures include can lead to accessibility problems being solved with efficiency measures and can also contribute to reduced greenhouse gas emissions. It follows that four-step

the principle, well applied, can contribute to the development of a socio-economically efficient and sustainable transport system. However, recurring criticism has been directed at the fact that stage 1 and stage 2 measures have not been reflected in the actual planning, which could mean that the transport policy has become more costly than necessary and a missed opportunity for emission reductions. The benefits of stage 1 and stage 2 measures have been highlighted

i.a. by the Swedish Transport Administration, Traffic Analysis, the Swedish Housing Agency, the Swedish Environmental Protection Agency, the National Audit Office, the Climate Policy Council and the Climate Rights Investigation.

County administrations, regions and municipalities have also expressed that they see a need for more measures to be implemented according to the first step of the four-step principle. Three quarters of the regions state that they want to be able to finance more such measures with funds allocated in the county plans for regional transport infrastructure. Even the county administrations are generally critical of the fact that the four-step principle is not fully applied in today's planning system.

The Swedish Transport Administration states that the authority is already incorporating the first two steps of the four-step principle as far as possible within the current regulatory framework. Trafikanalys believes that today's regulations relating to the area are ambiguous and the Swedish Transport Administration interprets, in Trafikanalys' opinion, its mandate restrictively. Trafikanalys also believes that, in light of today's lack of control, there is no reason to criticize the agency's stance in principle. Traffic analysis emphasizes that the proposal does not involve any change in process or changed quality requirements for decision-making documents to grant state co-financing for stage 1 and stage 2 measures.

The government shares Trafikanalys's assessment to some extent and considers that one or more authorities should be tasked with submitting proposals on how current conditions for state co-financing of municipal and regional stage 1 and stage 2 measures can be clarified in relevant regulations. The assignment should include developing a catalog of measures with economically viable and cost-effective stage 1 and stage 2 measures, with a focus on stage 2 measures that can contribute to reducing the need for more costly infrastructure measures in stages 3 and 4. The measures that identified should have high additionality. This refers to measures within the areas of responsibility of municipalities and regions that municipalities and regions are not supposed to implement without a grant from the state and which are of such a nature that they are suitable for state co-financing, e.g. compatible with current state aid regulations. The task should also include developing a guide for assessing the socio-economic costs and benefits of these measures.

9.4.3 A distance-based system for heavy goods transport by road

The government's assessment: In the long term, the taxation of heavy goods traffic will need to be reviewed. There is reason to continue the analyzes of a distance-based system for heavy goods transport by road which takes into account Sweden's different geographical conditions and which, together with other policy instruments, e.g. provides clear incentives for the use of zero-emission vehicles without disadvantaging previous investments in heavy-duty vehicles. At the same time, such a system, unlike effects that can occur in today's system, should be designed

competitively neutral so that foreign vehicles pay as much as Skr. 2023/24:59
Swedish based on actual distance driven. A ceiling for taxation must mean that
the consequence is not that the cost for Swedish skiers increases relative to
today's taxation. A distance-based system for heavy goods transport can in the
long term contribute to better control and thus better compliance with the taxation
of heavy goods vehicles also for trucks from other countries. By intensifying
control of cabotage transport, which consists of heavy traffic on Swedish roads,
it should be possible to access environmentally inferior vehicles, which do not
meet the requirements and which therefore should not operate on Swedish roads.

The reasons for the government's assessment: Today, Sweden participates together with Denmark, the Netherlands and Luxembourg in a road toll cooperation, the so-called Eurovignette cooperation. Swedish heavy goods vehicles pay an annual toll for the right to use the entire Swedish road network and foreign heavy goods vehicles pay a toll when traveling on certain Swedish roads.

For a sparsely populated country like Sweden, with long distances and relatively low traffic intensity, there are advantages to a time-based road toll system. The long transport distances are a competitive disadvantage for some industries, especially in rural areas. At the same time, the revised Eurovignette Directive adopted in 2022 involves the phasing out of time-based tolls for heavy vehicles on the trans-European core transport network within eight years of the directive's entry into force. In cases where Member States apply a common road charging system, such as the Eurovignette cooperation, they have an additional two years to adapt or abolish the common system. Exceptions to the phasing out of time-based charges are permitted only in duly justified cases. As mentioned above, Sweden is today part of the so-called Eurovignette cooperation. In the past, Germany and Belgium have left the Eurovignette cooperation to introduce distance-based systems. In recent years, Denmark and the Netherlands have also adopted legislation which means that within a few years they will switch to distance-based systems and leave the cooperation. When these countries leave the cooperation, it may mean that the remaining countries Sweden and Luxembourg will find it more difficult to maintain the euro vignette fee. It is thus unclear how long Sweden will be able to maintain the current time-based toll.

The issue of distance-based taxation of heavy goods transport has been investigated on several occasions, most recently by the inquiry into a new environmental management system for road freight transport, which submitted its report Road freight transport - certain issues surrounding a new environmental management system (SOU 2022:13) to the government in March 2022. The report has been forwarded and is now being prepared in the Government Office.

Within Europe, more and more countries are introducing distance-based taxation of heavy goods vehicles. A distance-based system for the taxation of heavy goods traffic by road has the potential to contribute to a more effective management than a time-based system. Such a system can reach both Swedish and foreign vehicles traveling on the Swedish road network and can thus be designed in a competitively neutral manner. It is important that the environmental requirements also apply to heavy goods transport from other countries in order not to distort competition for Swedish hauliers.

A relatively large proportion of domestic freight transport by road is carried out by foreign hauliers in connection with international transport. There are several

reason to tighten controls on regulatory compliance with cabotage transport. A positive side effect of increased controls is that more foreign vehicles that are not of a sufficiently good standard can be prevented from continuing to travel.

In the long term, the taxation of heavy goods traffic in Sweden will also need to be reviewed. There is reason to continue the analyzes of a distance-based system for heavy goods transport by road which, together with other policy instruments, provides clear incentives for the use of zero-emission vehicles without disadvantaging already implemented and environmentally justified investments in heavy vehicles.

9.4.4 Investment support for the transfer of goods transport to rail and shipping

The government's assessment: The government's investment support for the transfer of freight transport to rail and shipping (formerly known as the widened eco-bonus) aims to promote a transfer of freight transport from road to rail, shipping or intermodal transport and intends to accelerate the efficiency of transshipment of goods and stimulate new transport solutions.

Reasons for the government's assessment: The purpose of the investment support for the transfer of freight transport to rail and shipping (formerly known as the widened eco-bonus) is to promote, through better coordination between the traffic laws, a transfer of freight transport to rail, shipping or intermodal transport with a smaller impact on the climate than the corresponding transports by truck on the way. The support will promote a transfer of goods from road to rail and shipping and facilitate intermodal freight transport. The aid is deemed to contribute to the climate transition because the aid can contribute to positive effects on the transfer of goods from road to rail and shipping, facilitate intermodal transport arrangements and contribute to more efficient goods transport. A prerequisite for the aid to be introduced is that the European Commission approves the aid. Notification of the support is currently underway.

The support expires in 2024.

9.4.5 Road transport with longer and heavier vehicles

The government's assessment: Longer and heavier transport increases transport efficiency and reduces greenhouse gas emissions. On 31 August 2023, new rules for longer vehicles came into force, which means that trucks up to 34.5 meters will be allowed on certain designated roads. The measure is estimated to reduce carbon dioxide emissions from heavy road transport by 4–6 percent. The infrastructure is adapted to enable the performance of heavier vehicles. The road network with the highest load capacity class (BK4) is being expanded. The government considers that ongoing adaptation of the road network is important to enable more efficient truck transport.

The reasons for the government's assessment: New rules in the traffic regulation Skr. 2023/24:59
(1998:1276) for longer vehicles entered into force on 31 August 2023 where the maximum length for truck combinations was increased from 25.25 meters to 34.5 meters. The measure to allow longer trucks is estimated to have the potential to reduce carbon dioxide emissions from heavy road transport by 4–6 percent. Longer and heavier vehicles require certain adaptations to the infrastructure. On December 1, 2023, the first roads in Sweden were opened for long trucks up to 34.5 meters. In total, the road network includes approximately 450 kilometers of major roads, partly around 140 kilometers of state connection roads that have been identified in consultation and dialogue with the approximately 160 municipalities that are in some way affected by the designated road network. In addition to this, there are also all the municipal roads identified in the dialogues. In total, it is about 590 kilometers of state roads that will allow long trucks from 1 December 2023. Furthermore, the Swedish Transport Administration works systematically to increase the load-carrying capacity of the infrastructure so that more routes can be given load-carrying class 4 (BK4) and can therefore be operated with vehicle combinations weighing up to 74 tonnes.

The Swedish Transport Administration continues to lease a state road network for BK4 and estimates that in 2023, approx. 67 percent of the strategic road network for heavy traffic will be leased for BK4. In 2025, it is estimated that approximately 70 percent of the strategic road network will be leased, which corresponds to approximately 48 percent of the national road network. Until 2033, the Swedish Transport Administration's goal is to be able to lease 80-90 percent of the strategic road network for BK4.

9.4.6 More efficient rail transport

The government's assessment: The railway is an important and high-capacity mode of transport and more efficient use contributes to increased transport efficiency. To enable increased use of available capacity and simplify cross-border traffic, the capacity allocation process is now being reviewed.

The reasons for the government's assessment: Transport work by rail makes up around 85 percent of the total transport work in rail traffic (which also includes trams and subways) and is an important part of a well-functioning, long-term sustainable and reliable transport system.

On 11 July 2023, the European Commission presented its proposal for a new rail capacity regulation. The proposal is a revision of parts of the EU directive on the establishment of a common European railway area (the SERA directive) and also includes the repeal of the Freight Corridor Regulation. It aims to increase the capacity of the European rail networks and facilitate cross-border traffic by improving capacity allocation and traffic management processes for better coordination throughout the rail system. Greater demands are placed on earlier planning and coordination of available infrastructure, and a European network must take care of the coordination between the infrastructure managers.

By introducing a harmonized, directly applicable regulatory framework for the management of railway infrastructure and traffic, European assesses

the Commission that the proposal will lead to the overall goal of increasing the use of the rail network more efficiently. According to the Commission's impact analysis, the additional capacity is expected to lead to an increase in traffic within the EU of 4 percent (approx. 250 million train kilometres).
The government welcomes the objective of enabling a more efficient management of railway infrastructure and railway traffic. The proposal involves a major change compared to current rules and further analysis is required to gain a better understanding of possible risks and consequences with the proposal. The proposal is now being considered in the Council and the European Parliament in accordance with the ordinary legislative procedure.

9.5 Fossil-free flight

Aviation has an important role in providing accessibility for private individuals and companies and for people to be able to live, live and work throughout the country. At the same time, aviation has a significant climate impact, corresponding to approximately 2 percent of the world's carbon dioxide emissions in 2022.
However, the overall climate impact of the flight is greater as a result of emissions of e.g. water vapor and nitrogen oxides at high altitude, so-called high-altitude effects.

Although aviation has lower total emissions than other modes of transport, aviation has big challenges to change. A greatly increased use of sustainable aviation fuels will be central to the transition. A significant obstacle is that the cost of sustainable aviation fuels is higher compared to its conventional fossil equivalent, which leads to limited willingness to pay and hence demand. Airplanes powered by electricity or hydrogen are being developed. In the long run, such aircraft have good opportunities to replace conventional aircraft, mainly on shorter routes, but so far there are e.g. technical and regulatory challenges. Parts of the aircraft fleet will therefore for the foreseeable future be dependent on fossil-free and sustainable aviation fuels and face major challenges to reach all the way to basically zero carbon dioxide emissions

Aviation's global governance is accelerating, but still insufficient

Within the United Nations Civil Aviation Organization (ICAO), work has been developed in recent years to reduce aviation's global climate impact. During the ICAO General Assembly in Montreal in 2022, the countries of the world decided to introduce a long-term emissions target for international aviation. The goal means that the countries of the world must strive towards the achievement of international aviation
net zero emissions of carbon dioxide by 2050. The goal is collective and does not imply any commitment for an individual state. As the target is defined, the emissions from aviation can be offset by measures in other sectors.
In addition, ICAO has also decided on a global market-based policy instrument, the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). CORSIA's goal is to stabilize international aviation's carbon dioxide emissions at the 2020 level. Excess emissions

needs to be compensated by measures in other sectors. Overall, the climate work within ICAO has developed, but stronger efforts are needed
for the flight to adjust in line with the Paris Agreement.

The EU takes a leading role in reshaping aviation

The EU has for a long period taken a leading role in reducing aviation's climate impact. Since 2012, aviation has been part of the EU's emissions trading system (EU ETS). This means that airlines flying within the European Economic Area (EEA) need to cover their emissions with emission rights and comply with the gradually decreasing emission ceiling in the entire trading system. Through the revision of the EU ETS, the rules for aviation within emissions trading have been tightened, i.a. through a rapid phasing out of free emission allowances for air operators. There are thus stronger financial incentives for European aviation operators to reduce their emissions.

The EU has also introduced a quota obligation for the blending of sustainable aviation fuels through the regulation on equal conditions for sustainable aviation (Refuel EU Aviation) with blending requirements for sustainable aviation fuels that increase over time up to and including 2050. In addition, rules for the EU's common airspace (Single European Sky) under revision in order to, among other things, further contribute to aviation's climate transition.

National policy breaks down barriers to enable aviation's climate transition

At the national level, domestic aviation is included in Sweden's long-term climate goals and the bunkering of fuel for domestic aviation gave rise to approx. 300 thousand tons of greenhouse gases in 2022. Business is committed to the transition and the Swedish aviation industry has set ambitious climate goals within the framework of their road map for a fossil-free and competitive aviation sector. A reduction obligation has been introduced to increase the use of fossil-free aviation fuels. Sweden has also introduced environmentally differentiated take-off and landing fees to provide incentives for airlines to reduce their emissions of, for example, climate-affecting gases. This section describes what additional measures should be taken at national level to support Swedish aviation operators to reach all the way to basically zero emissions as well as to coordinate and supplement the management with legislation at European and global level.

This section therefore presents measures that increase the use of sustainable aviation fuels, stimulates the development of zero-emission flights as well as other measures to reduce emissions such as reducing the high-altitude effects of flight. The measures are categorized into three packages that reflect aviation's obstacles in climate change.

Table 9.6 Package of measures to reduce aviation's climate impact

Package 1: Increased use of fossil-free aviation fuels	**Package 2: Introducing Zero Emission Aviation**	**Package 3: Other rule changes for aviation climate change**
Blending requirements for sustainable aviation fuels in the EU (see section 9.5.2)	Early introduction of electric flight (see section 9.5.4)	Aviation's global climate change (see section 9.5.1)
Act for the pricing of fossil aviation fuel (see section 9.5.2)		Support for air operators to reduce their high altitude effects (see section 9.5.5)

Package 1: Increased use of fossil-free aviation fuels	Package 2: Introducing Zero Emission Aviation	Package 3: Other rule changes for aviation climate change
Cooperation for fossil-free aviation fuels (see section 9.5.2)		Include high-altitude effects in EU emissions trading (see section 9.5.5)
Promote the development and production of new fossil-free fuels (see section 7.5)		

9.5.1 Aviation's global climate transition is accelerating

The government's assessment: Aviation's climate change needs to be developed. In the short term, aviation should change mainly through a transition to fossil-free aviation fuels and more efficient flights, but in the longer term to an increasing degree also through aircraft powered by electricity or hydrogen gas. Sweden and the EU should continue to push within ICAO so that emissions from international aviation are reduced in line with the Paris Agreement's 1.5 degree target.

The reasons for the government's assessment

In order to reach the Paris Agreement's temperature target, aviation emissions of greenhouse gases need to decrease. Although aviation's emissions are not as large as other modes of transport, global air travel is expected to increase over time, as more people can afford to fly. Aviation also has greater challenges in climate change than other forms of transport because the technological development of zero-emission aviation has not progressed as far as e.g. zero-emission technologies in road transport or shipping. Mainly, aviation needs to change by increasing the use of sustainable and fossil-free aviation fuels, such as biofuels and fossil-free electric fuels. Such fuels are already in

day and can be used by the existing aircraft fleet. However, an increased production of sustainable and fossil-free aviation fuels is required to enable this increased involvement (see section 9.5.2). In the long term, electrification and hydrogen operation are also expected to be able to replace aviation kerosene, above all on shorter distances (section 9.5.4). In addition, there are certain opportunities to reduce aviation's climate impact, above all the emissions that occur at high altitude (high altitude effects) through smarter route planning and more efficient flights (section 9.5.5).

The flight is international and, as far as possible, control should therefore be coordinated at global and European level. The government believes that CORSIA needs to be developed into an ambitious and effective system to reduce aviation's own emissions of carbon dioxide in the long term and contribute to the Paris Agreement's 1.5 degree target. Other policy instruments are probably also needed to promote a large-scale transition to sustainable and fossil-free aviation fuels. Sweden should therefore, together with the rest of the EU and other like-minded countries, work for frameworks and rules that promote the large-scale use of sustainable and fossil-free aviation fuels on a global level. Goals and instruments should provide flexibility

for regional conditions, however, without renouncing the need for Skr. 2023/24:59
real emission reductions.

Goals for aviation's climate transition should be set at global and European level

At the national level, the Environmental Goals Committee has proposed in its report Sweden's global climate footprint (SOU 2022:15) that emissions from aviation's international bunkering in Sweden, i.e. the fuel refueled in Sweden for air travel to and from Sweden, be included in Sweden's climate goals. In addition, it is proposed that these emissions are also included in the stage target for transport until 2030. However, the committee's proposal came before agreements were reached within the EU's legislative package to reach the EU's climate target for 2030, the so-called
The Fit for 55 package. Through the EU's legislative package, there is now a tightened emissions trading system that includes aviation emissions, as well as a quota obligation for the mixing of sustainable aviation fuels. These two means of control are of great importance for aviation's climate transition, but also mean a limited one
availability for Sweden to nationally reduce its emissions from the aviation sector. There are e.g. limited opportunities for Sweden to set requirements for higher intervention levels than the EU as a whole and thereby reduce emissions more in Sweden than in the rest of the EU (see section 9.5.2). There is therefore limited opportunity for Sweden to steer towards a more ambitious climate goal for aviation than the rest of the EU.

The government therefore assesses that Sweden should not proceed with
The Environmental Goals Committee's proposal to include domestic aviation in the stage goal for transport until 2030 or international aviation in the long-term climate goal until 2045. Instead, the government should push for too high ambition at European and global level and support Swedish aviation operators' conversion work in line with the global and European agreements.

9.5.2 Mixing sustainable and fossil-free aviation fuels

The government's assessment: The use of fossil-free aviation fuels is of central importance for aviation's climate transition. Sweden should work for effective pricing of aviation's climate impact that promotes sustainable and fossil-free fuels. In addition, collaboration should increase to coordinate the work with production and distribution of fossil-free fuels for e.g. the flight.

The reasons for the government's assessment

The EU blending requirements for sustainable aviation fuels are implemented in Sweden

Aviation will be dependent on the blending of sustainable aviation fuels for the foreseeable future to reduce emissions. Sweden is a forerunner in this area. Sweden introduced a reduction obligation for aviation kerosene that came into effect in 2021, and then became one of three countries in the world with a requirement to mix in fossil-free aviation fuels. In its control station from 2022, the Energy Agency assessed that the reduction obligation for aviation kerosene contributes to strengthening Sweden's bio-based economy, creates a

investment climate for sustainable aviation fuels and inspires other countries to introduce similar policies.

On 14 June 2021, the Commission proposed that a common quota obligation for sustainable aviation fuels be introduced at all European airports. After negotiations during the Swedish presidency of the EU, an agreement could be reached between the EU's institutions. According to the now adopted regulation on equal conditions for sustainable aviation (RefuelEU Aviation), 2 percent in 2025, 6 percent in 2030, and 20 percent of the fuel refueled at European airports in 2035 must be sustainable aviation fuels. In the regulation, flights used for military or humanitarian purposes are exempt. After that, the blending requirements will increase further and by 2050, 70 percent must be sustainable aviation fuels. The regulation means that national intervention requirements need to be scrapped in favor of the European requirements. The levels up to 2030 in the European regulatory framework mean less interference than the Swedish reduction obligation, but mean greater emission reductions because the rules apply to the entire EU. The EU rules also contain explicit requirements that prevent economy fueling

The government believes that there are several advantages to governance for the mixing of sustainable aviation fuels at the European level. In addition to common mixing requirements reducing emissions from flights throughout the Union, it also reduces the risks of economy refuelling, i.e. planes refueling in countries where mixing requirements are weaker. Joint involvement at European level also contributes to creating a larger market for producers of sustainable aviation fuels. One of the main aims of the EU regulation is that air operators must have the same conditions throughout the Union. Sweden will therefore have to review the existing national

the reduction obligation for aviation kerosene based on the EU regulation.

Effective pricing of aviation's climate impact

The government believes that aviation should bear the costs of its climate impact to a greater extent and that incentives should be given to aviation's climate transition. It is problematic for aviation's climate transition that it is not possible to tax fossil aviation fuel in commercial aviation, and thus create financial incentives for sustainable aviation fuels or electric aviation. It is particularly problematic for air travel to and from the EU that is not covered by the EU Emissions Trading System (EU ETS). On the other hand, it is positive that the EU ETS has been tightened for aviation.

For a long time, Sweden has had a leading international role, both globally and at EU level, in order to make it possible to price aviation emissions. The government believes that it is important that flying emissions are priced, and not flying itself. Sweden should therefore continue to work for effective pricing of aviation's climate impact that promotes sustainable and fossil-free fuels.

Increased cooperation for e.g. fossil-free fuels for aviation

The transition to sustainable and fossil-free fuels for aviation requires a holistic approach to involvement, production and infrastructure.
The airport investigation (Ds 2023:3) has therefore proposed that a fuel commission for the flight be established. The justification for the proposal is that large-scale production of sustainable aviation fuels and Sweden is required

deemed to have the prerequisites for a high degree of self-sufficiency in terms of Skr. 2023/24:59
access to natural resources and at the same time have the technical knowledge required
to be able to use this. Furthermore, the investigation believes that there are several sectors
that need and compete in some form for the same raw material. However, some reference
bodies submitted that the commission should include shipping. Therefore, the fuel
commission's mandate should be broadened to also include shipping, which also has large-
scale needs for sustainable fuels.

The government believes that increased cooperation with relevant actors from aviation
and shipping can contribute to the transition to sustainable and fossil-free fuels for aviation.
Achieving domestic production of biofuels and electrofuels will require significant
coordination between a wide range of actors throughout the value chain in order to
minimize bottlenecks, and ensure that necessary measures, such as strengthening grid
capacity, take place at the required pace. The government therefore intends to increase
collaboration around sustainable and fossil-free aviation fuels with representatives from
the entire value chain, including representatives from business, academia and the public
sector, with the aim of working to scale up the production of sustainable and fossil-free
fuels, which includes both biofuels and electrofuels, as well as promoting the expansion of
associated infrastructure. The coordination function should also make recommendations
regarding the necessary supplementary measures to increase the production and use of
fossil-free fuels in the aviation and shipping sectors.

9.5.3 Climate requirements for support to airports

The government's assessment: Requirements for reduced climate impact should be considered in connection with the provision of support to non-governmental airports.

The airport investigation's proposal is consistent with the government's assessment.

The reasons for the government's assessment: Non-governmental airports fulfill an
important function for accessibility and socially important aviation. Based on a challenging
economic situation, the Airports Investigation Board assesses in the memorandum The
state's responsibility for the Swedish airport system - For availability and preparedness (Ds
2023:3) that there is a need for an increased state grant for operating support to non-state
airports. At the same time, the investigation assesses that the state's influence over the
airport system should increase, in order for the state's efforts to better contribute to
transport and climate policy.

The government agrees with the Airports Investigation's assessment that the government
grant for operating support to non-government airports needs to be strengthened. In the
budget bill for 2024, the government has proposed an increased state contribution for
operating support to non-state airports. In this context, the government states that the
direction is that the state subsidy for operating support will be conditional and that the
airports need to fulfill the conditions in order to receive a share of the support. The
Government Office has begun internal work on implementing the government's proposal
in the budget bill for 2024 regarding the grant for operating support to non-governmental
airports. In that context, the government considers, among other things, that requirements
should be considered

on reduced climate impact in connection with granting grants for operating support to non-governmental airports. Any requirements should take into account the need for communications throughout the country, the airports' financial conditions and preparedness issues.

9.5.4 Early introduction of electric flight

The government's assessment: Conditions need to be created for the introduction of electric aircraft in Sweden. The prerequisites for market introduction support for purchases or financial leasing should be analyzed as the market for electric aircraft develops.

The reasons for the government's assessment: Alongside sustainable aviation fuels, electric aviation has the potential to reduce emissions from air travel in the long term. Flights powered by electricity, either through batteries or fuel cells, can above all replace conventional aircraft on shorter distances. This is a consequence of electric aircraft's limitations in range and passenger capacity.

Technology development is at an early stage, but commercial electric aircraft have begun to be developed, i.a. by Swedish manufacturers. The government actively supports the development of electric aviation. So far, i.a. The Swedish Transport Administration has been tasked with analyzing whether there are conditions for setting requirements for electric aircraft in the procurement of air traffic for lines with public service obligations. Furthermore, in its regulatory letter, the Swedish Transport Administration has also specifically focused on work with a new research and innovation initiative for the field of electric aviation. The Swedish Transport Administration's regulatory letter also includes an account of how the authority has worked to increase collaboration and the exchange of information between the Swedish Transport Administration and relevant actors regarding research and innovation related to electric aviation.

The government intends to continue promoting the work of introducing electric aircraft and preparing for Sweden to once again become a manufacturing country.

In order for actors to carry out initial investments in electric aircraft that accelerate the climate transition, support for market introduction can be justified. The government has introduced such market introduction support for electric buses, environmental trucks and electric work machines (see section 9.2.8). As a result of the market development for electric aircraft, the government commissioned the Energy Agency to analyze and propose how the existing climate premiums can be designed to stimulate the market introduction of electric aircraft.

In the report Designing a climate premium for electric aircraft (ER 2023:05), the Energy Agency assesses that electric aircraft can be an important way to reduce aviation emissions. The authority considers that support for market introduction is justified on the basis that it reduces the costs of investing in electric aircraft and thereby accelerates technology development. In the design of a premium, the authority believes that electric hybrid planes should also be included, as a result of the limited number of aircraft models with exclusively battery electric or fuel cell operation. Based on the high costs associated with, the authority believes that support should be given both to credit purchases and so-called financial leasing according to the EU's state aid rules.

Given the market situation, the authority assesses that support should be able to be introduced from 2026 when it is expected that there will be electric aircraft on the market.

The Energy Agency has also analyzed other policy instruments that would
be able to supplement market introduction support. Electric airplanes are considered to be relevant for some of the flight routes that the state procures according to public transport obligations. However, it is considered to be uncertain whether the EU regulations for aviation allow Sweden to set demands for freedom from fossil fuels in connection with the procurement of air traffic. The Energy Agency therefore assesses that Sweden should work for the EU to open up to such requirements in order to further support the introduction of fossil-free aviation.

The government agrees with the Energy Agency's analysis that there may be reason to introduce market introduction support for electric aircraft. Stimulating an early introduction of electric aircraft in Sweden contributes both to reduced emissions, technological development and positive effects for the Swedish aviation industry, which is at the forefront of development. The government therefore assesses that the conditions for market introduction support for the purchase or financial leasing of aircraft that are fully or partially powered by electricity should be analyzed as the market develops. Furthermore, the government has given the Swedish Transport Agency the task of analyzing the conditions for setting requirements for electric aircraft in the procurement of air traffic for lines with public service obligations according to the current regulations.

9.5.5 The high altitude effects of the flight should be reduced

The government's assessment: The flight's high-altitude emissions, so-called high altitude effects, should decrease. As robust measurement methods for high-altitude effects are developed, these emissions should be included in the EU Emissions Trading System (EU ETS). In addition, guidance is needed for flight operators so that they can contribute to reducing the effects of high altitude.

The reasons for the government's assessment: A large part of aviation's climate impact occurs through high-altitude emissions of e.g. nitrogen oxides, water vapor and particles. There are different estimates, but according to the EU's Aviation Safety Agency (EASA), these high-altitude effects have roughly the same climate impact as aviation's other emissions of carbon dioxide.
Electric aircraft lack such high-altitude effects, but both biofuels, electrofuels and hydrogen propulsion cause high-altitude effects to varying degrees.

It is important that aviation's overall climate impact is priced so that incentives are given to reduce the high-altitude effects as well. Pricing of high-altitude effects, however, requires access to reliable monitoring and reporting of these emissions. At the EU level, there is ongoing development work linked to improving the state of knowledge and introducing monitoring and reporting of high-altitude effects. According to the revised ETS directive, a reporting system must be introduced from 2025. In addition, if deemed appropriate, the Commission must propose to extend the EU ETS to also include high-altitude effects by 1 January 2028 at the latest. The government considers it positive based on the principle that the polluter pays for aviation's overall climate impact to be priced within the EU. Sweden should therefore push for high-altitude effects to be included in the EU ETS as monitoring and reporting of these emissions improves.

The state of knowledge regarding how high-altitude effects can be reduced is currently limited, and information to aviation operators could be increased in this regard. The government therefore believes that guidance is needed for aviation operators to reduce the high-altitude effects of flying. The analysis should be based on the studies that have recently been carried out at European level.

9.6 Fossil-free shipping

Shipping plays an important role in the transport system by providing efficient transport between the world's continents, countries, regions, islands and in our archipelagos. About 90 percent of Sweden's imports and exports have been transported by sea. Shipping is thus of decisive importance for trade and increased prosperity, in Sweden and in the world. At the same time, shipping accounts for approximately 3 percent of global greenhouse gas emissions. The number of sea transports is also expected to increase as a result of a growing global demand for freight transport. In recent years, there has been significant development of solutions that reduce energy use, ships that are powered by fossil-free shipping fuels or electricity, and new, more efficient cargo solutions. Innovative fossil-free propulsion technologies such as electro-fuels and wind can contribute to the transformation of shipping. There are also a few existing nuclear-powered ships abroad that are mainly used in the military and as icebreakers, whose propulsion is fossil-free.

Despite this development, shipping lags behind road transport in the transition. Several significant obstacles exist. Shipping is diverse in its nature. Ships and boats are built in various sizes, from pleasure boats to ocean-going vessels, they generally have a long life and are highly specialized to carry out different types of transport work. This means that different and adapted solutions are required to reduce emissions. Another obstacle is that the cost of sustainable fuels and technologies is higher than for equivalent conventional ones, and there is a limited willingness to pay on the part of transport buyers and thus demand. The production capacity for sustainable marine fuels is also insufficient and needs to be expanded in order to meet increased demand. Another circumstance is that professional traffic is to a large extent international and must relate to the conditions that exist globally. The lack of effective global legislation in the climate area is a barrier to shipping's transformation.

The UN accelerates shipping's climate transition

Maritime emissions of greenhouse gases, above all from freight transport, often occur across land borders and between continents. Governance on a global level is therefore central to shipping being able to adapt. Like aviation, global cooperation is underway within the International Maritime Organization (IMO) to reduce shipping's emissions. At the IMO's Environment Committee meeting in 2023, the IMO's previous climate ambitions were strengthened. The new goals mean that the countries of the world must strive for international shipping to reach net-zero emissions by or around the year 2050. The ambition is collective and does not involve any commitments for individual states, but must take place within shipping and without compensatory measures in other sectors. In addition, the IMO has decided on intermediate control stations for emission reductions. These

means that the total emissions from international shipping must decrease by Skr. 2023/24:59
20 percent and aim for -30 percent by 2030 and 70 percent and aim for -80 percent by 2040, respectively, compared to the 2008 level. There are also ambitions to increase shipping's energy efficiency and that the use of technologies and fuels with zero or near-zero greenhouse gas emissions should correspond to 5–10 percent of shipping's energy needs on a global level in 2030.
The IMO is now working on developing instruments to reduce shipping's global emissions in line with the adopted targets. The focus is to develop a global fuel standard, with requirements for the use of sustainable shipping fuels with progressively lower climate impact, in combination with a market-based mechanism that is expected to enter into force in 2027.

In the past, the IMO has drawn up rules that should lead to increased energy efficiency in ships, but the effect of these is judged to be insufficient based on the goals of the Paris Agreement.

Emissions trading and requirements for reduced emission intensity for shipping within the EU

Through the EU's legislative package Fit for 55, policy instruments are introduced to reach the EU's climate goals by 2030. Already from 2024, shipping must be included in the EU's emissions trading system (EU ETS). All transport within the EU and half of the journeys to and from the EU will thus have to hand over emission rights for their climate impact and comply with the annual reduction of the emission ceiling in the trading system.
From 1 January 2025, the European requirement for progressively reduced emission intensity for
maritime fuel in ships that enter EU ports through the regulation on renewable fuels for shipping (Fuel EU Maritime) and the corresponding requirements for infrastructure for alternative fuels in ports through the regulation on the development of infrastructure for alternative fuels (AFIR). This means that the EU is taking important steps forward and enables reduced emissions from shipping throughout Europe.

National policy supports shipping's climate transition

The bunkering of shipping fuels for domestic transport in Sweden has increased over time and greenhouse gas emissions correspond to around 800 thousand tonnes of greenhouse gas emissions per year. At the same time, an increased transfer of goods from road to shipping can contribute to reduced emissions. In Sweden, there are a number of existing measures in place to promote both relocation and shipping's climate change. There are differentiated fairway fees that provide financial incentives for shipping companies to reduce their emissions. A national coordinator for shipping is tasked with promoting inland shipping and short sea shipping, but also energy-efficient solutions with low emissions of greenhouse gases. The national coordinator for inland shipping and short sea shipping is also tasked with working to establish so-called green corridors, i.e. fossil-free operation between ports (I2020/01135, I2020/01136).

The shipping industry itself has also set ambitious climate goals through its roadmap for fossil-free competitiveness, and several Swedish authorities have been tasked with restructuring the Swedish shipping fleet.

It is important that Sweden continues to support the Swedish shipping industry in its transition, especially as the EU is now introducing sharp policy measures for the industry. In this section, measures aimed at enabling a fossil-free environment are presented

and competitive shipping in Sweden. Table 9.7 summarizes this policy package.

Table 9.7 **Package of measures to speed up shipping's climate transition**

Package 1: Increased use of sustainable marine fuels	**Package 2: Introduction of zero-emission vessels**	**Package 3: Other rule changes for shipping's climate transition**
Fossil-free shipping (see section 9.6.2)	Promotion of electric fuels in the EU (see section 9.6.3)	Shipping's global climate transition (see section 9.6.1)
Cooperation for fossil-free marine fuels (see section 9.6.2)	Facilitate conversion to electric ships (see section 9.6.3)	Climate requirements for publicly funded shipping (see section 9.6.5)
	Support for fossil-free infrastructure in port (see section 9.6.4)	

9.6.1 Shipping's global climate transition is accelerating

The government's assessment: Shipping's global climate transition needs to be accelerated through more efficient ships, an increased use of sustainable shipping fuels, a conversion to ships with zero and near zero emissions and more efficient freight transport. Within the International Maritime Organization (IMO), Sweden should push for global requirements for the use of fossil-free fuels and an ambitious market-based climate control tool in line with the Paris Agreement's 1.5

degree goal. Sweden should also push for all greenhouse gas emissions and also smaller ships to be included in international
rules for shipping's greenhouse gas emissions.

The reasons for the government's assessment

The UN's work for shipping's climate change needs to be strengthened Like

aviation, shipping is often international and, as far as possible, governance should therefore be coordinated on a global level. Within the IMO, work is underway to develop policy instruments to reach the goal of net zero greenhouse gas emissions by or around the year 2050. This is positive both for the climate and for shipping's competition, as all shipping companies would meet the same requirements and pricing of greenhouse gas emissions. Within a few years, the IMO will also begin a review of existing rules for ship energy efficiency. Sweden should be a pusher for ambitious and effective policy instruments within the IMO.

The EU's climate control instruments for shipping are important but can be made more efficient Within the EU, there has been significant development in the shipping area. Shipping has gone from lacking governance at the European level to soon being covered both by the EU's emissions trading system (EU ETS) and the regulation on renewable fuels for shipping (FuelEU Maritime).

Both pieces of legislation will cover emissions from ships with a gross tonnage of over 5,000 carrying out transport within the EU. In addition, half of the emissions from ships carrying out transport between third countries and the EU are included. In addition to carbon dioxide, nitrous oxide and methane will also be included in the EU ETS from 2026. FuelEU Maritime will set requirements for the greenhouse gas intensity from energy use by ships.

Emissions must be reduced through gradual increased requirements, 2 percent reduction from 2025, 6 percent from 2030, 14.5 percent from 2035 and then gradually up to 80 percent from 2050. The government considers it positive that common rules are introduced for shipping's climate transition on a European basis level. It contributes to financial incentives for the companies that take the lead in the transition and to equal competition within the EU. In order to further improve the system, it is important that all shipping meets the same requirements.

The government therefore believes that Sweden should work to ensure that even smaller ships are included in the EU ETS and FuelEU Maritime.

Sweden should support the restructuring of Swedish shipping based on the agreements at global and European level

At the national level, emissions from fuels used for domestic shipping are included in Sweden's climate goals. In addition, in its report Sweden's global climate footprint (SOU 2022:15), the Environmental Policy Committee has proposed that half of the fuel for foreign shipping should be included in Sweden's long-term climate goals until 2045. The committee's proposal came before the IMO's global climate goals were tightened and before the EU's legislative package Fit for 55 were in port.

Within the Fit for 55 package, emissions trading is now being introduced for shipping emissions, as well as requirements for the use of sustainable fuels. These two instruments are of great importance for shipping's climate transition in Sweden, but also mean that Sweden's availability for emissions from shipping is reduced. There are e.g. limited possibilities for Sweden to set demands for higher mixing levels of sustainable fuels than the EU as a whole. The government therefore assesses that Sweden should not go ahead with including foreign shipping in the long-term climate goal until 2045. Instead, the government should push for excessively high ambitions for shipping's climate transition on a European and global level and support Swedish shipping's transition work in line with the global and European the agreements and the Swedish climate goals.

9.6.2 Increased involvement of sustainable and fossil-free shipping fuels

The government's assessment: The involvement of fossil-free shipping fuels is of central importance for shipping's climate transition. Increased cooperation is needed for the work with production and distribution of fossil-free fuels for e.g. shipping.

The reasons for the government's assessment

For the foreseeable future, a large proportion of ships will require liquid fuel for their propulsion. The involvement of sustainable and fossil-free shipping fuels is therefore of crucial importance for reducing shipping's greenhouse gas emissions alongside technologies for zero-emission ships.

Effective implementation of EU intervention requirements for shipping

At EU level, requirements have been introduced for the use of sustainable ship fuels with progressively lower climate impact at EU ports through the regulation on renewable fuels for shipping (FuelEU Maritime). The government considers it important that common rules are adopted for shipping within the EU.
The government believes that the focus should be on giving shipping operators opportunities to live up to the regulation's requirements in an efficient manner. Section 7.5 describes the government's measures to prepare production support for fossil-free fuels. Other measures should also be considered.

Increased collaboration for fossil-free fuels for shipping

The transition to sustainable and fossil-free fuels for shipping requires, just as for aviation, a comprehensive approach to involvement, production and infrastructure. Section 9.5.2 describes the Airport Investigation's proposal for the establishment of a fuel commission. In coordination with aviation, the government intends to increase collaboration around sustainable and fossil-free shipping fuels.

9.6.3 Promotion of electric ships

The government's assessment: Further measures should be taken to support the introduction of electric ships. It should be analyzed how ships powered by electricity and the conversion of ships to electric power can be promoted in an effective way. The European Commission is currently processing an application for an extension of Sweden's existing reduction of the tax on shore power for larger vessels.

Trafikanalys's proposal is partially consistent with the government's assessment. Trafikanalys proposes an extended tax reduction for shore current for smaller ships.

The reasons for the government's assessment

The transition to zero and near-zero emission ships is an important piece of the puzzle in shipping's climate transition. By running as many ships as possible on electricity, greenhouse gas emissions are reduced and at the same time, other sustainable shipping fuels are freed up for the rest of the ship fleet. Ships that travel relatively short distances and regularly use the same ports and quays have good conditions for electrification, for example in public transport. There are several companies that develop electric ships, and Swedish manufacturers are well ahead in this work. There is also a nascent market for conversion to electric operation and battery hybrid vessels, which enables a conversion of the existing vessel fleet as well.

Analysis suggests that the Energy Agency, in the same way as they analyzed support for electric aircraft, also analyze and propose how to promote electric ships. Against this background, the government believes that it should be analyzed how ships powered by electricity and the conversion of ships to electric power can be promoted in an effective way.

Tax reduction for electricity connection for ships

Diesel used as marine fuel in commercial traffic is tax-exempt. This applies both to the ship's propulsion and to
generation of electrical power on board the vessel. The tax freedom follows from a mandatory regulation in the energy tax directive, which is based on international conventions. However, Sweden applies a tax reduction of the energy tax for shore power, that is, electrical power consumed by ships in port. The tax reduction applies to ships in commercial traffic with a gross tonnage of over 400. The reason for the tax reduction is that the use of such electricity is considered to be a less harmful way of meeting the need for electricity for ships in port than burning bunker fuel on board such ships from an environmental point of view. The tax reduction achieves a more uniform taxation of purchased electricity and electricity produced by burning oil on board the ship.

The reduction therefore does not include electricity for propulsion of ships.

There is no support for a tax reduction for onshore power explicitly in the energy tax directive. It is therefore required that the Council unanimously, on a proposal from the European Commission, announce an exception in accordance with Article 19 of the directive in order for such a tax reduction to be implemented.
Sweden's current approval from the council expires on December 31, 2023, and the government is working for a renewed approval of the exemption for the current tax reduction. The approved exemption and thus the current tax reduction therefore only covers electricity that is consumed when the ship is in port. The European Commission is currently processing an application for an extension of Sweden's existing reduction of the tax on shore power for larger vessels.

9.6.4 Infrastructure for fossil-free ships is being expanded

The government's assessment: The expansion of charging infrastructure and tank infrastructure for electrofuels at ports should be promoted. In the budget bill for 2023, it was therefore decided that support for charging infrastructure at ports and quays should be applied for based on an existing budget allocation (expenditure area 21, 1:8 *Charging infrastructure).* appropriation

Traffic analysis's proposal is consistent with the government's assessment.

The reasons for the government's assessment

In order to enable the shipping industry's climate transition, charging infrastructure for electric operation and tank infrastructure for electrofuels at ports need to be expanded throughout the country. In the budget bill for 2023, it was decided that support

for charging infrastructure at ports and quays must be able to be applied for based on an existing budget allocation (expenditure area 21, allocation 1:8 Charging infrastructure).

Exemption from requirements for network concessions in ports

In order to enable investments in infrastructure for fossil-free shipping, the existing regulatory framework also needs to be reviewed. Requirements for network concessions for electricity networks in ports are considered to be an obstacle to the expansion of charging infrastructure for shipping. The main rule according to the Electricity Act is that permission is required to be allowed to build and use power lines, so-called
network concession. The procedure can be simplified by exempting power lines and power grids in ports from the requirements for network concessions. Trafikanalys proposes that an investigation be added to clarify how exemptions from network concession requirements can be introduced. The Energy Markets Inspectorate has also analyzed the problem and concluded that charging ships should be exempt from network concessions. The government intends to return to the issue.

9.6.5 Climate requirements for publicly funded shipping

The government's assessment: The public sector should use the tools available to support shipping's climate transition. Relevant authorities should continue to speed up the conversion of their
fleet where possible. Furthermore, the national coordinator for inland shipping should be given an extended and clarified mission to work for a fossil-free shipping industry in Sweden.

Trafikanalys proposal: Trafikanalys suggests in the report Proposals leading to the transformation of the transport sector (2022:14) that the climate requirements for the authorities' fleet should be developed. Furthermore, Trafikanalys proposes that the national coordinator for inland shipping be given the task of specifically working for shipping's climate transition.

The reasons for the government's assessment

Shipping is facing major challenges in converting to a fossil-free environment. The IMO and the EU are placing new demands on the restructuring of shipping, and emissions from domestic shipping need to be reduced in order to reach Sweden's climate goals. It is important that the state supports the shipping industry to adjust and at the same time develop its competitiveness.

Authorities create demand for fossil-free shipping

Publicly owned and procured maritime traffic accounts for around 40 percent of the emissions from domestic shipping. In order for Swedish players who are leading the way in the climate transition to be strengthened, there is a need for a demand for fossil-free technologies in shipping, both emission-free ships and sustainable shipping fuels. Swedish authorities account for a large part of the purchases of ships in Sweden, above all authorities such as the Swedish Transport Administration, the Maritime Administration, the Coast Guard and the Swedish Armed Forces. Most authorities have an overarching obligation to reduce their emissions of greenhouse gases according to the regulation (2018:1428) on authorities' climate adaptation work. The Swedish Transport Administration and the Maritime Administration also have

received a special assignment to investigate and produce action plans for a more Skr. 2023/24:59
climate-efficient fleet. However, other authorities do not have such a mandate. Traffic
analysis suggests that authorities' climate requirements develop. The government intends
to analyze how these requirements can be developed based on costs and availability. The
government assesses that there may be reasons for exceptions for certain socially
important activities such as the Swedish Armed Forces and in some cases the Coast
Guard.

A national coordinator for a fossil-free and competitive shipping industry

In order to support the work of moving more freight transport to sea, a national coordinator
for inland shipping was appointed in 2018. According to the assignment, the coordinator
has a promotion and knowledge-spreading function and must initiate collaboration within
Swedish shipping. The national coordinator has subsequently been given additional
assignments focusing on the green transition, e.g. about having a dialogue about the
implementation of the so-called
green corridors, i.e. routes served by fossil-free ships, and around environmental incentives
in ports.

Trafikanalys assesses that the coordinator fulfills an important function, but that the
mission should be broadened. In addition to the transfer of goods transport, the authority
believes that the coordinator should continue to support shipping
climate change. The government agrees that there is a need for further coordination of
shipping's climate transition and that the task should include relocation, to support Swedish
shipping's transition to emission-free ships and the use of sustainable shipping fuels.

The government intends to come back with a mission to the national coordinator to support
the transition to a fossil-free and competitive shipping industry.

10 The electricity and heating sector and waste

Sweden has come a long way in the transition with almost fossil-free electricity production
and heating. Emissions from electricity and district heating production have decreased
sharply since 1990 and accounted for 8 percent of emissions in 2021, which corresponds
to 4 million tons of carbon dioxide equivalents.
Between 1990 and 2021, emissions from burning fossil fuels have accounted for a majority
of emissions in the sector, and as fossil fuels have been replaced, emissions have
decreased.

The low emissions from the sector are explained by the fact that hydropower, nuclear
power and wind power account for a dominant part of electricity production, while district
and cogeneration production is largely biofuel-based.
The remaining emissions come mainly from burning fossil plastic waste in the district
heating sector. The electricity and heating sector will play a central role in the work on
climate change. The electrification of the industrial and transport sectors is crucial for
reaching the climate goals. For access to electricity as a prerequisite see section 7.5.

The electricity and heating sector has large point emissions of carbon dioxide that are
well suited for carbon dioxide capture. Regardless of whether the carbon dioxide is biogenic

or fossil, it is suitable for both storage (CCS) and use (CCU) as a raw material. Read more about the separation, use and storage of carbon dioxide in section 7.9. Waste incineration plants often burn waste that contains both fossil and biogenic fuels. If CCS is applied to these facilities, it will partly avoid emissions from the fossil part, and partly produce negative emissions from the biogenic part.

10.1 The fossil share of plastic in waste incineration should decrease

The government's assessment: In order for the electricity and heating sector to be able to achieve essentially zero emissions of greenhouse gases and reach the goal of 100 percent fossil-free electricity production by 2040, the proportion of fossil plastics in waste incineration needs to be reduced as far as possible. Both the Swedish and international markets should strive to replace fossil-based raw materials with sustainable bio-based or recycled raw materials. The government therefore intends to work to increase material recycling and that the conditions for reaching the EU's waste targets are in place.

Carbon capture and storage (CCS) and utilization (CCU) have the potential to both avoid emissions and create negative emissions in the electricity and heat sectors for plants burning biofuel or waste.

The reasons for the government's assessment

Fossil raw materials should be replaced with bio-based or recycled raw materials

The majority of the remaining emissions in the electricity and heating sector come from waste incineration. In 2021, the emissions from waste incineration were three million tons, which is five times higher than the emissions from waste incineration in 1990. The amount of Swedish waste that is incinerated has increased sharply since the landfill of organic waste was banned in 2005. The capacity and cost-effectiveness for energy extraction from waste incineration in Swedish facilities is high, which contributes to household waste being imported to Sweden for incineration.

Plastic is used in many products in society and has become part of our everyday life. Plastic has a major climate impact as around 99 percent of global plastic today is made from fossil oil and only around one percent from bio-based material. In order to reduce the emissions of greenhouse gases from electricity and district heating production, the emissions from plastic waste produced from fossil fuels should be managed by replacing the fossil-based raw material with bio-based or recycled raw material. The sorting of plastic waste from residual waste should also increase so that the incineration of plastic waste is reduced and material recycling is increased.

There are already several different bio-based plastic alternatives commercially, but they make up a very small part of the total volume. IVL The Swedish Environmental Institute assessed in a 2022 report that there is promising development and a slow but steady increase in bio-based plastics, but that it is first

around 2030, and thereafter, as bio-raw material for plastic, and plastic from bio-raw material, Skr. 2023/24:59
will be available in larger quantities.

Increased material recycling of municipal waste means reduced environmental and climate impact, extended value chains and the possibility of increased entrepreneurship with circular business models. By recycling material waste, reductions in greenhouse gas emissions can be achieved. The development towards reusing and recycling plastics is slow in Sweden.
About 80 percent of all plastic waste is incinerated today and only about 10 percent is recycled.

In Motala, a facility with the expected capacity to receive all plastic packaging from Swedish households has been built, partly with support from Klimatklivet, and thus become the world's largest sorting facility for plastic waste, which complements the source sorting that must take place in the collection of packaging waste close to the property. In addition to mechanical recycling, work is also underway with a facility for chemical recycling in Stenungsund, a so-called plastic recycling refinery, which has received support from Industriklivet.
By recycling materials and recycling plastic instead of burning it for energy purposes and instead of continuing to produce new plastic with fossil raw materials, greenhouse gas emissions are reduced and the chemical industry reduces its dependence on fossil raw materials (see also section 7.6.1).

At the same time, there is potential to remove the fossil emissions that despite efforts remain through CCS, see section 7.9.

Reduced waste incineration of municipal waste that can be recycled

The majority of municipal waste goes to incineration and just under 40 percent to material recycling and biological treatment, while only just under one percent is landfilled. Against the background of the benefits that an increased material recycling level entails through reduced environmental and climate impact, extended economic value chains and the possibility of increased competitiveness with circular business models, the government in the regulatory letter for 2023 tasked the Environmental Protection Agency with proposing measures with the aim of reaching the EU's material recycling targets. According to Directive 2008/98/EC of the European Parliament and the Council of 19 November 2008 on waste and on the repeal of certain directives (the waste directive), Sweden and the other member states must take all necessary measures aimed at achieving the goal of preparation for reuse and material recycling of municipal waste must increase to at least 55% by weight by 2025, to at least 60% by weight by 2030 and to at least 65% by weight by 2035. The targets have been introduced in Sweden in the form of stage targets in the environmental target system.

The material recycling level in Sweden was barely 40 percent by weight in 2021, which means that Sweden risks not reaching the target by 2025. At the same time, an investigation is underway within the Ministry of Climate and Business, which complements the Swedish Environmental Protection Agency's mission (KN2023/03088). Sweden risks fines if all necessary measures to achieve the material recycling target are not taken.

The government sees strong synergies between increasing material recycling and reducing emissions in the energy sector and intends to work to increase material recycling and that the conditions for reaching the EU target are in place.

Regulation within the EU and globally contributes to the work

The Commission has put forward several important proposals for new legislation to strengthen the transition to a circular economy where waste is prevented, reuse is increased and non-toxic material cycles with increased use of recycled materials are promoted. New legislative proposals being negotiated within the EU are, for example, a regulation on eco-design for sustainable products (COM(2022) 142 final) and a regulation on packaging and packaging waste (COM(2022) 677 final), which are expected to contribute to increased material recycling and the replacement of fossil plastics out to more sustainable alternatives.

Potential effects on greenhouse gas emissions differ between different product areas and materials. For example, the commission's analysis shows that significant reductions in greenhouse gas emissions can be achieved with the help of more circular measures according to the proposal for a new packaging regulation.
The packaging sector consumes 40 percent of the plastic and 50 percent of the paper in the EU. The overall aim of the proposed regulation is to reduce packaging waste within the EU by e.g. increased reuse and high-quality material recycling. This should steer the packaging sector towards climate neutrality by 2050, make it easier for consumers and increase competitiveness and Europe's degree of self-sufficiency.

The challenges with plastics are also cross-border, which requires global solutions. Therefore, the government intends to work proactively in the negotiations on a new global agreement against plastic pollution. Sweden intends to work for the agreement to cover the entire life cycle of plastics, including preventive measures, increased material recycling and reduced pollution from e.g. microplastics.

Great potential for carbon dioxide sequestration

Within the electricity and heating sector there are several large point sources with emissions of biogenic carbon dioxide. If CCS is applied to these facilities, negative emissions may be produced. Waste incineration in the electricity and heating sector burns waste of both fossil and biogenic origin. If CCS is applied to these, they will contribute both to avoiding emissions and to creating negative emissions. In the first place, the fossil parts in the waste should be reduced according to section 10.1 above, but if the waste streams were to remain fossil, CCS could be an alternative.

See section 7.9 for details on CCS including bio-CCS and CCU.

10.2 Increased circular handling of construction waste including excavation masses

The government's assessment: Soil and rock masses that arise during infrastructure and construction projects constitute a resource that should be used in a sustainable, expedient and transport-efficient way. The regulations should make it possible to reduce unnecessary transport of soil and rock masses.
The regulations governing the handling of the masses should therefore be reviewed.

The reasons for the government's assessment: The Swedish Environmental Protection Agency assesses that the annually, between 50 and 200 million tonnes of soil and rock masses occur in Sweden. It is an amount which, according to the Swedish Environmental Protection Agency, is greater than what society can utilize in a short-term and local perspective. Such large amounts of mass mean extensive transport. It is therefore important that the regulations do not lead to unwarranted transport, and thus emissions of greenhouse gases, by the fact that the masses cannot be used in the immediate area.
In a report on a government assignment, the Swedish Environmental Protection Agency has proposed a number of measures to promote the efficient use of excavated materials. A proposed measure is e.g. to enable the storage of masses for a longer period of time than today. At the same time, consideration must be given to the risk that the use of the masses leads to the spread of pollution and to the negative impact that the handling of large amounts of masses can have on the environment.
The government therefore intends to review the regulatory framework with the aim of increasing resource utilization and reducing the need for transport based on the Environmental Protection Agency's proposal and the advisory opinions that have been submitted.

11 Agriculture, forestry and other land use

A sustainable land use of forests and soil contributes to reaching the climate and environmental goals. The arable industries provide us with food as well as wood raw materials and biofuels that reduce the need for fossil materials and energy at the same time as carbon dioxide is sequestered in forests, land, wood products and other biomass. Production of biomass for energy and other purposes also provides conditions for reduced use of fossil raw materials through bio-CCU as well as negative emissions through bio-CCS, see section 7.9.

Sweden must have a high ambition in the work with nature conservation, biological diversity and ecosystem services both nationally and internationally and within the EU.

Well-being and viable ecosystems are important for the human living environment and provide the conditions for e.g. for biodiversity, sustainable food production, pollination of plants and clean drinking water. They are a prerequisite for dealing with the climate crisis and enable the extraction of sustainable biomass as an alternative to fossil products, materials and energy.
Well-functioning ecosystems are also an important tool for climate adaptation.

In international comparison, Swedish agriculture is climate-efficient with low emissions per unit produced. Productivity development in agriculture has been decisive in reducing greenhouse gas emissions. This has meant that fewer animals and inputs and less land have been needed for the same production, and thus reduced greenhouse gas emissions from both the animals and the fossil inputs. Swedish forest products, produced

through sustainable forestry and with high environmental requirements in industry, can contribute climate benefits by replacing fossil resources both in Sweden and in other countries when exporting. A reduction in Swedish production in the area

the industries could mean increased imports and decreased exports. If this results in the same or greater emissions of greenhouse gases, it means that the global climate benefit is lower than the national one. This is usually described as leakage. Climate initiatives within the land-based industries must have their starting point in competitiveness and climate efficiency. The landscapes and the arable industries need to deliver high climate and environmental benefits both in relation to commitments in the near term and over the longer term and into the next century, even in a changed climate.

Active forestry with high growth and the use of products from renewable raw materials provides the highest long-term climate benefits. Active forestry also enables a high net uptake in a changing climate. It is important to have high and sustainable forest growth, good forest health and a growing circular bioeconomy. The Norwegian Forestry Agency conducts consultancy for both increased sustainable production and climate adaptation.

Forestry has a high climate efficiency thanks to high resource utilization in integrated forest value chains. The forestry industry's investments have been high for the past seven years, approx. SEK 13 billion per year distributed among sawmills, pulp mills and paper mills.

Emissions and absorption of greenhouse gases from land use, such as forestry and agriculture, are regulated by the EU's LULUCF regulation (Land Use, Land-Use Change and Forestry). The common EU goal is that the member states' total carbon sink should increase from the current net absorption of approx. 265 million tons to 310 million tons in 2030. The net absorption from the land use sector in 2021 amounted to almost 42 million tons of carbon dioxide equivalents. A significant amount is primarily tied up in the Swedish forests. During the period 1990–2021, the net absorption from the land use sector has averaged just under 46 million tonnes of carbon dioxide equivalents per year, but has had a decreasing trend in the last 10 years. During the last ten-year period, growth has slowed while both felling and natural attrition have increased. The variation is large between years and the uncertainty surrounding the size of the flows is significant in this sector.

In agriculture, Swedish policy supports a so-called Food-systems-approach, increased productivity, resource efficiency in the entire value chain, scientifically based improvements, renewable energy production and conservation of biological diversity in the agricultural landscape.

In 2021, the EU decided on the EU's Common Agricultural Policy (CAP) for the program period 2023–2027. The implementation of the new program means a higher ambition in terms of environmental and climate measures. Sweden's strategic plan for agricultural policy 2023–
2027 was approved by the European Commission in October 2022. A central objective of the strategy is to achieve the food strategy's goal of increased food production while meeting relevant national environmental goals. In several parts, these goals work together within the plan, because efficiencies and improved use of production resources through investments, development measures and increased knowledge both result in increased productivity and reduced climate impact.

The plan includes new targeted support for one-year catch and catch crops such as is estimated to result in a storage of 244,000 tonnes of carbon dioxide equivalents per year. Other more targeted climate-related measures are investments in agricultural enterprises, including cover ditching and the establishment of energy crops,

support for construction of wetlands and irrigation dams, compensation for Skr. 2023/24:59 management of wetlands and ponds, better tools for precision farming and support for competence development and collaborative projects. In addition, certain basic conditions contribute to reduced greenhouse gas emissions.

The majority of emissions from agriculture are biogenic and have a different dynamic than emissions from fossil sources. This means, for example, that in the long term they break down in the atmosphere and do not have the same long-lasting effects as fossil emissions in cases where emissions decrease. These biogenic emissions also cannot be eliminated without production ceasing.

11.1 Reduced climate impact from agriculture through increased productivity

The government's assessment: Reducing the emissions of greenhouse gases significantly from agriculture in a cost-effective and competition-neutral way is more difficult than in other sectors. National policy instruments to reduce Sweden's emissions in agriculture must not hamper the sector's competitiveness or risk leading to the leakage of emissions. Continued
measures for increased productivity and resource efficiency can provide both lower greenhouse gas emissions and increased profitability in agriculture. As technological developments improve the possibilities of reducing emissions from the agricultural sector, Sweden should work to introduce a harmonized, accurate and cost-effective control towards reduced emissions at EU level. It is essential not to thereby distort competition on the food market, create leakage of emissions or inhibit food production.

The reasons for the government's assessment

The agricultural sector's emissions, which include emissions from animal feed digestion, handling of stable manure and emissions from fertilized and limed agricultural land, consist of approximately equal parts of methane and nitrous oxide.
Emissions of methane come primarily from ruminant feed digestion and a smaller part from handling stable manure, while emissions of nitrous oxide come from handling stable manure and from fertilized agricultural land.
In addition, a small part of carbon dioxide emissions comes from liming and urea use in agriculture. These emissions must eventually decrease in order for Sweden and the EU to meet their climate commitments.

National policy instruments to strengthen the climate efficiency of agriculture

The government assesses that it is difficult to reduce emissions from agriculture because they are tied to biological processes. Measures that reduce these emissions are continuously developed. National policy instruments to reduce agricultural emissions must take into account cost-effectiveness, the competitiveness of the sector and the risk of production moving to other countries. In the report Sweden's climate strategy (KN2023/03828), a national system is proposed that provides financial incentives to reduce emissions of greenhouse gases from agriculture. According to the proposal, the system should be designed so that the sector's competitiveness and profitability do not decrease at the same time. During a

transition phase, according to the report, the increased financial burden on agriculture should be compensated. The government's assessment is that it is not effective to direct governance towards Swedish agriculture that reduces Swedish agricultural production in favor of food imports because Swedish food production has low emissions in relation to the unit produced compared to many other countries. A particular aspect for agriculture is that there are significant difficulties in measuring emissions with sufficient precision and that the effect of measures is likewise difficult to verify. The government has therefore set aside funds in the budget bill to develop methods for measuring uptake and emissions from the agricultural sector and from the individual practical measures carried out on agricultural enterprises (see section 11.5 below). As knowledge about emissions increases, control instruments and measures need to be evaluated and possibly changed.

The government works broadly with measures that strengthen agricultural productivity and climate efficiency. There are several investment measures that are effective in reducing emissions that can currently be supported via the Climate Change (see section 11.6 below) and the EU's common agricultural policy. Within the framework of the strategic plan, which is Sweden's implementation of the EU's common agricultural policy, significant resources are allocated to support investments, innovations, method development and competence development that contribute to increasing productivity, resource efficiency and reducing greenhouse gas emissions from agriculture.
The efforts include a great diversity of actions. The government has also decided to finance a knowledge hub for the animal sector at RISE Research Institutes of Sweden AB, where issues of resource efficiency and profitability within the sector will be in focus. The hub, which has recently started its operations, shall, among other things, collect, compile and disseminate new research and knowledge, and contribute to filling knowledge gaps in Swedish animal production.

Harmonized governance within the EU can reduce emissions from agriculture and avoid the risk of carbon leakage

According to the EU's climate act, a climate target for 2040 must be drawn up. The law states that in the spring of 2024, the commission must present a proposal for the target level for 2040, which must be based on, among other things, recommendations from the EU's scientific council for climate issues. In that proposal, overall reasoning is also expected on what the architecture of the EU's climate policy might look like after 2030. In other words, discussions about the EU's climate policy after 2030 will intensify in the coming year (see section 5.3). In the report Sweden's climate strategy (KN2023/03828) it is proposed that Sweden should work for the introduction of harmonized control instruments to create economic incentives for reduced emissions in the agricultural sector. The government sees significant difficulties and risks with such a system, while joint EU instruments can reduce the risks of distorted competitive conditions. Bluntly constructed, such governance does not provide incentives for improvements in operations, but only forces reduced production and higher administration. As technological developments improve the possibilities of reducing emissions from the agricultural sector, Sweden should work to introduce at EU level a

harmonized, accurate and cost-effective management against reduced Skr. 2023/24:59 release. It is essential not to thereby distort competition on the food market, create leakage of emissions or inhibit food production. As regards emissions from fossil fuels used in agricultural machinery, the control of these should be handled in ETS 2 (see section 7.2).

11.2 Adjustments to the EU's new policy for increased net absorption in forests and land

The government's assessment: A coordinated implementation of Sweden's EU commitments in climate and nature conservation in forests and land should enable competitiveness, the development of a growing bioeconomy, and increased food supply.

The reasons for the government's assessment

The forest sector's climate benefit and competitiveness The

forest is a strategic resource for a robust Sweden as well as for jobs and growth. Swedish forestry is central to Swedish climate work and access to biomass is therefore of great importance to be able to realize a shift away from fossil materials and fuels. The growing forest is also crucial for biodiversity. The government prioritizes that Swedish forestry is not restricted but can fully contribute to achieving the climate goals, as well as to jobs and growth throughout the country. At the same time, a number of new EU legal acts are current which may affect Swedish forestry and the national forest policy. The government therefore believes that a review of the national forestry policy is needed in order to develop a future appropriate forestry policy that promotes long-term sustainable Swedish forestry and a growing bioeconomy.

Implementation of new EU legislation

Several existing and upcoming legal acts from the EU are related to the bio-economy, including the LULUCF regulation, the renewables directive, the deforestation regulation and the regulation on the restoration of nature as well as the certification framework for absorption and capture of carbon dioxide.

The revised LULUCF regulation, which was decided on 19 April 2023, means at EU level an increase in ambition with a total of 85 million tonnes of carbon dioxide equivalents in the EU. For Sweden, this means that the net intake must increase by approx. 4 million tonnes in 2030 compared to the average of 2016–
2018 as well as a commitment to a storage budget for the period 2026–2029.
For the period 2021–2025, the previous commitment to a so-called no-debit target applies, which means that the member states must ensure that uptake is not reduced compared to a predetermined reference level. The LULUCF Regulation contains certain flexibilities vis-à-vis the EU's Sharing of Responsibilities Regulation (ESR) which can be used to meet the commitment.

On 30 November 2022, the Commission presented a proposal for a Carbon Capture and Capture (CRCF) certification framework.
The certification framework is voluntary and covers the absorption and storage of carbon dioxide through so-called carbon farming, storage of carbon in products and permanent storage through technical measures. The goals of the certification framework are to encourage and to ensure high quality of the measures for absorption and capture of carbon dioxide within the EU.

The proposal for the EU regulation on the restoration of nature (COM (2022) 304 (final)) connects and must function in synergy with other policies within the green given, i.a. in the EU's strategies for biodiversity and climate adaptation. The proposal contains a number of binding goals and obligations for the member states regarding the restoration of various types of ecosystems, i.a. restoration and rewetting of ditched peatlands.

The Environmental Targets Committee (M 2010:04) has received an additional directive (dir. 2022:126) on developing a strategy for how Sweden should live up to its commitments within the EU and internationally for biodiversity and net absorption of greenhouse gases from the land use sector (LULUCF). In accordance with the bill on strengthened property rights, flexible forms of protection and increased incentives for nature conservation in the forest based on voluntariness (prop. 2021/22:58), the Norwegian Forestry Agency must produce a proposal for a national goal for increased sustainable growth in the forest.

The bioeconomy investigation (N 2022:07) reports on its work in developing proposals for a national strategy including follow-up targets for a sustainable, competitive and growing bioeconomy on 30 November 2023.

The directive on renewable energy entails the need for adaptations

The renewables directive sets the goal that at least 42.5 percent, and preferably 45 percent, of the EU's energy by 2030 must come from renewable sources.
This is almost a doubling of today's share of renewable energy, and can be compared to the previous target of 32 percent. All member states must contribute to the goal. The new binding target for the EU in the directive will mean that Sweden's contribution to the EU target will increase. In 2021, Sweden had a share of 63 percent renewable energy, half of which came from bioenergy.
Implementation of the directive entails the need for adaptations of national approaches and regulations.

11.3 Increase knowledge about and rate of rewetting of excavated peatlands

The government's assessment: The rate of rewetting of excavated wetlands in forest and agricultural land should increase. Knowledge-raising measures and dissemination of information to landowners and local actors about rewetting should be carried out in order for effective measures to be implemented. An investment in the restoration of wetlands, including a competence investment, should be carried out. Therefore, the government has proposed that funds be added to the purpose in the budget bill for 2023 (prop. 2022/23:1) and 2024 (prop. 2023/24:1). The effects of rewetting on greenhouse gas emissions and the soil's water-holding capacity should be studied. For Sweden to

be able to live up to current and future reporting requirements such as Skr. 2023/24:59 concerns wetland work, the legislation should be reviewed and the authorities' reporting routes are streamlined.

The County Board of Uppsala County's proposal (2022:14) complies with the government's assessment.

Referral bodies: The majority of referral bodies approve the proposal or have no objection to it. *The County Administrative Board in Östergötland County* believes that the need for funds for the implementation of the proposal is likely to be higher than SEK 15 million for the entire country, approximately twice that. *The municipality of Kiruna* points out that in continuing education and skills development, you need to take into account the local conditions that exist in the various counties. In the mountain municipalities above the cultivation limit, most of the land is owned and managed by the state. *The County Administrative Board in Västmanland County* underlines that competence development is not enough without concrete guidance for landowners and authorities involved should be included in the investment.

The reasons for the government's assessment

Increased investment in rewetting

Creating wetlands and rewetting peatlands is of great importance in reducing the emission of greenhouse gases, strengthening biological diversity and reducing eutrophication. Wetlands also strengthen the landscape's protection against drought, flooding and fire, which is important from a climate adaptation perspective. The road selection investigation identified in its report SOU 2020:4 that increased carbon sequestration and reduced leakage of greenhouse gases from excavated land are cost-effective climate measures, and proposed measures for 100,000 hectares which can provide a gradually increasing climate benefit that can amount to 0.5 million tonnes of carbon dioxide equivalents per year 2030 and approximately 1 million tons in 2045. The measure also contributes to reaching Sweden's commitment on rewetting which may be included in the EU regulation on restoration of nature (restoration regulation).

Ongoing negotiations on the Carbon Capture and Capture (CRCF) certification framework may change the conditions through increased financial incentives for landowners who want to take rewetting measures. However, it is too early to consider upcoming certification frameworks in ongoing rewetting operations, as the issue will not be prepared when the legal act is adopted.

The government's ongoing and permanent wetland investment comprises SEK 1,365 million during 2024–2026. In addition, there is support in the strategic plan for the common agricultural policy for wetland construction and management. In order to achieve targets regarding negative emissions by reducing greenhouse gas emissions, initiatives for biological diversity and contributing to the management of water resources and reduced eutrophication, the national investment needs to be strengthened in accordance with the government's budget bill for 2024. Land that produces the greatest climate effect should be prioritized at rewetting of peatlands. According to calculations from the Norwegian Forestry Agency, the funds for their rewetting activities alone could create a rewetting of up to 12,000 hectares of peatland, with an overall, cost-effective, net reduction of the

annual net greenhouse gas emissions of approx. 100,000 tonnes of carbon dioxide equivalents. The Norwegian Forestry Agency and several authorities have built up a support system for rewetting based on agreements with interested landowners.

Investment in increasing competence

The County Administrative Board in Uppsala County has proposed an investment in competence for increased choline binding through rewetting of previously excavated organic forest land. For this, the government assesses that a competence investment that includes knowledge-raising measures and dissemination of information to landowners and other actors about rewetting, such as e.g. consultants and companies working on rewetting measures should be implemented. The government agrees that it would be positive to have increased competence in the area.
Through a competence investment, the threshold for applying for funds is assessed to decrease and the quality of objects and projects to increase. It provides greater opportunities for more and more successful rewetting projects, which should lead to increased carbon sequestration and reduced release of soil carbon as well as reduced release of greenhouse gases such as methane and nitrous oxide.

Compliance with reporting requirements relating to wetland work

Wetland work requires access to data to estimate emissions and environmental quality and with the commitments and possibly stricter requirements that may follow from the restoration regulation, the access and quality of data will need to be improved and standardized. The data that is currently collected looks different between different grant systems and the way in which data on rewetting is collected varies. This makes national compilation of data difficult.
In addition, the same data is reported in different contexts, e.g. climate reporting and environmental target follow-up.

The government intends to analyze the need for changes to legislation or other measures to ensure that Sweden complies with current and future reporting requirements concerning wetland work at national, EU and UN level. The analysis should also include streamlining and standardizing the reporting routes and reducing the double and triple reporting that takes place within the county administrations' wetland work today, and avoid extra work for actors who carry out rewetting work.

11.4 Rules for water activities should be reviewed

The government's assessment: The regulations for water operations and land drainage should be revised. It is needed to facilitate the restoration and rewetting of land in order to increase the net absorption of greenhouse gases from land use. An overhaul is also needed to meet the needs of the land-based industries.

The Water Operations Investigation (SOU 2014:35) and the Swedish Environmental Protection Agency's proposal (FU23) largely agree with the government's assessment.

Referral bodies: The Water Operations Investigation's proposal for an investigation has the support of the majority of referral bodies. The Environmental Protection Agency's proposal has not been forwarded, but the Environmental Protection Agency has voted against it

the proposal with a number of authorities and others concerned, including Havs- Skr. 2023/24:59 and the water authority, the Forestry Agency, the county administrations, the Swedish Meteorological and Hydrological Institute and the water authorities who are positive about the proposal. The Swedish Agricultural Agency has opposed the proposal from the Environmental Protection Agency in FU23.

The reasons for the government's assessment: The majority of land drainage that has historically been carried out in Sweden has had the purpose of dewatering land for agricultural or forestry purposes. The major investments in soil drainage were made from the 19th century until the 1960s.
Drainage of arable land has been both requested and subsidized by the state. Today, new land drainage is mainly used to improve land before the development of new residential areas, roads or other public buildings.

For long-term sustainable food production, well-drained soil is a prerequisite. Crop growth is dependent on a favorable ratio between oxygen and water. It is therefore important that the soil is permeable and that the groundwater table is deep enough to give the roots enough space to develop. A well-drained soil can withstand longer periods of drought than soil with poorer drainage. The resources that are put into cultivation, in the form of seed, plant nutrition, plant protection products, fuel, labor and capital, also give greater returns on well-drained land.

The regulations on land drainage are outdated and cumbersome.
Permit and notification matters can involve extensive processes for landowners and often contain uncertainties and unpredictability that make it difficult to maintain good drainage. Many soil drainage companies are old and in some cases may even be out of date. The difficulty with the outdated legislation regarding land drainage has been noted on several occasions.

The Swedish Environmental Protection Agency and several other actors have highlighted that the legislation is also an obstacle in the work of rewetting wetlands. The authority and several other actors have found that it is both time- and labor-consuming to get started with and implement measures that increase the pace of implementing important climate and environmental improvement measures such as restoration and rewetting of wetlands. The difficulty of managing land dewatering operations has been highlighted as a major legal obstacle to wetland rewetting. Permit applications, notifications of water activities and various dispensation applications are also highlighted as obstacles as these processes take a long time. This means that it is both time- and labor-intensive to get started with and implement measures that increase the pace of implementing important climate and environmental improvement measures such as
restoration and rewetting of wetlands. The processes and regulations that are affected by various climate and environmental measures such as rewetting and restoration of previously ditched land, but also measures to be taken for climate adaptation, reduced eutrophication and the implementation of the Water Directive, have for a long time and by several authorities and other actors been highlighted as complicated and time-consuming The regulations for water operations and land drainage should therefore be reviewed.

11.5 Development of measurement methods and support systems in forest and agricultural land

The government's assessment: Methods for measuring uptake and emissions of greenhouse gases from forest and agricultural land should be further developed in order to be able to follow up the Swedish commitment in the LULUCF regulation in a better way. The government has therefore proposed in the budget bill for 2024 that funds be added for this purpose. In addition, the government has proposed in the budget bill for 2024 (prop. 2023/24:1) to add funds to method development to measure climate effects in practical agricultural production and to test measures to reduce agriculture's climate impact. Overall, these funds should contribute to building up knowledge of effective measures to reduce agricultural emissions as well as method development in order to better apply measures that improve agriculture's climate efficiency and to be able to calculate climate effects of measures within agriculture.

Growth analysis proposal (PM 2022:10) partially complies with the government's assessment.

Referral bodies: The majority of referral bodies approve the proposal or have no objection to it. *The County Administrative Board in Stockholm County* believes that it is unclear which method development is intended. *The County Administrative Board in Kronoberg County* emphasizes that it is extremely important to optimize the food supply. A balance needs to be achieved between getting a high yield, low use of inputs and low environmental impact. *The County Administrative Board in Västra Götaland County* is positive to the proposal, but points out that the emissions from agriculture largely relate to biological, dynamic and complex systems that differ between different locations. Furthermore, *the County Administrative Board in Västra Götaland County* believes that method development needs to take in the local scale and make the interventions compatible with farmers.

The reasons for the government's assessment

Better statistics for follow-up of Swedish commitment in the LULUCF regulation

Sweden has received a commitment to increase the carbon sink in the land use sector in the LULUCF regulation. Measures will be required both in forestry and on agricultural land. Even if the statistics that form the basis when Sweden's goal fulfillment is evaluated follow the accounting rules in the LULUCF regulation and the IPCC guidelines, there are problems from a follow-up perspective. It should be investigated how Sweden can develop measurement and reporting in order to obtain a better decision-making basis for policy development and a more legally secure evaluation of Swedish commitments vis-à-vis EU law. The Swedish Environmental Protection Agency has been tasked with analyzing, in cooperation with the relevant authorities, how the revised LULUCF regulation should be applied in Sweden (KN2023/03832). The assignment includes, in consultation with Sweden's University of Agriculture, analyzing opportunities to develop the Swedish system for inventorying and reporting emissions and uptake from the LULUCF sector. The assignment must be reported no later than

30 September 2024. An analysis work should be carried out with further- Skr. 2023/24:59 develop methods used to measure and report removals and emissions in the LULUCF sector.

Increased knowledge building about sustainable farming methods

The climate impact linked to animal husbandry, crop cultivation and other land use is difficult to measure and remedy. At the same time, it is important to be able to test, apply and develop measures that improve the climate efficiency of agriculture in practice. In terms of animal husbandry, for example, new solutions regarding feed additives have recently been developed to reduce methane emissions, but there are uncertainties regarding effects and consequences. New solutions also come about through new production methods and techniques that are developed at the farm level. Being able to test, measure and map climate effects from existing and new solutions in practical agricultural production facilitates agriculture's climate transition and the design of an effective environmental and climate policy. An improved state of knowledge is required both on a theoretical and applied level.

The Swedish Agricultural Agency has an important role in terms of support for trial and development projects on sustainable farming methods, not least to test measures that can reduce agriculture's climate impact. In combination with an increased investment in method development within climate reporting, the government's investment in method development to measure climate effects in practical agricultural production can provide important tools to target-oriented development work, to strengthen application and provide increased understanding for the application of new methods in practice.

The Norwegian Agricultural Agency's grant 1:19 Environmental improvement measures in agriculture may be used for experimental and development activities with the aim of contributing to the fulfillment of environmental quality objectives relevant to agriculture, especially A rich cultivated landscape, No eutrophication, Non-toxic environment and Limited climate impact. In order to carry out method development and experimental activities in agriculture, the grant is increased by SEK 10,000,000 for 2024. For 2025 and 2026, the grant is estimated to increase by SEK 15,000,000.

11.6 More effective promotion of emissions-reducing investments in agriculture

The government's assessment: In order to contribute to achieving Sweden's commitments in the ESR sector, operators in the agricultural sector need to make additional investments to reduce emissions of greenhouse gases. There are opportunities to apply for investment support for such measures today it should be analyzed how the support can promote investments for increased climate efficiency and reduced emissions of ammonia from agriculture in a more effective way.

The growth analysis proposal is partly in line with the government's assessment. *Growth analysis* proposes an investigation into a new investment support with a focus on measures that reduce air and climate emissions primarily from agriculture.

Referral bodies: The majority of referral bodies approve the proposal or have no objection to it. *Luleå University of Technology* believes that there is a risk that the proposed policy will not be carried out cost-effectively.
The County Administrative Board in Kronoberg County agrees that the regulations and the design of the support can be based on Klimatklivet, but should be able to be simplified and adapted for the sectors concerned. *The county administrative board in Kronoberg county* also sees a need for the county administrative boards to have a similar function as within Klimatklivet, i.e. advice, regional knowledge, etc. *The County Administrative Board in Västra Götaland County* points out that there are already opportunities within Sweden's strategic plan for the common agricultural policy 2023–2027 provide investment support that also provides increased nitrogen efficiency. Pointing out the possibilities there is an important and faster first step to take.

The reasons for the government's assessment: In order to contribute to Sweden meeting its commitments in the ESR, operators in the agricultural sector need to make additional investments that reduce emissions of greenhouse gases. Investments in reduced emissions of greenhouse gases can also result in reduced emissions of ammonia, which is important to meet commitments in the EU's Taqdir Directive (Directive 2016/2284), where Sweden has received a formal notification from the Commission due to exceeding the commitment for ammonia for 2020 . Agriculture is the dominant source of ammonia emissions.

Given the increased demands to reduce ammonia emissions that EU law may bring for agriculture, it is also important to support investments so that the industry can maintain its competitiveness. Several potential synergistic effects may arise for other environmental goals. For example, reduced nitrogen supply has a positive effect on the climate, the ozone layer, air pollution, eutrophication and acidification.

Today, it is possible to apply for investment support via the common agricultural policy (CAP), but the CAP funds are limited and are not sufficient for all the needs that exist. In October 2023, the government decided to notify the European Commission that there is no reason to revise the support in the strategic plan 2023-2027 due to the development of the legislation for ESR and LULUCF. Farmers can also apply for support for climate measures via Klimatklivet, but its design in combination with the complexity of agricultural emissions means that certain measures in agriculture find it difficult to compete. However, the possibility of applying for support via Klimatklivet has been appreciated by farmers because it is easier than applying for support from the EU's common agricultural policy.

The government assesses that efforts that lead to reduced emissions of both greenhouse gases and ammonia from agriculture can contribute to reaching Sweden's EU commitments, not least as the emissions often come from the same sources or from interconnected processes. It should therefore be analyzed how investments that lower the emissions of greenhouse gases and ammonia from agriculture can be promoted in a more efficient way.

11.7 Increased construction in wood and bio-based materials

The government's assessment: It should be analyzed whether national measures should be introduced as a complement to the funding that may result from the EU's certification framework in order to promote construction in wood. The analysis should include an assessment of whether mandatory declarations of carbon uptake in the construction of buildings can be an effective measure, as well as what obstacles there may be to building with wood and bio-based materials. Sweden should also promote sustainable construction, for example in wood, within the EU and internationally.

The reasons for the government's assessment: About 90 percent of all single-family houses and 10–20 percent of apartment buildings are mainly built of wood. Wood is also used otherwise in construction. Methods exist to handle e.g. fire and acoustics in wooden buildings and for building high-rise buildings in wood. High-rise wooden buildings have begun to be built in Sweden. The association Trästad Sweden has, among other initiatives, contributed to spreading knowledge and inspiration to increase wooden construction in Sweden. Apartment buildings built in wood have increased from 10 percent of apartment building construction in 2016 to 20 percent in 2019–2020. Sweden's competence and products in wooden construction can be exported and reduce emissions abroad. Building in wood creates a carbon dioxide sink over time and at the same time implies a substitution effect, i.e. that it replaces non-renewable materials. There are currently limited financial incentives for increased storage of biogenic carbon in buildings.

Despite the increased use of wood, the building materials in the construction sector also contain large amounts of fossil raw materials and materials that create large emissions of greenhouse gases during their production. There is great potential to reduce the use of these materials in favor of materials that instead sequester carbon that is stored in the house throughout the life of the house. The timber construction industry aims to build up a capacity by 2025 that can cater for 50 percent of apartment buildings and at least 30-35 percent of other buildings (offices, schools, nursing homes, hospitals, factories, sheds, etc.).

Sweden is far ahead in industrial wood construction and should promote wood construction within the EU and internationally. The government's foreign trade strategy points to Swedish know-how in the manufacturing industry, smart and sustainable cities, raw materials and new materials, as well as the green industries as important parts for raising Sweden's position as a prioritized green partner globally. Increased construction in wood and bio-based materials is included in all of these sectors. An increased Swedish investment in these areas is therefore considered to be able to increase Sweden's attractiveness for new green investments. Sweden participates in the New European Bauhaus Academy, the European Wood Policy Platform and the Forest and Climate Leaders Partnership's work with wooden buildings from sustainable forestry.

The EU's carbon capture and capture (CRCF) certification framework is proposed to include carbon storage in long-lived products, which should stimulate the use of products consisting of biogenic carbon and carbon captured from the atmosphere. The types of materials and under which conditions the storage can be certified will be specified in a detailed set of regulations within the framework of the CRCF.

It is uncertain how much of a stimulus effect the EU's certification framework can contribute. The Swedish Environmental Protection Agency should be tasked with developing proposals for how incentives for carbon storage in the construction sector can be designed as a complement to the funding that may result from the EU's certification framework.

The requirement for a climate declaration when constructing buildings was introduced on 1 January 2022 and today does not cover negative emissions. The government considers that the climate declaration should be expanded to, among other things, adapted to EU regulations and to include more building components and processes while limiting the administrative burden, see section 7.6.8. The government also intends to consider whether it should be mandatory to declare carbon uptake in wood and bio-based products as well as products that consist of captured carbon from the atmosphere.

The government considers that it should be analyzed what obstacles there may be to building with wood and bio-based materials, for example within the framework of detailed plans and planning regulations, and if necessary measures should be proposed. It can e.g. about the fact that detailed plans usually indicate a maximum building height, which means that wooden houses need to be built with fewer floors than other houses, as wooden buildings usually have slightly higher floor joists than other building systems, which means that wooden buildings are often a little higher than buildings with other materials with the same number of floors. An alternative, which many municipalities apply, is to specify the maximum number of floors instead of building height in the detailed plan. Technical properties such as fire protection, moisture protection, noise protection and durability should also be taken into account.

12 Work machines

In Sweden, there are a large number of work machines around the country with varied areas of use, in e.g. construction, maintenance of roads, housing and premises, but also in industry, agriculture and forestry and fishing.
Greenhouse gas emissions from work machines amounted to 3.3 million tonnes in 2021, which corresponds to seven percent of the total national greenhouse gas emissions. Emissions are lower compared to 2010 but have increased since 2018. Reduced emissions from work machines contribute to achieving Sweden's commitment according to the responsibility sharing regulation (ESR). When it comes to e.g. agricultural work machines, the goal is hampered by the fact that there are no electrified alternatives for all uses.

Most of the fuel used in work machines is covered by the reduction obligation. There is also the use of pure and highly blended biofuels such as HVO100, RME100, ED95, biogas and E85 which are not covered by the reduction obligation. Fuels used in agricultural industries are included in the reduction obligation, but are also covered by rules that enable the operator to receive a refund of parts of the fuel tax. In 2022, 2023 and 2024, an extended reduction is given to the tax on diesel used in work machinery and in ships and certain boats in professional agricultural, forestry and aquaculture activities.

If oil and gas prices exceed a certain level, a European greenhouse gas emissions trading system could be introduced in 2027 or 2028

of buildings and road transport as well as some smaller industries (ETS 2). Skr. 2023/24:59 The government intends to include all fuels in ETS 2 and thus the emissions of work machines will also be covered by the new European trading system.

This section presents which additional measures the government deems necessary to realign the work machines and contribute to the government's overall goal of reaching all the way to zero net emissions by 2045 at the latest.

12.1 The EU needs to steer towards fossil-free work machines

The government's assessment: Sweden should work for the EU to promote fossil-free work machines.

The reasons for the government's assessment: Since 1997, the EU regulates emissions of air pollutants from engines used in work machines, but the regulation does not cover emissions of greenhouse gases or energy consumption.
The government believes that it is difficult to introduce national restrictions on emissions from work machines as the Swedish market is too small for the large manufacturers of work machines to develop machines specifically adapted for Sweden. Similar to the emissions from light and heavy vehicles, emissions from work machinery should also be regulated at EU level in order to create uniform conditions of competition in the internal market.
The requirements need to take into account that work machines are a heterogeneous group with different functions and conditions. Rules for emission requirements that are set for the entire European market can also provide strong incentives to manufacturers of work machines to adjust production to meet the requirements.

12.2 Register for work machines

The government's assessment: There are several advantages to a register for work machines, e.g. when checking climate requirements during procurement. However, there should not be legal requirements for the registration of work machines.

The Swedish Transport Agency's proposal partially agrees with the government's assessment. The Swedish Transport Agency proposed an extended registration obligation for work machines.

The reasons for the government's assessment: Emissions from work machines have increased in recent years, which means a deviant trend compared to other sectors. At the same time, there is a lack of opportunity to comprehensively follow up the emission development for work machines. In February 2021, the Swedish Transport Agency was tasked with investigating the conditions for developing the record keeping of work machines. The background to the assignment was primarily that the government saw a need for an increased opportunity for governance, control and follow-up of work machines.

To facilitate the procurement of work machines, several actors, both public and private, recommend a register for work machines. A register would facilitate the possibility of setting environmental requirements and following up on that

the actors use such machines as promised. The climate benefits arise above all for construction machinery used in larger procurements.
A register also has a number of other positive added values. A registry can make theft, fraud and money laundering more difficult. Even when it comes to work environment and work safety, there is an added value in the form of better control, which a register can contribute with. The government therefore believes that a work machine register should be introduced.

The government considers that a voluntary register has several advantages over a mandatory register with regard to acceptance and the risk of unnecessary administration, especially for smaller companies. There are examples of voluntary registers for work machines in Norway. The Norwegian work machine register is run by a foundation and financed by a relatively low connection fee. It has a high degree of connectivity within the construction machinery segment. However, a voluntary register means at the same time that some of the added value that a registration obligation entails is limited, above all the possibility of being able to better map and calculate the climate and air emissions from work machines. The government assesses that there are clear incentives for the industry's actors to build up and run a voluntary register for work machines on their own.

12.3 Support for market introduction of environmental work machines

The government's assessment: The grants that the government has proposed in the budget bill for 2024 to strengthen climate premiums promote the market introduction of environmental work machines and thereby enable reduced emissions.

The reasons for the government's assessment: The market introduction of electric work machines is at an early stage where new sales are at very low levels. The product range has gradually grown in recent years to include increasingly larger and heavier work machines. According to the Energy Authority, the trend is primarily towards electric work machines. Since 2020, investment support for electric work machines has been given through the regulation (2020:750) on government support for certain environmental vehicles (climate premium). In 2022, work machines and tractors that run on vehicle gas, bioethanol or that are hybrids were also included among the eligible vehicles (environmental work machines).

In 2021, the power limit for electric work machines was lowered to 15 kW and in 2022, the possibility to pay support was also opened for work machines that cannot be registered in the road traffic register. The number of applications for support for electric work machines has increased rapidly, from ten in 2021, 83 in 2022 and during the period January to August 2023, 81 have been received. Interest in work machines powered by biogas or ethanol is currently low and only four applications have been received so far. However, there is ongoing development in the area that could mean increased interest in support, for example there is now access to work machines that run on vehicle gas in agriculture. There is also ongoing development of powertrains that use

hydrogen in conventional combustion engines, which can enable Skr. 2023/24:59 phasing out of fossil fuels in certain segments.

As of 1 January 2024, support may no longer be given for the purchase of work machinery powered by bioethanol and vehicle gas, including biogas supported by the General Block Exemption Regulation (GBER). The vehicle gas used in Sweden consists predominantly of biogas and the bioethanol is produced from renewable raw materials. Work machines powered by bioethanol or biogas thus contribute to reducing greenhouse gas emissions compared to vehicles powered by diesel, vehicle gas of fossil origin or other fossil fuels. The government will analyze what opportunities exist to give these work machines continued support.

In order to continue to promote the market introduction of environmental work machines, the government has proposed in the budget bill for 2024 an increase in allocations 1:17 Climate premium.

12.4 The need to promote charging and tank infrastructure for work machines should be analyzed

The government's assessment: The need to promote charging and refueling infrastructure for work machines and facilitate the conditions for changing and transporting batteries for work machines should be analysed.

Growth analysis's proposal is partially consistent with the government's assessment. Growth analysis suggests that an authority group should be formed to draw up a national action program for charging infrastructure for work machines and design a proposal for earmarked support for charging infrastructure for work machines.

Referral bodies: The majority of referral bodies approve the proposal or have no objection to it. The energy companies believe that electric work vehicles and the charging infrastructure for them have special conditions that need to be taken into account, e.g. need for mobile battery solutions, need for battery replacement solutions, need for specially adapted charging solutions for different types of work machines/use cases and that electric work machines have the potential to greatly improve the work environment (and the immediate environment next to the construction site), with, for example, reduced noise and elimination of local emissions. *The County Administrative Board in Gävleborg County* believes that the proposal's prerequisites already exist to a large extent within Klimatklivet.

The County Administrative Board in Kronoberg County does not support the proposal, but instead wants to see faster implementation of support for charging and refueling infrastructure for work machines. This can be proposed by giving a task to the Environmental Protection Agency to adapt the regulations for Klimatklivet so that it can include support for work machines. Alternatively, the Swedish Environmental Protection Agency is tasked with developing special support that is coordinated as far as possible with Klimatklivet.

The procurement authority views the proposal positively but emphasizes, in light of the fact that work machines are included in the contracts that are procured, that the proposal may need to be supplemented. The authority believes that dialogue needs to be conducted with actors, including client networks, in the value chains within

the machinery and construction industries to ensure quick implementation and the desired effects.

The reasons for the government's assessment: A functioning charging and tank infrastructure for work machines is an important component in the transition to work machines with low emissions or zero emissions. High battery weights and difficulties in connecting to stationary charging points in the electricity grid are particular obstacles to the electrification of work machines with large power requirements and which are used over large geographical areas. This contributes to less commercial demand for heavy electrical machinery at the moment. Extensive testing and development work is underway to find workable solutions for such work machines, for example through battery replacements. Work machines may, in addition to charging stations, also need support for systems for battery replacement and transport of batteries, infrastructure in the form of electricity for direct operation, which is a difference compared to charging infrastructure for vehicles in road traffic. Another difference is that the charging infrastructure can be temporary such as e.g. during road or tunnel construction. Work machines also need opportunities to fill up with hydrogen gas for fuel cells or for the use of hydrogen gas in the internal combustion engine as well as other fossil-free fuels.

Within the framework of the Klimatpremien and Klimatklivet, it is possible to apply for support for the machine as such, but there is currently no special support specifically intended for charging and refueling infrastructure for work machines. Both of these parts need to work for a changeover to take place and the market introduction needs to go in step with the expansion of the charging and tanking infrastructure, just like for road transport. The government shares the view *of the County Administrative Board in Kronoberg County* that an action plan is not obviously necessary, but that the need to promote charging infrastructure for work machines should be analyzed. Although today there is no

support scheme with the specific purpose of supporting charging and refueling infrastructure for work machines, there are several examples of companies that have received support for charging infrastructure for work machines from Klimatklivet according to the regulation (2015:517) on support for local climate investments. A wide range of technical solutions with different business models is being developed and an analysis is therefore needed if the current opportunities for support are appropriate or if further efforts are needed.

12.5 Procurement for work machines

The government's assessment: The state, municipalities and regions can promote manufacturers' transition to fossil-free work machines by coordinating the requirements so that they become more clear, uniform and long-term. The government intends to investigate the possibility of coordinating the requirements in the public procurements that include work machines.

The reasons for the government's assessment: Harmonized requirements for work machines' environmental performance and energy use as well as market signals through harmonized quality criteria in tender evaluation models can potentially be effective in reducing

environmental impact from procured contracting services. State authorities - Skr. 2023/24:59 names, municipalities, regions and public construction, energy and water companies, set different requirements for similar needs and they describe similar needs in different ways. It can therefore be difficult for the companies to submit tenders in similar procurements, but also difficult to assess whether there is sufficient demand for fossil-free work machines for them to dare to take the investment risks associated with converting to fossil-free machine parks.

In order to support a broad transition to fossil-free work machines, the requirements need to be coordinated. The government therefore intends to investigate the possibility of coordinating the requirements in the public procurements that include work machines.

13 Public leadership

Climate change is the major global structural transformation of our time, and clear leadership is needed to enable a rapid and effective transition throughout the country at reasonable costs for society while maintaining prosperity. The public sector has an important role in creating the conditions for the transition as well as stimulating, enabling and removing obstacles for companies, private individuals and civil society to switch to fossil-free energy. In this way, the climate policy action plan can be understood as an overarching plan for what the structural transformation to zero net emissions should look like and what demands on society the transformation places.

An important part of the concrete implementation of the policy to reach the climate goals needs to take place through efforts at local and regional level. Through spatial planning, land use and construction, the physical framework for society is formed. Municipalities and regions, with their broad area of responsibility and proximity to community building and community development, have an important operative part in the implementation of climate policy. Public procurement is another example of an opportunity for municipalities and regions to influence the climate footprint. Municipalities and regions need clear mandates and tools to reduce their climate impact.

Business has an important role in the transition. Within the framework of the Fossil-free Sweden initiative, 22 industries have produced roadmaps for fossil-free competitiveness that describe the path towards net zero emissions and identify which conditions need to be in place for the transition to be possible. Public leadership includes creating the conditions for business to change. Fossil-free Sweden's roadmaps are an important basis for this. Another example is the national climate meeting that the prime minister invited for June 16, 2023. The meeting had been preceded by roundtable discussions with companies in various industries and gave the government a good opportunity to take part in views on how the government can create the conditions for Sweden, that the sector for sector, must reach all the way to net zero emissions by 2045.

Clear public leadership will be decisive for Sweden to meet the Riksdag's goals as well as commitments within the EU and the UN. IN

this section describes the government's sector-wide measures within public leadership linked to goals, authority governance, public procurement and local and regional climate change.

13.1 Effective management of climate policy

The government's climate policy is about taking Sweden all the way to zero net emissions of greenhouse gases by 2045. The climate issue should permeate the policy so that conditions are created for the whole of society to participate in the climate transition. To cope with this, climate policy work needs to be integrated in all relevant spending areas. This means that the climate goals and the effort to reach them should be captured in the government's various processes.

13.1.1 The climate goals are integrated into relevant societal goals

The government's assessment: The climate perspective needs to be clear in the targets for the expenditure areas where it is relevant. In connection with the review of targets within expenditure areas that have a direct or indirect impact on greenhouse gas emissions, the climate impact and climate targets should be considered in a relevant way in the target formulation.

The Environmental Goals Committee's proposal is consistent with the government's assessment.

The referral bodies mainly endorse the Environmental Objectives Committee's proposal. *The Public Health Agency, the Research Council for the Environment, Regional Industries and Community Development, the Chemicals Inspectorate, the Swedish Consumer Agency, the Nature Conservation Society, the Norwegian Geotechnical Institute, the State Office, the World Wildlife Fund WWF* and a majority of the county administrative boards, several municipalities and several other actors recommend that the climate issue should be integrated into all policy areas and sectors and at all leve *The Research Council for the Environment, Land Industries and Community Development* believes that the integration of the climate issue is a prerequisite for the transition to be possible at all. *The World Wildlife Fund WWF* believes that several policy areas have an emission reduction potential that is greater than Sweden's domestic annual emissions. This includes, for example, consumption policy as well as business, innovation and export policy where significantly stronger climate control measures could be introduced. The same applies to the state's ownership governance and the frameworks for financial market actors, including the AP funds.

Royal The Academy of Forestry and Agriculture (KSLA) and *Svensk Kollektiv-trafik* support the committee's proposal that the government, in connection with the review of the social goals, revise them so that they are compatible with the climate goals. *The Nature Conservation Society* believes that all policy areas must of course stay within the emission space, in the same way that all policy areas together must stay within the state's budget framework. If there are societal goals in conflict with the climate goals, this should be dealt with immediately, as political governance that works against itself benefits no one.

The Economic Institute is positive about the proposal as it could conceivably facilitate for the Swedish Transport Administration's work with the orientation basis for long-term infrastructure planning where the accessibility goal needs to be weighed against climate policy goals. However, this does not mean that the climate goals should be superior to other societal goals.

The Swedish Chamber of Commerce disapproves of the proposal. The way in which politics in Sweden is conducted today, with joint preparation within the Government Office, should, according to Swedish Business, be the basis for integrating the climate issue into other policy areas. The seriousness and complexity of the climate issue means that climate policy needs to be taken into account when designing other policy areas, such as economic policy. This does not mean, however, that these policy areas should be subordinated to climate policy or that other social goals should be subordinated to the climate goals.

The reasons for the government's assessment: The climate goals that the Riksdag has decided on for 2030, 2040 and 2045 are sector-wide. The government states that actors in all sectors and at all levels need to contribute in order for the climate goals to be reached.

The Environmental Goals Committee states that climate policy is complex and is not solely a task for environmental policy. The ambitious emissions target set for 2045 means that the government needs to take greater and integrated responsibility for climate policy. The Climate Policy Council has also repeatedly emphasized the importance of sector integration to achieve success in climate policy.
In the annual report for 2023, the council recommended that the government carry out a review of relevant social goals during the mandate period to ensure that goals and governance are compatible with the climate goals.
In its review of Swedish climate policy, the National Audit Office has recommended that the government coordinate the climate goals with other overarching societal goals (Climate for money? Reviews in the climate area 2009–2013, RiR 2013:19).

Swedish Business Confederation questions the proposal with reference to the government's collective decision-making and the joint preparation procedure.
The government considers that the goals are important for the government's work. Therefore, the climate perspective should be clarified for societal goals where relevant. This does not mean that the climate issue would thereby become superior to other social goals.

According to the government, climate and environmental issues need to continue to be integrated into work in all sectors and at all levels of society. Conflicting interests needs to be highlighted and analyzed as a basis for political trade-offs between different interests. Climate impact and climate targets should therefore be considered in the formulation of targets in connection with the review of targets in expenditure areas that have a direct or indirect impact on emissions of greenhouse gases.

13.1.2 Identify obstacles to a rapid transition to 2045

The government's assessment: An authority should be tasked with identifying obstacles in the transition to zero net emissions by 2045 at the latest.

The reasons for the government's assessment: In the report Sweden's climate strategy (KN2023/03828) it is proposed that the government give an authority the task of identifying thresholds and bottlenecks in the transition. The government shares the assessment that there is such a need. The challenges of implementing the transition to a fossil-free economy with zero net emissions by 2045 change over time and are affected by factors that are difficult to predict. It concerns, for example, companies' investment decisions, technological development, raw material prices, international trade, economic development and EU regulations. In order to meet this, an appropriate authority should be tasked with following developments and continuously analyzing the conditions for the changeover and identifying obstacles that may make it difficult for companies, organizations, private individuals and public actors to make the necessary decisions.

13.1.3 Developed authority governance linked to climate change

The government's assessment: Authorities' tasks linked to climate change should be specified in the authorities' instructions.

The Treasury's proposal is consistent with the government's assessment.

The reasons for the government's assessment: According to the Climate Act, the government's climate policy work must be based on the long-term emission target that the Riksdag has established, that is, that Sweden must not have any net emissions of greenhouse gases into the atmosphere in 2045, and that the emissions thereafter must be negative. The changeover is a unique opportunity to take advantage of the growth potential that the industry's changeover represents and strengthen Sweden's resilience against global disruptions. In order to get there, it will be central to ensure that the structural transformation keeps pace and can take place without major social and economic wear and tear. The transition can also, if it is carried out in the right way, contribute to strengthening Sweden's preparedness and the ability to adjust and produce even in a recession and in the event of a crisis or war. Climate change basically affects all policy areas, e.g. economic policy, energy policy, regional development policy, education policy, labor market policy and transport policy.

An important part of the work to realize a long-term sustainable climate policy is the governance of the authorities. The State Office has recently, on behalf of the government, evaluated the authority's management in the climate area and has identified some shortcomings and submitted proposals on how the management can be developed (State Office report 2022:14). The State Office states that the government's governance of the authorities has not sufficiently met the long-term requirements set by the Climate Act. Steering towards the climate goals often takes place through short-term assignments in the authorities' regulatory letters or through individual special government assignments.

According to the State Treasury, governance is often perceived as jerky, which makes it difficult for the authorities to contribute to climate change. It leads i.a. to the fact that the authorities find it difficult to build competence and processes that respond to the Climate Act's long-term requirements. The State Treasury assesses that these shortcomings together make it difficult for the authorities to contribute to the climate goals in an efficient manner. The State Office's overall assessment is that

In order to develop governance, the State Treasury proposes that the government specify in the relevant authorities' instructions which tasks the authorities have to contribute to achieving the climate goals. Through clear and business-adapted information in the relevant authorities' instructions, the authorities are given better conditions to contribute to reaching the climate goals. It improves the authorities' conditions for planning and prioritizing operations with regard to the climate goals, as well as making it possible for the authorities to build up competence in the field in the long term. It would also make it easier for the authorities to take initiatives in the climate area themselves within the framework of their duties. The government's assessment is that the instruction is the basic instrument in the government's management of the authorities (prop. 2009/10:175) and that the management of the state administration must be strategic, adapted to operations and enable authorities to focus on their core tasks (prop. 2023/24 :1 spending area 2).

The assessment is consistent with recommendations that the Climate Policy Council has submitted to the government (Climate Policy Council's annual reports for 2020 and 2023). The council suggests that the government should more clearly point out the responsibilities of the relevant authorities within the climate policy framework, preferably in the authorities' instructions, and that the authorities be given a standing task to contribute to the climate policy action plan. Furthermore, the Climate Policy Council believes that it should be part of the relevant authorities' instructions to follow up the climate transition, identify efforts to reach zero emissions and contribute proposals to the climate policy action plan within their areas of responsibility.

In the report Sweden's climate strategy (KN2023/03828) it is proposed that all authorities should be given a task to contribute to the transition and be responsible for constructively reducing contradictions between the interests they are set to guard and the overall societal interest in implementing an economically and socially acceptable structural transformation to climate neutrality.
The government shares the view that it is central to ensure that the structural transformation keeps pace and can take place without major social and economic wear and tear and that the governance of the authorities is an important part of the work to realize a long-term sustainable climate policy. At the same time, the government underlines that the management of the state administration must be strategic and adapted to operations.

The government shares the assessment of the State Office and the Climate Policy Council and the direction in the proposal from Sweden's climate strategy (KN2023/03828) that the management of relevant authorities should be reviewed to enable more long-term management based on the climate act. Through clear information in the relevant authorities' instructions, the authorities are given better conditions to contribute to reaching the climate goals, strengthen competitiveness and Sweden's preparedness in the short and long term. It also improves the authorities' conditions for planning and prioritizing operations with regard to the climate goals, as well as making it possible for the authorities to build long-term competence in the area. It would also make it easier for the authorities to, within the framework of their tasks, take initiatives themselves that ensure a green transition in the climate area.

13.2 Public actors are important for climate change

To be credible in the work towards net zero emissions by 2045, the state needs to set a good example. Government activities must be long-term sustainable and at the same time stimulate climate change and sustainable development. A significant part of consumption's environmental impact occurs through public consumption.

13.2.1 Public purchases that stimulate the development of circular and fossil-free goods and services

The government's assessment: The public sector should demand climate-smart products and services and contribute to the development of new green technologies if the nature of the procurement justifies this. In order for business to be given good conditions to meet the public's demand for, for example, climate-smart products and develop appropriate climate-smart solutions, it is easier if the public demand is clear, uniform and long-term. It can increase predictability for suppliers, facilitate their transition to fossil-free services and products and reduce their investment risks when commercializing new climate-smart solutions. The government therefore intends to investigate the possibility of coordinating the requirements in public procurement in different sectors.

The reasons for the government's assessment

Public procurement has a turnover of almost SEK 900 billion per year. These funds can be used more efficiently. There is potential to give citizens the best possible product or service for the money, while the purchases contribute to achieving the climate goals. Through a clear, uniform and long-term public demand, business is given better conditions to submit tenders in procurements with existing climate-smart products and services, but also to dare to invest in the development of fossil-free solutions and green innovations.

Business demands uniform and long-term public demand In Fossilfritt Sweden's follow-up of roadmaps for fossil-free competitiveness (Fossilfree Sweden 2022), several industries state that uniform and long-term public demand would increase the conditions for finding funding to develop technologies from the prototype stage to market introduction. Today, public organizations with a significant climate impact, such as state authorities, municipalities, regions and public construction, energy and water companies, set different requirements for similar needs and describe similar needs in different ways. This makes it difficult for business to submit tenders in similar procurements, but also difficult to assess whether there is sufficient demand to take investment risks for new solutions, especially for small and medium-sized companies. This has also emerged in the government's round table discussions with trade associations

which was carried out within the framework of the government's review of the national Skr. 2023/24:59
the procurement strategy that began in spring 2023.

Increase the coordination of public purchasing power

Public businesses have an annual turnover of almost SEK 900 billion distributed among over 4,000 organisations. The Procurement Authority's analyses, however, show that purchases are concentrated in a smaller number of procuring organisations. 103 organizations together accounted for 80 percent of the amounts paid out in 2019 (Procurement Authority Report 2020:4). As most of the public purchasing power is concentrated in around a hundred organisations, there should be good opportunities for coordination. The majority of the organizations are municipalities and regions. Coordination therefore needs to take place with consideration of municipal autonomy.

Further knowledge is needed to determine in which areas it is most important to take measures to coordinate demand. The government therefore intends to investigate the possibility of coordinating the requirements in public procurement in different sectors.

13.2.2 Environmental management systems in government operations are developed to promote climate change

The government's assessment: The environmental management systems in government operations should be developed to further contribute to climate change in a cost-effective manner.

The reasons for the government's assessment: Environmental management systems help organizations improve environmental work by focusing on the right things in planning, implementation, follow-up and improvement of operations.
Close to 190 government agencies have environmental management systems in accordance with the requirements of the regulation (2009:907) on environmental management in government agencies. Environmental management systems create the conditions for authorities to consider the environmental perspective in the implementation of assignments so that it is done systematically and leads to continuous development. The authorities' activities give rise to different types and degrees of environmental impact. In February 2020, the government commissioned the Swedish Environmental Protection Agency to review the regulation (2009:907) on environmental management in government agencies. The Swedish Environmental Protection Agency presented its mission to the government in October of the same year. The government believes that the green transition means great opportunities for Swedish competitiveness and social development and that the state should be an active party in this work. The government therefore intends to review how the environmental management system in government operations can be developed to further contribute to climate change.

13.3 Climate change throughout the country

An important part of the implementation of the climate policy needs to take place through efforts at local and regional level. In this, municipalities and regions have a

central role because they are responsible for spatial planning and construction, local and regional transport infrastructure, public transport, local traffic regulations, environmental supervision, technical infrastructure and are responsible for regional development. Municipalities and regions are also owners of companies with large property holdings. Municipalities also own companies that produce and distribute electricity and heat, port companies and companies that handle water and waste issues. Furthermore, the municipalities are large owners of land with influence over land use within important activities such as ports, airports, industrial facilities and together with the regions, the municipalities are responsible for a large part of public procurement, which means good opportunities to reduce greenhouse gas emissions. Regions are also responsible for regional development. They are tasked with drawing up and determining a strategy for the county's development and coordinating efforts to implement the strategy. Economic, social and environmental sustainability must be an integral part of analyses, strategies, programs and efforts in the regional development work. In this way, municipalities and regions are responsible for a range of activities and development issues that are absolutely central to reducing emissions of greenhouse gases in the short and long term.

In each county there is a county board which is responsible for the state administration in the county, to the extent that no other authority is responsible for special administrative tasks. The county administrative boards must, according to their instructions, i.a. promote the county's development and, based on a state-wide perspective, work cross-sectorally and within their area of responsibility coordinate various societal interests and the efforts of state authorities and work to ensure that national goals have an impact in the county, while at the same time regional conditions and conditions must be taken into account. They are thus central to the work with i.a. climate change must have an impact throughout the country.

Sweden's climate goals, as well as commitments within the EU and the UN, require that the state, the municipalities and the regions take clear public leadership and work together to ensure that the implementation of the climate transition takes place in a sustainable and efficient manner throughout the country. Prior to the work on the government's climate policy action plan, the government tasked the County Administrative Board in Uppsala County with the support of the Environmental Protection Agency and the Energy Agency and in collaboration with the Housing Authority, Trafikanalys and the Transport Agency to analyze the conditions and obstacles for municipalities and regions to work for reduced emissions of greenhouse gases so that the climate goals can be reached . The County Administrative Board in Uppsala County assesses that a better collaboration between the national and the local and regional level as well as between authorities is necessary for municipalities and regions to have the conditions to work strategically with the local and regional climate transition.

13.3.1 The county administrative boards have an important role in the energy and climate transition

The government's assessment: The county administrative boards have an important role in enabling a quick and efficient energy and climate transition throughout the country and should be given better conditions for this. The government has therefore proposed that funds be set aside for this in the budget bill for 2024. The investment applies to both the county administrations' work with regional energy

planning and the role of the county administrations in the permit processes. The county governments should thus be better placed to coordinate, support and guide the work with the energy and climate transition in municipalities and regions.

The reasons for the government's assessment

According to their instructions, the county administrative boards must promote the county's development and work to ensure that national goals, such as climate and energy policy goals, have an impact in the county. The county administrations must also, based on a state-wide perspective, work cross-sectorally and within the authority's area of responsibility coordinate various societal interests and the efforts of state authorities. The county administrative boards also have the task of promoting cooperation between municipalities, regions, state authorities and other relevant actors in the county within the framework of the operations. The County Administrative Board has a central role in the application of the Environmental Code and the Planning and Building Act
(2010:900) with guidance, examination and supervision and balances different environmental and societal interests against each other. Based on this, the county administrations have an important role for the climate transition and to coordinate the work with regional energy planning. The County Board's role in the environmental assessment is dealt with in section 7.3.

The state should make it easier for operators, municipalities and regions to make investments and plan for climate change in a way that simultaneously takes into account environmental goals and sustainable development. The county administrative boards can, for example, contribute to this by promoting energy planning. Other examples are developed working methods for more effective consultation or working in parallel processes, more about this in section 7 environmental assessment.

The challenges for the energy and climate transition look different in different parts of the country, for example in terms of access to electricity, network capacity, charging infrastructure, the ability to store energy, access to efficient fossil-free transport, etc. The Swedish Grid Agency and the Energy Authority need, for example, better knowledge of when and where the electrification takes place in order to be able to plan electricity networks and promote electricity production for the rapid electrification. At the same time, actors in various areas of activity at local and regional level should identify how national goals and initiatives in the climate policy action plan and the upcoming energy policy orientation bill affect them. The government assesses that the county administrations, within the framework of the investment in regional energy planning in the budget bill for 2024, should be given better conditions to coordinate, support and guide regional energy and climate transition and work to promote in relation to operators, the municipalities' and regions' energy and climate transition.

In this action plan and the upcoming energy policy orientation bill, the government presents new policies that need to be quickly implemented at regional and local level. The industry sees a great need for expanded fossil-free electricity production. At the same time, the energy and climate transition is greatly influenced by local balancing of interests and the degree of coordination between local, regional and national levels. The establishment of new electricity production, increased capacity in the electricity grids and charging infrastructure presupposes locally and regionally anchored foundations that weigh competing societal goals. There are good examples in e.g. Norrbotten County and Västra

Götaland county where the county administration in collaboration with municipalities, business and other regional actors found new ways of working that increase the pace of the green transition.

Regional energy and climate strategies should be updated

The regional energy and climate strategies need to be updated. The strategies are about four years old, but since then a lot has happened regarding the electricity market, the rate of electrification and the security policy situation. The regional strategies can advantageously be linked more clearly to national processes, for example by being updated every four years.

The county administrations should be given better conditions to coordinate, support and guide municipalities and regions in the work with the energy and climate transition

In order for Sweden's climate goals to have an impact at the local and regional level, coordinated and targeted efforts by municipalities, regions and government actors are needed. The County Administrative Board in Uppsala County points to a lack of holistic view and system perspective at both local, regional and national level, where the work is characterized by fragmented target images and a lack of leadership, which leads to lack of clarity and a slower pace in climate work than would otherwise be possible. The authority highlights the experiences from the work with the strategic innovation program Viable Cities and Klimatkommunnerna, which is an association for municipalities and regions, but also the experiences from Fossilfritt Sweden's work with industry-specific roadmaps, which show that there is great potential for municipalities to be more clearly included in the regional the conversion work. It is both about the importance of a common framework and increased opportunities for knowledge transfer and collective learning. This applies, for example, to the restructuring of the energy sector and the transport sector, which require a systems perspective and which cannot be solved by individual actors or municipalities. The government shares the County Board of Uppsala County's view that the local and regional restructuring work needs to be developed.

The County Administrative Board in Uppsala County proposes that the government appoint a national coordinator with a roadmap for local and regional climate work. The government notes, however, that the county administrations have an important role in climate work, i.a. to work sector-wide from a state-wide perspective and within the authority's area of responsibility to coordinate various societal interests and state authorities' efforts, to promote the county's development and within its activities to promote cooperation in the county.
The government does not consider it effective to establish another actor with a similar mission. The county administrative boards are better placed to coordinate, support and guide the work with the energy and climate transition in municipalities and regions than a national coordinator.

The government has proposed that funds be set aside for energy planning in the budget bill for 2024. The investment should mean better conditions for the county administrations to contribute to creating conversion capacity at several levels of society. The cooperation of the county administrative boards with municipalities and regions throughout Sweden can contribute to electrification and emission reductions where municipalities or regions have direct or indirect control. In this context, it is important that the county administrative boards cooperate with

14 The plan's effect on climate change and society

14.1 A plan to reach the long-term goal of net zero emissions by 2045

The overall management towards reduced emissions takes place to an increasing extent at the EU level. This is logical because the EU is an integrated economic region and harmonized governance is therefore the most effective.
The EU is a central player both in influencing emissions within the Union and in influencing the outside world. The EU's new decisions within the framework of the Fit for 55 package, including the tightening and broadening of the EU's emissions trading system, have created a significant opportunity for faster emission reductions in the Union and in Sweden and binds the Member States through Union-wide mandatory legislation to take measures for to reduce emissions at EU level by 55 percent by 2030.

This action plan is based on the national climate target for 2045.
This is necessary as a strategy to reach all the way to net zero emissions and to subsequently achieve negative emissions is fundamentally different from a strategy whose primary purpose is to reduce emissions in the near term. Thus, this and future action plans must clearly aim at the goal of phasing out the use of coal, oil and fossil gas as fuel as well as raw material.

The action plan contains a series of measures to ensure that Sweden lives up to its commitments towards the EU by 2030. In the short perspective, the national milestones are also important as checkpoints on the road to net zero emissions as they underline the need for measures in the near term both to ensure that the emissions that can be phased out earlier disappear and to create the conditions to reach net zero by 2045 and negative emissions thereafter.

The starting point is that it is business and households that carry out the transition, but the government needs to actively and continuously create the right conditions. This particularly applies to the net zero goal in 2045. In this action plan, the government presents measures in a number of areas that provide conditions for companies and households to make the decisions that, taken together, can lead to Sweden reaching net zero emissions by 2045 at the same time as both the household economy and the companies' competitiveness are strengthened.
Climate change must take place in a growing economy where people can live free lives. The most important prerequisites for reaching the climate goals are to:

- ensure access to fossil-free electricity (including a major expansion of the electricity system with, among other things, expanded nuclear power), charging infrastructure and electricity grids to enable new connections of fossil-free facilities and charging

of electric vehicles and meet the expected increased demand for fossil-free electricity and power throughout the country,

- make permit processes shorter, more predictable and efficient,
- ensure access to labor with the right skills,
- ensure a sustainable supply of critical raw materials, batteries, sustainable biomass and fossil-free fuels,
- increase recycling and reuse to create a more resource-efficient circular economy,

- price emissions of greenhouse gases,
- create commitment and acceptance for climate policy instruments,
- contribute to an efficient supply of capital for e.g. technology development,
- provide incentives for negative emissions including bio-CCS.

The government assesses that the Fit for 55 package, measures already taken by the government, ongoing investigations and assignments as well as proposals for measures and analyzes in this climate action plan all together give Sweden good conditions for reaching the long-term climate goal. A basic prerequisite is that the EU's climate ambition is maintained and that the work that the government has begun continues and develops over time.

With the policies described in this action plan, the transition to net zero emissions can become part of sustainable growth until 2045.
The government also assesses that the policy described in the action plan will be able to gain broad support in various groups across the country.

Scenario of Sweden's territorial emissions to 2045

The climate goals require a change in society as a whole. By 2045 at the latest, emissions in the majority of social sectors need to be basically zero. Therefore, the government is taking measures to enable the emissions from e.g. electricity production, heating, cooling, industry[6], transport, work machines and product use will basically reach zero by 2045 at the latest. Emissions from agriculture need to be reduced, but reducing greenhouse gas emissions significantly from agriculture in a cost-effective and competition-neutral way is more difficult than in other sectors. Nor can biogenic emissions be reduced to zero without production ceasing. The same applies to certain process emissions where there is still a lack of technology to reach all the way to basically zero. This means that supplementary measures (see section 6) also need to be taken to reach net zero emissions by 2045. These supplementary measures are at the same time crucial for Sweden to reach negative emissions after 2045, which is why the government is taking preparatory measures to enable full utilization of supplementary measures 2045.

One such measure with significant potential is e.g. operating support for bio-CCS. The operating support, which is based on reverse auctions, can have great significance, both measured as the number of tons of captured carbon dioxide and measured as a share of Sweden's total emissions.

The figure below shows Sweden's historical emissions and an illustrative scenario that shows how Sweden could reach all the way to

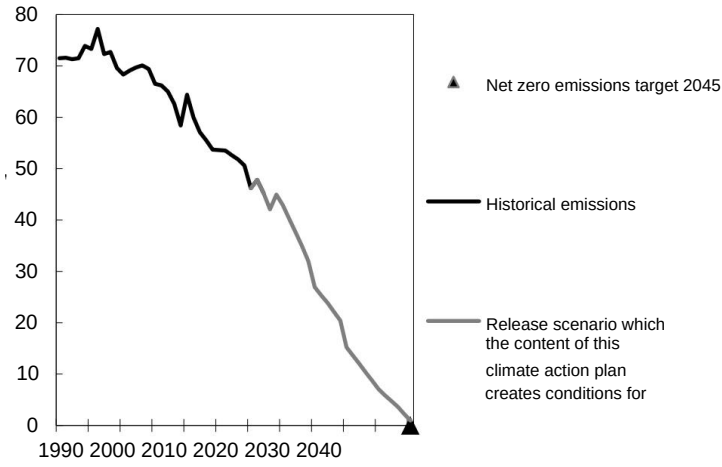
[6] However, some process emissions lack the technology to reach all the way to basically zero.

net zero emissions by 2045 at the latest. This illustrative scenario was developed by Skr. 2023/24:59 The Swedish Environmental Protection Agency and is an update of the Environmental Objectives Committee's scenario from 2016. In working with this illustrative scenario, the Environmental Protection Agency has based its work on an analysis of the potential of the transition per sector and concluded that the goal of net zero emissions in 2045 can be reached faster than the Environmental Objectives Committee calculated , mainly thanks to the fact that a faster rate of electrification in the transport sector and a faster rate of change in industry have become more likely. The Swedish Environmental Protection Agency adopts e.g. that the iron and steel industry can convert to fossil-free in several stages by 2035 and that the mineral industry can convert to large parts by 2030. Regarding the electrification rate in the transport sector, the Environmental Protection Agency assumes that zero emissions could be reached from 2030 for new sales of passenger cars and from 2035 for new sales of light trucks, which is faster than decided carbon dioxide requirements at EU level lead to. According to the Swedish Environmental Protection Agency, zero emissions for light trucks could be reached even earlier than 2035. For heavy vehicles, a negotiation is underway on carbon dioxide requirements at EU level, if the Commission's proposal and if the general guideline from the Council becomes the final result, according to the Swedish Environmental Protection Agency, 90 percent of heavy trucks sold in the scenario are assumed to be zero-emission vehicles in 2040.
Most of the investments announced by the business community within the framework of the Fossil-Free Sweden collaboration are considered by the Swedish Environmental Protection Agency to be realizable, albeit a little later than announced for some of them. Technology to reduce emissions from agriculture, waste incineration, aviation, shipping as well as negative emissions and other supplementary measures are also assumed to be able to contribute to net zero emissions in 2045. Remaining emissions in 2045 derive in this scenario mainly from the agricultural sector as well as certain process emissions and diffuse emissions from industry. Since the reduction obligation is lowered to 6 percent during 2024–2026, at the same time as the government's starting point is that Sweden's ESR commitment by 2030 should be reached, the Environmental Protection Agency's scenario has been updated to take this into account.

The scenario is an estimate of how emissions can be reduced given that the conditions required to reach all the way to net zero emissions are in place. The government assesses that the content of this climate action plan means that similar assumptions made in the scenario have become possible and can be realized. The content of this climate action plan thus creates the conditions for this scenario or a similar scenario towards net zero emissions in 2045 to be followed.

Above all, the government implements efforts to, by strengthening the electricity system, enable new fossil-free electricity production and make it possible to connect electricity consumption to a greater degree on a large scale, which provides better conditions for implementing a rapid electrification of the transport sector and rapid restructuring of industry. The broad measures taken to shorten the time for various permit processes are also of great importance for emissions to decrease faster than in forecasts based on decided policies and to be able to complete the climate transition before 2045, but also to maintain Swedish companies' lead as suppliers of fossil-free goods and services.

Figure 14.1 Emissions scenario that reaches the net zero emissions target in 2045 and for which the content of this climate action plan is deemed to create conditions



Note: The Environmental Protection Agency's scenario shows how the goals in the Swedish climate policy framework could be reached. The scenario has been updated with own calculations that include the statistics up to 2022, lowering the reduction obligation to the EU's lowest level during 2024–2026 and the assessment that Sweden's ESR commitment in 2030 will be reached. Other effects of the measures in the budget bill for 2024 are not included in this scenario. Net emissions show emissions minus so-called supplementary measures.

Source: Swedish Environmental Protection Agency (2021), Updated target scenarios showing how the targets in the Swedish climate policy framework could be reached.

A global question requires global answers. The government acts through international cooperation, knowledge exchange and free trade to bring about a successful transition in other countries as well. The global emissions are also estimated to be able to be reduced through Sweden's advocacy work internationally and within the EU, through the export of climate-friendly products and through reduced climate impact from companies' value chains.

The government will, i in line with the Climate Policy Council's recommendation, to annually follow up the progress in the implementation of the action plan in the annual climate report to ensure that Sweden stays on course towards the goal of reaching all the way to net zero emissions by 2045.

14.2 The climate action plan's effects on climate change and society

14.2.1 Sweden must meet its EU commitments within ESR and LULUCF

Sweden has an EU commitment to reduce emissions within the framework of the ESR regulation by 50 percent by 2030 compared to 2005 according to a defined emissions budget that extends from 2021 to 2030. Furthermore, Sweden has commitments within the framework of the LULUCF regulation: the recorded net absorption within LULUCF must not decrease during the period 2021–2025 and the reported net uptake must increase by approx. 4 million tonnes in 2030

compared to the average 2016–2018, with a certain emissions budget in 2026– Skr. 2023/24:59 2030. As there are certain opportunities to utilize flexibilities between the ESR and LULUCF sectors, their joint development is reported in this chapter.

In relation to the annual emission allowances, Sweden has accumulated a surplus of emission units within the ESR sector during the period 2021–2023. During the years 2024–2026, Sweden is expected to have an annual deficit. Looking at the entire period 2021–2030, it is estimated that there will be a cumulative deficit of around 11 million tonnes with the decisions and notifications that have been made until July 2023.[7] However, that does not include the effect of the proposals that the government made in the autumn amendment budget for 2023 (prop. 2023/ 24:2) and the budget bill for 2024 (prop. 2023/24:1), which are described in the climate report for expenditure area 20 in the budget bill for 2024, as well as the content of this climate action plan, which is described in this section.

In prop. 2023/24:28 the government clarifies that with previous legislation, a disproportionately large emphasis is placed on the fact that the reduction obligation should contribute to reaching the stage goal for domestic transport, without sufficient consideration being given to the consequences for other societal goals. Therefore, in the same bill, the government stated that the reduction levels for the years 2027–2030 should be scrapped pending a renewed analysis in which other socio-economically effective policy instruments are also considered. The government has therefore made the assessment in section 7.2 that before the period 2027–2030 an investigation will be added to analyze and provide information about and, if so, which policy instruments can be designed to achieve Sweden's commitments in the EU in a cost-effective and socio-economically effective way that ensures that not unreasonably high costs for households and businesses arise with the risk of serious impact on the competitiveness of Swedish companies. Such an analysis can i.a. take on relevant parts of Sweden's climate strategy (KN2023/03828). See section 7.2.3.

The analysis shall in principle be based on the political agreement Climate policy to reach all the way to net zero which was presented on 14 November 2023. In this it is stipulated that Sweden is bound by and shall, like all EU Member States, live up to our ESR commitments. The plan to reach the assigned target path is based on the possibilities of finding policy instruments that gain legitimacy among the citizens, where the conditions and standard of living for individuals, households and companies do not stagnate and where the whole country and all social groups have equal opportunities in the transition. The measures should be such that they lead to real emission reductions and not to emission leakage through discontinued domestic production and increased imports. The pace of the transition is affected by the outside world keeping pace. War, crises and other social challenges affect the ability to meet the climate challenges in a sustainable way.

The policy instruments that are decided for 2027 and beyond will be designed to, together with the climate policy in general, ensure that Sweden's commitments in the EU are met and contribute to reaching the national milestones for the environmental quality goal Limited climate impact on a socio-economic

[7] Swedish Environmental Protection Agency (2023), Basis for the government's upcoming climate action plan and climate report.

effective way. In order to contribute to reaching the Swedish climate goal of emission neutrality in 2045, measures need to be taken which mean that the use of coal, oil and fossil gas is phased out as fuel as well as raw material.

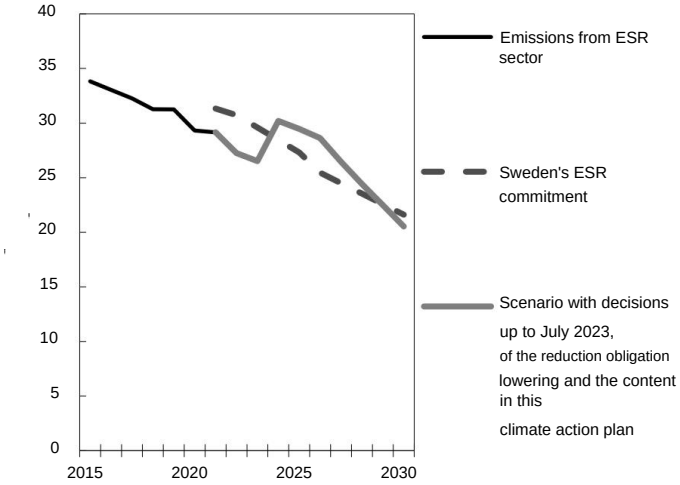
In the autumn amendment budget for 2023 (prop. 2023/24:2), the government has proposed that the Riksdag authorizes the government to fully utilize the limited cancellation of emission rights from Sweden's auction volume within the EU's emissions trading system for 2025–2030, which is permitted under Article 6, during 2025–2030 in ESR. In accordance with the authorization, the government has decided to notify the European Commission to fully utilize the flexibility. This means that a maximum of approx. 870,000 tonnes of greenhouse gas emissions per year from the auctioning of these emission rights can instead be used for Sweden to reach its ESR commitment. The government assessed in the autumn amendment budget for 2023 that maximum utilization is needed for Sweden to achieve its commitment in a cost-effective manner. However, the flexibility is limited to 100 million tonnes of greenhouse gas emissions during the period 2021–2030 for all of the nine member states that are given this option according to the ESR regulation, which means that Sweden's flexibility is dependent on the actions of other member states. If this flexibility can be fully used, it means that the accumulated deficit in 2021–2030 will be reduced by around 5.2 million tonnes to around 6 million tonnes.

In order to further streamline the climate work and lower the economic cost to society in order to reach the Swedish commitments within the ESR and LULUCF regulations, the government has proposed in the budget bill for 2024 that allocations 1:12 *Efforts for international climate investments* may be used to acquire room for emissions and absorption from other EU member states. The supply of emission units in other countries is uncertain, but the government assesses that the possibility of acquiring emission rights abroad can lower the cost of reaching Sweden's ESR and LULUCF commitments.

The remaining approximately 6–11 million tonnes in accumulated emissions are deemed to be able to be managed through changes to the control instruments as described above together with the climate policy in general. Through a socio-economically effective combination of the control instruments, the impact on household finances and the competitiveness of companies is limited. It is important that the climate policy is designed so that the consequences of the measures implemented to quickly reduce emissions become acceptable for households and companies. The government makes the assessment that Sweden should make full use of the flexibilities in the ESR in order to reach its commitments. The government further makes the assessment that the accumulated emissions that remain after this should be able to be managed through changes to the policy measures aimed at the consumption of petrol and diesel as above together with the climate policy in general.

The figure below shows that the content of the climate action plan puts Sweden on course towards reaching the ESR commitment. For this, changes in policy instruments aimed at the consumption of petrol and diesel are required together with the possible use of flexibilities. The government follows developments so that the fulfillment of the ESR commitment can be ensured.

Figure 14.2 Scenario of emissions minus flexibilities for Sweden's EU commitment within ESR



Source: The Swedish Environmental Protection Agency and own calculations.

Uptake and emissions from forests and land use show greater uncertainty than other sectors. This is due both to the difficulty of measuring the actual carbon flows, the large variation in annual carbon dioxide flows between years, which e.g. depends on weather conditions, as well as how these are captured in the statistics. The available scenarios of the future development of uptake and emissions in the LULUCF sector are uncertain. The latest shows that Sweden could reach its LULUCF commitments during 2021–20258 respectively 2026–20309 with today's measures, but the uncertainty is therefore great and additional measures and the use of various flexibilities may be required to cover any large deficits within the sector during the respective period.

The national milestones are also important as checkpoints on the road to net zero emissions. The content of this climate action plan is considered to be able to contribute to emission reductions towards Sweden's milestones for 2030 and 2040. The environmental goals committee should be tasked with reviewing the design of the national milestones so that it better complies with Sweden's commitments within the EU. The environmental target committee should also review the stage target for domestic transport until 2030.

14.2.2 Quantified climate effects

The table below summarizes preliminary quantified climate effects of the assessments, notifications and existing budget investments described in this climate action plan and which have the greatest and direct significance for reducing emissions. The effect refers to net emissions of greenhouse gases compared

[8] The Swedish Environmental Protection Agency (2021), Preliminary accounting according to the LULUCF regulation.

[9] Swedish Environmental Protection Agency (2023), Basis for the government's upcoming climate action plan and climate report.

with the decisions made no later than July 1, 2023. Some of the effects found in the budget bill for 2024 are mentioned in the table below in the cases where they are also associated with a certain assessment in the climate action plan. The effect on the emissions follows in some cases from the change in the measures, e.g. in the case of reinforcements of certain grants, not of the instrument as a whole. Since there are often significant interactions between different policy instruments, the effect of policy instruments is reported in some cases as policy instrument packages that also include certain supporting measures. The impact of the assessments and notifications are shown as preliminary assessments of the potential for emission reductions.

Table 14.1 Order of magnitude of direct effects on the annual net emissions in 2024–2026, 2030 and 2045 of the most important content for the climate in this climate action plan These estimates are preliminary

Ratings*	2024–2026	2030	2045	Comment
The Swedish program for international climate investments in accordance with Article 6 i The Paris Agreement should be developed (section 4.3)		–	–/– – –	Current budget could generate approximately 3.5–4 million units until 2030, which could mean that approximately 0.7 million tons of supplementary measures can be delivered in 2030 according to the Energy Agency. The potential for additional investment is limited to 2030 but could be much greater for the period after 2030.10
Package for EU commitments, including: - A cost-effective fulfillment of Sweden's commitments within the EU (section 5.2) - Broad instrument investigation is added (ch. 7.2.3)		–/– – – –/–	– –	See section 14.2.1 for more details on measures to achieve EU commitments. In that i.a. acquisition of emission units from other countries may be an alternative to reach The ESR commitment and that the effect of other measures depends on its implementation, it is uncertain what effect this can have on reducing Sweden's territorial emissions. If the entire emissions gap were to be covered by policy instruments that reduce Sweden's territorial emissions, the effect could be approximately 4 million tons in 2030. After that, such a policy instrument could contribute to a phase-out of fossil fuels by 2045.

[10] SOU 2020:4 The path to a climate-positive future.

Ratings*	2024–2026	2030	2045	Comment
Sweden should participate in the implementation of EU ETS 2 from the start and include combustion of fuels in all additional sectors beyond those mandatorily covered by EU ETS 2. The government intends to come back with proposals aimed at consumers and operations fully compensated for the effects on fuel prices (section 7.2.2)		difficult-assessed	difficult-assessed	The price effect of the introduction of the EU ETS 2 "full scope" is assessed, all other things being equal, to be able to contribute approximately 0.12–0.35 million tonnes emission reductions according to the Swedish Environmental Protection Agency. 11 EU ETS 2 means a more efficient control of emissions when only fossil fuels are priced, but the effect of the compensation is difficult to assess before it is clarified how the compensation mechanism will work.
Package for bio-CCS, including: - The starting point is that, if cost-effectiveness i the measure can be achieved, during the mandate period make a decision to further increase the auctioned volumes (section 7.9.2) - A voluntary market for negative emissions such as bio-CCS should be enabled. Sweden should work for an effective EU-level certification framework for carbon capture and capture (Section 7.9.2) - Industrial life is important for climate change in Sweden and globally (section 8.3)		–/– – – –/– –	– Current decision on operating support for bio-CCS is expected to be able to achieve 1.2–2.2 million tonnes in 2030 according to the Swedish Environmental Protection Agency. 12 This could enable further negative emissions, but not before 2026 and above all after 2030. However, it is today uncertain about i.a. cost efficiency for the operating support can is achieved. According to the Energy Agency the projects that have received support from the industrial sector until December are appreciated In 2022, have the potential to achieve in the long term approx. 9 million tonnes of negative emissions per year through the capture and storage of biogenic carbon dioxide emissions. In addition to this, support goes to research projects whose potential for emission reduction is more difficult to assess. 13	

[11] The Swedish Environmental Protection Agency (2023), Analysis of route choices in the implementation of ETS 1 and ETS 2.

[12] Swedish Environmental Protection Agency (2023), Basis for the government's upcoming climate action plan and climate reporting.

[13] The Swedish Energy Agency (2023), Government task Industriklivet report 2023-03-31.

Ratings*	2024–2026	2030	2045	Comment
Package for industry adjustment, of which i.a.: - EU's emissions trading system is tightened (section 7.2.2) - Additional control means for CCS and CCU for emissions from electricity and the district heating sectors and industry process-related emissions should be considered (section 7.9.1) - Industrial life is important for climate change in Sweden and globally (section 8.3) Other prerequisites such as more efficient environmental testing for a faster climate transition (section 7.3) and access to fossil-free energy (section 7.5) as described in Sect 14.2.4 is also decisive for the industry's transition.	–	–/–	– –/– – –	In the budget bill for 2024, the government proposes a strengthening of Industrial Life. The effect of the reinforcement itself is judged to be small, but the effect from the whole The industrial life can be very large. However, it is not possible to calculate in advance the exact effect of this support as the effect depends on which companies apply for the support and when the technology shifts take place. According to the Energy Agency, the projects that received support from the industrial sector are estimated until December 2022 have the potential to reduce greenhouse gas emissions by approx. 9 million tonnes per year in the long term. In addition to this, support goes to research projects whose potential for emission reduction is more difficult to assess.[14]
Climate action contributes to climate change throughout Sweden (section 8.4)			–/– – –	The government has i the budget bill for 2024 proposed that the grant be strengthened and extended. The calculation is based on on historical data on the cost-effectiveness of the support, the proportion of emission reductions that take place in Sweden and the additional emission effect of the support until 2030. The effect until 2045 is judged to be more uncertain.
Fluorinated greenhouse gases (F-gases) (section 8.5)	–	–	–/– –	Emissions of F-gases account for approximately 0.8 million tonnes. The revision of the EU's F-gas regulation will contribute to a faster phasing out of F-gases. Further cost-effective measures in Sweden could further accelerate development.

[14] The Swedish Energy Agency (2023), Government task Industriklivet report 2023-03-31.

Ratings*	2024–2026	2030	2045	Comment
Transport electrification package (section 9.2), including: - Scrapping premium for passenger cars with internal combustion engines (section 9.2.1) - Hit-and-miss climate premium for light trucks that are driven on electricity (section 9.2.2) - Enhanced climate premium for heavy vehicles (section 9.2.4) - Support to market introduction of environmental work machines (section 12.3) Other prerequisites such as charging infrastructure for road transport (section 9.3), the need to promote charging and refueling infrastructure for work machines should analyzed (section 12.4) and increased fossil-free electricity production and an expanded electricity network (section 7.5.1) are also crucial for the electrification of transport.			– –/– –	In the budget bill for 2024, the government has proposed that funds be added for the scrapping premium and the climate premium. The Commission's proposal for the EU's new carbon dioxide requirements for heavy vehicles could reduce emissions by approximately 0.3 million tons in 2030 and 0.6 million tons in 2045, according to the Swedish Environmental Protection Agency. Contributes to that the market introduction support with some additional effect for technology development in the short term. Based on the number of electric vehicles that the climate premium is expected to finance the reinforcement in the 2024 budget bill, the current budget can reduce emissions by about 0.2 million tons in 2030 and about 0.1 million tons in 2045. The effect of the scrapping premium is estimated to be below 0.1 million tonnes in 2030 based on the number of electric vehicles that the budget is expected to be able to finance and which is assumed replace fossil-fueled vehicles.
Early introduction of electric flight (section 9.5.4)				Until 2030, the potential for electric flight for domestic flights is limited. A somewhat larger proportion of air traffic could be electrified by 2045, but the effect of this assessment until 2045 is uncertain and depends on, among other things, technology and market development.

Ratings*	2024–2026	2030	2045	Comment
The high-altitude effects of flight should be reduced (Section 9.5.5)	–	–	–	High altitude effects are limited on domestic flights. Despite large uncertainties in the magnitude of high-altitude effects, measures based on more reliable information can help air operators reduce this effect already in the near term. With a general and rough multiplication factor of 1.3 for domestic flights15 and an estimate that approximately high-altitude effects can be remedied with cost-effective measures, it is estimated to be able to reduce high-altitude effects by less than 0.1 million tonnes in 2030. The potential is greater for foreign flights.
Promotion of electric ships (Section 9.6.3) Infrastructure for fossil-free ship expansion (Section 9.6.4) is a crucial supporting measure.	–	–	–/– –	Emissions from domestic shipping is approx. 0.7 million tonnes and faster electrification is estimated to have little effect by 2030 but a greater effect by 2045.

* The content of the plan is divided into subsections where the government's assessment is reproduced in boxes. The word assessments is therefore used here as a collective term for the content of the plan.

Note: +/– means the following emissions development compared to current policy:

+ Refers to an increase of between 0 and 100 thousand tonnes of CO2e per year. The effect can also be 0.

+ + Refers to an increase of between 100 and 500 thousand tonnes of CO2e per year.

- Refers to a reduction of between 0 and 100 thousand tonnes of CO2e per year. The effect can also be 0.

– – Refers to a reduction of between 100 and 500 thousand tonnes of CO2e per year.

– – – Refers to a reduction of over 500 thousand tonnes of CO2e per year.

Source: Own calculations. In some cases, documentation from the authorities has been obtained.

The following parts of the climate action plan are judged to have the potential to contribute with further direct emission reductions, but the size is today even more difficult to assess than for the above parts:

- industry's climate transition (section 8.1)
- mixing of sustainable and fossil-free aviation fuels (section 9.5.2)
- increased involvement of sustainable and fossil-free shipping fuels (section 9.6.2)
- climate requirements for publicly funded shipping (section 9.6.5)
- the fossil share of plastic in waste incineration should decrease (section 10.1)

- increased circular management of construction waste including excavation materials (section 10.2)
- reduced climate impact from agriculture through increased productivity (section 11.1)
- increase knowledge about and the rate of rewetting of excavated peatlands (section 11.3)

[15] SOU 2022:15 Sweden's global climate footprint.

- more effective promotion of emissions-reducing investments within Skr. 2023/24:59 agriculture (section 11.6)
- increased construction in wood and bio-based materials (section 11.7)
- public actors are important for climate change (section 13.2).

14.2.3 Elements of the plan aimed at improving the cost-effectiveness and acceptance of the changeover

Listed below are some of the most important elements of this climate action plan that have not been impact-calculated and that improve the cost-effectiveness and acceptance of the transition. It can e.g. about other countries also changing more quickly, that Swedish climate policy is coordinated with the EU's climate policy, that the coordination of the changeover is improved at national level or that acceptance and inclusion in the climate changeover are taken into account. The list of some of the most important such parts:

- international climate work (section 4)
- EU climate policy (Section 5)
- climate policy framework (section 6)
- commitment and acceptance of climate change (section 7.1)
- The EU's green industrial policy (section 8.2)
- strategy for new industrialization and societal transformation i Norrbotten and Västerbotten counties (section 8.6)
- overall governance for a fossil-free transport sector (section 9.1)
- aviation's global climate change is accelerating (section 9.5.1)
- shipping's global climate transition is accelerated (section 9.6.1)
- adaptations to the EU's new policy for increased net uptake in forests and land (section 11.2)
- The EU needs to steer towards fossil-free work machines (section 12.1)
- procurement for work machines (section 12.5)
- climate change throughout the country (section 13.3).

14.2.4 Parts of the plan that aim to improve the conditions for climate change

Listed below are some of the most important other supporting elements of this climate action plan that improve conditions for climate change in Sweden or globally:

- pricing of greenhouse gas emissions (section 7.2)
- more efficient permit processes for a faster climate transition (section 7.3)
- capital provision (section 7.4)
- access to fossil-free energy (section 7.5).
- sustainable value chains (section 7.6)
- competence supply (section 7.7)
- research and innovation (section 7.8)
- capture, use and storage of carbon dioxide (section 7.9)
- industry's climate transition (section 8.1)

- standardization for climate change (section 8.7)
- overall governance for a fossil-free transport sector (section 9.1)
- charging infrastructure for road transport (section 9.3)
- increased transport efficiency (section 9.4)
- climate requirements for support to airports (section 9.5.3)
- rules for water activities should be reviewed (section 11.4)
- development of measurement methods and support systems in forest and agricultural land (section 11.5)
- register for work machines (section 12.2)
- the need to promote charging and refueling infrastructure for work machines should be analyzed (Section 12.4)
- effective management of climate policy (section 13.1).

14.3 Climate change is combined with the competitiveness of business and the standard of living of households

It is important that the consequences of the measures put in place to quickly reduce emissions become acceptable for households and businesses, while strengthening the economy and maintaining confidence in the transition.

The climate action plan is based on a business and household perspective. It is the companies and households that implement the measures that concretely reduce emissions. The government's assessment is that the plan's effects on the green transition, companies' competitiveness and employment are positive. Properly implemented, the plan for net zero emissions in 2045 is an opportunity for companies and it is also an opportunity for increased living standards for households. Both parts are necessary for the policy to be implemented. Climate change must take place in a growing economy where people can live free lives. By Sweden today

is among the leading countries in the transition, Swedish companies gain advantages in a global market with increasing demands for climate neutrality, while at the same time creating opportunities for future financial gains. Swedish companies are far ahead in terms of recycling capacity and circular and resource-efficient business models in several industries. Swedish knowledge is in demand in areas such as energy transition, fossil-free steel, the manufacturing industry, sustainable transport solutions, smart and sustainable cities, battery production, semiconductors, sustainable mining, health and life science, green industries, raw materials and new materials. There are therefore also good opportunities to continue to attract green investments to Sweden. The Swedish companies' lead must be maintained. The government assesses that the policy in this action plan creates the conditions for that.

The government assesses that this climate action plan will contribute to more stable conditions for sustainable choices and investments by business and households and to increased acceptance of climate change. The industry carries out extensive strategic investments in both the green and the digital transition, which is crucial for creating long-term competitiveness.

The plan's combined effect on gender equality is difficult to assess, but the Skr. 2023/24:59 is a guiding thought in the government's policy that groups should not be left behind when society changes. The government considers it important that climate change is permeated by a perspective of gender equality. As described in more detail in chapter 7.1.1, there are differences between women and men both when it comes to the view of climate change, in how men and women respectively contribute to the emission of greenhouse gases, as well as how women and men, girls and boys, are affected by climate change. Based on these differences, the government assesses on an overall level that the action plan's measures to speed up the climate transition are positive from a gender equality perspective. Within certain parts of climate change, there are greater differences between men and women. Women use e.g. to a greater extent public transport than men, and to a lesser extent car.

The government's measures to promote public transport have a positive impact on gender equality work. In addition, changes in the labor market as a result of climate change are important from a gender equality perspective. A well-functioning competence supply is dependent on a broad recruitment base and that the potential of both men and women is taken advantage of.
The government's upcoming STEM strategy (from the English science, technology, engineering and mathematics) can contribute to more women in these, for climate change, important educational areas.

Some of the proposals in the climate policy action plan have positive effects on air quality, above all the instruments that enable faster electrification in the transport sector, which also contribute to reducing emissions of air pollution. The action plan thus interacts with the revised national air protection program and commitments according to the ceiling directive. The action plan's effects on the natural environment and biological diversity are mainly given by the measures that affect land use. The Swedish bioeconomy is judged to be able to develop in a sustainable way. The environmental objectives committee shall propose a joint strategy with proposals for measures that contribute both to Sweden's commitments for nature conservation and biological diversity as well as Sweden's commitment to increased absorption and emissions of greenhouse gases within the land use sector, which can form the basis for Sweden's description of the implementation. The assignment includes mapping and describing synergies and goal conflicts in the work of fulfilling Sweden's commitments and, if necessary, proposing political trade-offs. The funds that the government has set aside for rewetting wetlands are also predicted to have strong positive effects for e.g. the biological diversity.

Overall, the climate action plan contains the policy that needs to be implemented during the current term of office in order to create the necessary conditions to reach all the way to net zero emissions in 2045.
The course will need to be corrected somewhat in the action plans 2027, 2031, 2035, 2039 and 2043. But it is now the policy that is being established that lays the foundation for being able to reach the goal of net zero emissions by 2045 and negative emissions thereafter.

Abbreviations and terms

Abbreviations or terms	full name
AFIR	Regulation (EU) 2023/1804 of the European Parliament and of the Council of 13 September 2023 on the development of infrastructure for alternative fuels and on repealing Directive 2014/94/EU.
The Waste Directive	Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and on the repeal of certain directives.
Convention on the Rights of the Child	UN Convention on the Rights of the Child. Incorporated into Swedish law through the Act (2018:1197) on the United Nations Convention on the Rights of the Child.
BAT conclusions	Conclusions on best available techniques adopted with the support of Article 13.1–13.6 of the European Parliament and Council Directive 2010/75/EU of 24 November 2010 on industrial emissions (coordinated measures to prevent and limit pollution).
Bio-CCS	Separation and storage of carbon dioxide from renewable sources (Bio-Energy Carbon Capture and Storage).
Bio-CCU	Separation and use of carbon dioxide from renewable sources (Bio Energy Carbon Capture and Usage).
GDP	Gross domestic product. A measure of economic activity in a country over a period of time.
Bonus	A subsidy paid to the buyer of environmentally friendly cars and light trucks. The climate bonus ended on 8 November 2022.
The Construction Products Ordinance	Regulation (EU) No. 305/2011 of the European Parliament and of the Council of 9 March 2011 establishing harmonized conditions for the marketing of construction products and repealing Council Directive 89/106/EC.

CBAM	The Carbon Border Adjustment Mechanism. Regulation (EU) 2023/956 of the European Parliament and of the Council of 10 May 2023 establishing a carbon border adjustment mechanism.
CCfD	Carbon Contracts for Difference (climate contract). Climate contracts mean that a business receives support for products with low emissions in situations where the carbon dioxide price is not high enough for products - tion must be profitable.
CCS	Separation and storage of carbon - dioxide (Carbon Capture and Storage).
CCU	Separation and use of carbon dioxide (Carbon Capture and Utilization).
CEF	The Connecting Europe Faci - lity). Financial instruments to promote growth, jobs and con - current through directed infra - structural investments in Europe - icy level.
CEN	European standardization bodies - nization (Comité Européen de Normalisation). The largest euro - European standardization body the sation.
CETP	Clean Energy Transitions Pro - grams. Cooperation program for an accelerated transition to sustainable energy production and use.
CORSIA	System for compensation for and reduction of carbon dioxide emissions from international aviation (Car - bon Offsetting and Reduction Scheme for International Avia - tion). A global market base - rat control instrument that regulates aviation's carbon dioxide emissions.
CRCF	Certification framework for absorption and capture of carbon dioxide (Carbon Removal Certification Framework). Proposal for Europe - foreword by the Parliament and the Council -

	ing on the establishment of a Union - carbon dioxide certification framework - uptake (COM/2022/672 final).
CRMA	European Critical Raw Materials - the act (European Critical Raw Materials Act). Proposal for Euro - papal parliament and council foreword - ing on the establishment of a framework - works to ensure access to critical raw materials (COM(2023) 160 final).
CSDDD	EU directive on due process - cooperation for companies in terms of sustainability (Corporate Sustaina - bility Due Diligence Directive). Proposal for a Directive of the European Parliament and of the Council on business due diligence in relation to sustainability and amending Directive (EU) 2019/1937 (COM/2022/71 final).
CSRD	The EU's directive on the conduct of companies - corporate sustainability reporting directive. of the European Parliament and Council Directive (EU) 2022/2464 of 14 December 2022 amending Regulation (EU) No. 537/2014, Directive 2004/109/EC, Directive 2006/43/EC and Directive 2013/34/EU with regard to corporate sustainability reporting .
DACCS	Separation and storage of coldi - oxide taken directly from the atmosphere sphere (Direct Air Carbon Cap - ture and Storage).
E85	E85 is a fuel mixture of 70-86 percent ethanol and 14-30 percent gasoline.
EASA	European Union Aviation Safety Agency.
EBA	The European Battery Alliance (European Battery Alliance).
ED95	ED95 is an ethanol-based biodrive - average.
EEA	European Environment Agency (Euro - pean Environment Agency).
EED	The Energy Efficiency Directive (Energy Efficiency Directive).

	Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency - tet, amending directives 2009/125/ EC and 2010/30/EU and repealing directives 2004/8/EC and 2006/32/ EC.
EEA	European Economic Cooperation the bite area.
EIB	European Investment Bank.
EPBD	The directive on the energy of buildings - performance (Energy Performance Buildings Directive). European couple - Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings.
ERDF	European Regional Development - lingsfonden. Regulation (EC) No 1783/1999 of the European Parliament and of the Council of 12 July 1999 on European regional development - lingsfonden.
ESR	The Effort Sharing Regulation. Regulation (EU) 2018/842 of the European Parliament and of the Council of 30 May 2018 on Member States - nas binding annual reductions in greenhouse gas emissions during peri - oden 2021-2030 which contributes to climate measures to fulfill the commitments under the Paris Agreement and on the amendment of Regulation (EU) No. 525/2013.
ESRS	EU standard for sustainability rap - porting (European Sustaina - bility Reporting Standards).
ETD	The Energy Taxation Directive. Council Directive 2003/96/EC of 27 October 2003 on a restructuring - call of the Community framework for the taxation of energy products and electricity.
EU ETS	The EU Emissions Trading System (EU Emissions Trading System). Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 on a scheme for greenhouse gas emission allowance trading within the Community

	and amending Council Directive 96/61/EC.
EU ETS 2	EU emissions trading system for road transport, buildings and certain other emissions. Directive (EU) 2023/959 of the European Parliament and of the Council of 10 May 2023 amending Directive 2003/87/EC on a system for trading emission rights for greenhouse gases within the Union and Decision (EU) 2015/1814 on the establishment and use of a market stability reserve for the Union's emissions trading system.
EU fuel information directive	Directive 1999/94/EC of the European Parliament and the Council of 13 December 1999 on access to consumer information on fuel economy and carbon dioxide emissions when marketing new passenger cars.
EU regulation on nature restoration	Proposal for a Regulation of the European Parliament and of the Council on nature restoration (COM (2022) 304 final).
EU climate law	Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing a framework for achieving climate neutrality.
EU Directive	European Parliament and Council Directive (EU) 2016/2284 of 14 December 2016 on the reduction of national emissions of certain air pollutants, amending Directive 2003/35/EC and repealing Directive 2001/81/EC.
The Eurovignette Directive	Directive 1999/62/EC of the European Parliament and of the Council of 17 June 1999 on charges for heavy goods vehicles for the use of certain infrastructures.
F gases	Fluorinated greenhouse gases are a group of very powerful greenhouse gases used in e.g. cooling systems, heat pumps and air conditioning systems.
The F-gas regulation	Regulation (EU) No. 517/2014 of the European Parliament and of the Council of 16 April 2014 on fluorinated

	greenhouse gases and on the repeal of Regulation (EC) No 842/2006.
The Fit for 55 package	The legislative package to reach the EU's 2030 climate target of reducing net emissions within the Union by at least 55 percent, compared to 1990.
FuelEU Maritime	Regulation (EU) 2023/1805 of the European Parliament and of the Council of 13 September 2023 on the use of renewable and low-carbon fuels for maritime transport and amending Directive 2009/16/EC.
GBER	The General Block Exemption Regulation. Commission Regulation (EU) No. 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market pursuant to Articles 107 and 108 of the Treaty.
GCF	The Green Climate Fund. The fund forms part of the financial mechanism for the climate convention and the Paris agreement.
GEF	Global Environment Facility (Global Environment Facility). The fund forms part of the financial mechanism for the climate convention and the Paris agreement.
CAP	The EU's common agricultural policy.
The Goods Corridor Ordinance	Regulation (EU) No. 913/2010 of the European Parliament and of the Council of 22 September 2010 on a European rail network for competitive freight traffic.
GSP+	The Generalized Scheme of Preferences Plus (Generalised Scheme of Preferences Plus). GSP+ is a trade policy instrument to promote environment, climate and sustainability issues in developing countries.
GW	Gigawatts. One billion watts, measure of power.
HFCs	Fluorinated hydrocarbons (Hydrofluorocarbon). HFCs belong to the group of fluorinated greenhouse gases.

HVO100	Diesel that is 100 percent renewable and fossil-free.
IAEA	International Atomic Energy Agency (International Atomic Energy Agency).
ICAO	International Civil Aviation Organization (International Civil Aviation Organization).
IEA	International Energy Agency
IED	The Industrial Emissions Directive (Industry Emissions Directive). European Parliament and Council Directive 2010/75/EU of 24 November 2010 on industrial emissions (coordinated measures to prevent and limit pollution).
IMF	International Monetary Fund (International Monetary Fund).
IMO	The UN's International Maritime Organization (International Maritime Organisation).
Industrial life	Investment support for research, feasibility studies and investments, which contribute to reducing the industry's process-related emissions of greenhouse gases, bio-CCS and strategically important initiatives within the industry.
IPCC	UN climate panel (Intergovernmental Panel on Climate Change).
The climate step	Investment support to enable climate investments and investments in charging infrastructure at local and regional level throughout Sweden.
The Climate Convention	UN Framework Convention on Climate Change.
Climate premium	Support paid to the buyer of environmentally adapted work machines and trucks.
The Kyoto Protocol	Addendum to the climate convention adopted at the convention's third party meeting in Kyoto in 1997.
Driving license directive	Directive 2006/126/EC of the European Parliament and of the Council of 20 December 2006 on driving licenses
LDCF	The Least Developed Countries Fund.

LeadIT	Industry Leadership Group - transition (Leadership Group for Industry Transition).
LSU	The National Council for Sweden's Young - judicial organizations.
LTS	Long-term climate strategies (Long-Term Strategy).
LULUCF	Land use, land use change and forestry (Land Use, Land Use Change and Forestry). Regulation (EU) 2018/841 of the European Parliament and of the Council of 30 May 2018 on the inclusion of emissions and up - removal of greenhouse gases from land - use, changed land - use and forestry in the framework of climate and energy policy the bitch until 2030 and if end - ring of Regulation (EU) No. 525/2013 and Decision 529/2013/EU. no
Malus	Increased vehicle tax for light vehicles - don with high emissions of coldi - oxide, which is levied during the first three years from when the vehicle becomes taxable for the first time.
The EIA directive	Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the impact on the environment of certain public and private projects.
MW	Megawatt. One million watts, measure of power.
NAP	National Adaptation Plans (National Adaptation Plans).
NDC	National climate plan or nation - otherwise determined contribution according to Paris - the agreement (Nationally Determined Contribution). To reach Parisav - year's goal, the countries must submit nationally decided climate plans with goals and measures.
NO	Cooperative Organization for Atomic - energy issues within the OECD (Nuclear Energy Agency).
NZIA	Regulation on net - net zero industry act. Proposal for Europarla - ment and the Council's regulation on

	establishing an action framework to strengthen Europe's net zero technology manufacturing ecosystem - products (COM/2023/161 final).
The Emergency Ordinance	Council Regulation (EU) 2022/2577 establishing a framework to accelerate the development - the nade of renewable energy.
OECD	The Organization for Economic Cooperation and Development (Orga - nization for Economic Co -opera - tion and Development).
Ozone Ordinance n	Regulation (EC) No 1005/2009 of the European Parliament and of the Council of 16 September 2009 on ozone-depleting substances - the layer.
The Paris Agreement	Addendum to the climate convention adopted at the convention's twenty-first meeting of the parties in Paris in 2015.
EDIT	The Renewable Energy Directive. Europa parla - ment and Council Directive (EU) 2018/2001 of 11 December 2018 on the promotion of used - the generation of energy from renewable energy sources.
REFIT programme	The European Commission's pro - gram for the end of the legislation - focus and results.
ReFuelEU Aviation	Regulation (EU) 2023/2405 of the European Parliament and of the Council of 18 October 2023 on safe - setting equal conditions for hold - bare air transport
RME100	A renewable diesel fuel.
SAF	Sustainable Aviation Fuels.
SBTi	Framework for companies to set science-based climate targets (Science Based Target initiative).
SERA directive	Directive 2012/34/EU of the European Parliament and of the Council of 21 November 2012 establishing a common European iron - road area.
SFDR	The EU regulation on sustainability - related information (Sustainable Finance Disclosure Regulation). of the European Parliament

	and Council Regulation (EU) 2019/2088 of 27 November 2019 on sustainability-related information to be provided within the financial services sector.
Single European Sky	Regulation (EC) No. 549/2004 of the European Parliament and of the Council of 10 March 2004 on the framework for the establishment of the Single European Sky.
STEM	Science, Technology, Engineering and Mathematics (Science, Technology, Engineering and Mathematics).
TEN-T	Trans-European Transport Network (Trans-European Transport Network).
TWh	Terawatt hour. One thousand billion watt hours, measure of energy.
UNEP	The United Nations Environment Program (United Nations Environment Pro-gramme).
UNFCCC	United Nations Framework Convention on Climate Change (United Nations Framework Convention on Climate Change). The convention was adopted at the environmental conference in Rio de Janeiro in 1992.
WTO	World Trade Organization

The Climate Policy Council's recommendations

The climate policy council must evaluate how the government's overall policy is compatible with the climate goals. In March 2023, the council submitted its sixth annual report. In this year's report, the Climate Policy Council has particularly focused on the need to accelerate the climate transition and important priorities in the upcoming climate policy action plan. In addition, the report, like previous reports, contains an overview of how the emissions of greenhouse gases and the policy to reach the climate goals have developed in recent years. Below, the government explains its view on this year's report's recommendations from the council.

The Climate Policy Council's report for 2023

1. Develop a climate policy action plan that leads to an accelerated climate transition so that emissions are reduced in the near term and the climate goals for 2030 are achieved.

An effective and legitimate climate transition requires balanced and well-balanced long-term measures to be sustainable in the long term. An ever-accelerating pace of change without consideration of the effects on households and businesses will not be sustainable in the long term. In accordance with the Climate Act, the government's climate policy work is based on the climate policy framework and the long-term, timed emissions target that the Riksdag has determined that Sweden must have no net emissions of greenhouse gases into the atmosphere by 2045 at the latest, in order to subsequently achieve negative emissions. The focus of climate policy is therefore to remove the emissions that can be removed in a socio-economically efficient way, reduce the emissions that cannot be removed completely and to create large volumes of negative emissions in addition. For this to be possible to do in a socio-economically efficient way, the right conditions must be in place.

The starting point is to remove the obstacles that consumers and companies face and thereby enable the societal transformation that must take place in a controlled and efficient manner. An acceleration is also required in e.g. environmental permit processes, electricity production, electricity network expansion and expansion of charging infrastructure. It is also the government's responsibility to change the policy, the path towards the long-term climate goal, when the path there hits too hard on the individual and the business world. The policy will contribute with frameworks and conditions for this transition. In this way, Sweden contributes to the fulfillment of the Paris Agreement in an efficient manner.

The national milestones are important checkpoints on the way to the long-term climate goal. The Environmental Targets Committee should be tasked with reviewing the design of the national milestones so that it better complies with Sweden's commitments within the EU. The preparation should also review the stage target for domestic transport until 2030.

2. Ensure that the action plan covers all sectors and utilizes the entire integrated policy to reach the long-term goal of net zero emissions by 2045 and negative emissions thereafter.

Sweden's long-term climate goal is to reach net zero emissions by 2045 and net negative emissions thereafter. To cope with this, climate policy work must be coordinated and integrated in all relevant policy areas. A transformative change, such as climate change, requires both long-term political reforms and efficient and effective organization of the state administration and authorities.

The climate goals require a change in society as a whole. By 2045 at the latest, emissions in the majority of social sectors need to be basically zero. Therefore, the government is taking measures to enable the emissions from e.g. electricity production, heating, cooling, industry, transport, work machines and product use will in principle reach zero by 2045. Emissions from agriculture need to be reduced, but there are technical and natural obstacles to reducing emissions from agriculture to zero. The same applies to certain process emissions where there is a lack of technology to reach all the way to basically zero. This means that supplementary measures also need to be taken to reach net zero emissions by 2045. These supplementary measures are at the same time crucial for Sweden to reach negative emissions
after 2045. This is a transformation that needs to be initiated in the near future.

3. Ensure that the implementation of the action plan is prioritized and coordinated within the government under the leadership of the prime minister.

In order to reach Sweden's climate goals and commitments within the EU and implement the climate policy action plan, all policy areas must pull in the same direction. The climate issue should permeate politics so that conditions are created for the whole of society to participate in the climate transition. To cope with this, climate policy work needs to be integrated in all relevant spending areas. This means that the climate goals and the effort to reach them should be captured in the government's various processes.

4. Annually follow up the implementation of the action plan in the climate report to the Riksdag.

The government intends to follow up the development of the climate action plan in the annual climate report to the Riksdag in the budget bill.
The budget's climate statement should be developed to correspond to the changes implemented at the EU level. The report should also be expanded with a description of investments in the budget that contribute to increasing acceptance of the climate goals and of the transition. In addition to this, the government believes that the climate report should be moved from expenditure area 20 to the overall report in volume 1.

5. Give the relevant authorities a standing task to provide evidence for the climate policy action plan with proposals that provide emission reductions that exceed the climate targets.

An important part of the work to realize a long-term sustainable climate policy is the governance of the authorities. The government considers that authorities' tasks connected to climate change should be specified in the relevant authorities' instructions. The government shares in this way

The assessment of the State Office and the Climate Policy Council and the direction in the proposal from Sweden's climate strategy (KN2023/03828) that the governance of the relevant authorities should be reviewed to enable a more long-term governance based on the Climate Act. Through clear and business-adapted information in the relevant authorities' instructions, the authorities are given better conditions to contribute to reaching the climate goals, strengthen competitiveness and Sweden's preparedness in the short and long term. It also improves the relevant authorities' conditions for planning and prioritizing within operations with regard to the climate goals, as well as making it possible for the authorities to build long-term competence in the area. It would also make it easier for the authorities concerned to, within the framework of their tasks, take initiatives themselves that ensure a green transition in the climate area.

It is central to ensure that the structural transformation keeps pace and can take place without major social and economic wear and tear. The governance of the authorities is an important part of the work to realize a long-term sustainable climate policy.

6. Makes society less sensitive to future resource price shocks, e.g. through measures for more efficient energy, material and product use and diversified supply.

The transition to net zero emissions is a unique opportunity to take advantage of the growth potential that the industry's transition represents and strengthen Sweden's resilience against global disruptions. Circular and resource-efficient value chains are important for reducing emissions from raw material supply, increasing Sweden's degree of self-sufficiency and reducing Sweden's exposure to price fluctuations for these raw materials. That companies have access to reliable and fossil-free value chains is also a prerequisite for us to succeed in the green transition with strengthened competitiveness. The government will work to achieve circular and long-term sustainable value chains and a sustainable, competitive and growing bioeconomy.

There is also a need for a safe and sustainable supply of raw materials in Sweden, especially for critical and strategic metals and minerals as well as batteries.
The building stock needs to be used more efficiently. The Swedish textile sector's transition towards circular business models is also important.

7. Build competence and preparedness in order to be able to design and effectively implement short-term crisis interventions in the future without these counteracting the possibilities of reaching long-term climate goals.

The Government Office is organized to be able to quickly deal with situations that arise. The joint preparation contributes to this and the establishment of the Ministry of Climate and Business means that the responsibility for economic policy, energy policy and climate policy is gathered within one and the same ministry.

8. Continue to develop good examples of planning processes and forms of cooperation that can contribute to an accelerated transition and

at the same time make better use of synergies and balance between different interests.

Since the changeover is urgent, the permit processes must be made more efficient and questions linked to changed use of land, sea and water areas need to be resolved at the earliest possible stage. In addition, new technology often means demands for new knowledge and ability within the public administration to handle both rapid changes and the goal conflicts that may arise between e.g. quickly enable new climate-smart solutions and business models and to consider responsible technology development. The government places a high priority on these issues and has appointed various investigations and assignments as well as assigned resources to the relevant authorities that aim to speed up and make the processes more efficient.

9. During the mandate period, carry out a review of relevant social goals to ensure that goals and governance are compatible with the climate goals, in line with what the Riksdag previously decided.

The government shares the assessment that the climate perspective clearly needs to be included in targets for relevant spending areas. Therefore, climate goals should be weighed in a relevant way in connection with the review of goals in expenditure areas that have a direct or indirect impact on greenhouse gas emissions. According to the government, climate and environmental issues need to continue to be integrated into work in all sectors and at all levels of society. Opposing interests need to be highlighted and analyzed as a basis for political balances between different interests.

10. Develop a clearer, comprehensive narrative about Sweden's climate transition.

The government's climate policy action plan not only describes how emissions are to be reduced, but also the overall story of Sweden's climate transition.

Climate policy must be ambitious and effective. Climate change requires a balanced policy of well-balanced long-term measures.
The government's focus is to reach all the way to net zero emissions by 2045 and negative emissions thereafter. The focus of climate policy is therefore to remove the emissions that can be removed in a socio-economically efficient manner, reduce the emissions that cannot be removed completely and, in addition, to create negative emissions. In addition, the work towards net zero emissions needs to be combined with work to adapt society to a changed climate.
Increased electrification is central to reducing emissions to basically zero in several sectors.

Sweden's climate policy needs to take account of the fact that the EU has now taken the lead in global climate work and in practice constitutes the world's largest climate club which, with its size, has the ability to go ahead and set standards for the rest of the world. The government is thus focusing on creating the right conditions for climate change by removing the obstacles that consumers and companies face and thereby enabling the social change that must take place in a controlled and efficient manner.
It is the households who are at the kitchen table and the companies who are in the boardrooms implementing the changeover required to eliminate emissions. The politics

will contribute with frameworks and conditions for this transition.
In this way, Sveriges contributes to the fulfillment of the Paris Agreement in an efficient manner.

Thanks to access to fossil-free electricity, sustainable biomass, a well-developed infrastructure and technical expertise, Sweden has the opportunity to turn climate change into a growth engine. By being far ahead in climate change, Swedish companies have a unique opportunity to export know-how and technology to other countries, which contributes both to climate change globally and employment locally. To get there, a number of conditions need to be in place.

Sweden is in the process of changing from a fossil economy to a fossil-free one. To succeed, climate work needs to be combined with economic growth and growing welfare, in Sweden as well as globally. It is therefore important that the means of control are effective and that measures are taken that enable climate transition and reduce the negative effects of climate policy.

Ministry of Climate and Business

Excerpt from the minutes of the cabinet meeting on 21 December 2023

Present: Prime Minister Kristersson, chairman, and Minister Busch, Billström, Svantesson, Ankarberg Johansson, Edholm, J Pehrson, Jonson, Strömmer, Roswall, Forssmed, Tenje, Forssell, Slottner, M Persson, Wykman, Malmer Stenergard, Kullgren, Liljestrand, Brandberg, Bohlin, Carlson, Pourmokhtari

Rapporteur: Prime Minister Pourmokhtari

The government decides on a letter The government's climate action plan – all the way to net zero