Summary

Rising levels of greenhouse gases in the atmosphere have upset the balance of the Earth's climate system, resulting in a rapidly rising global average temperature. Global warming is now just over 1.1 degrees Celsius compared with pre-industrial levels. In addition to higher temperatures, this has led to more extreme weather events, increasing ice melts and rising sea levels. The environmental, economic and social effects of climate change are becoming increasingly apparent.

Sweden's emissions need to be reduced more quickly than before

Global emissions must trend down, quickly. Time is of the essence to limit global warming in accordance with the Paris Agreement and avoid the most dramatic negative consequences of a changing climate.

For nearly two decades, emissions in Sweden have decreased every single year except when the economy was recovering from the financial crisis, and later, from the Covid-19 pandemic. But in order to achieve Sweden's climate targets and halt global climate change, emissions must be reduced faster than before.

The EU is staying on course and picking up the pace...

Despite 2022 being marked by the war in Ukraine and the resulting high energy prices, the EU stuck to its roadmap for the climate transition that was agreed on by member states. New decisions were taken to end Europe's dependence on fossil-fuel energy more quickly.

During the Swedish Presidency of the EU, negotiations are underway on a major reform package called Fit for 55, which involves both more ambitious targets and more rigorous policy instruments. The EU's targets have been tightened so that Sweden's commitments as a member state have clearly approached the level of ambition in the country's nationally determined targets. The EU has also decided on a separate target for net removals of greenhouse gases from land use, land use change and forestry (LULUCF), which places increased demands on Sweden.

... while Sweden has lost steam

The policy presented so far by the new government is not sufficient for achieving the 2030 climate targets. On the contrary: instead of rapidly reducing emissions, the changes decided and announced to date will, according to the Government's own assessment, actually *increase* emissions in the near future. This is especially true for domestic transport and non-road mobile machinery. The measures that have been decided on, such as increasing carbon dioxide uptake in forests and land or stimulating climate investments in other countries, will not compensate for the omission of major emission reductions in Sweden by 2030.

For several years, the Swedish Climate Policy Council has stated that the transition towards climate neutrality (climate transition) needs to accelerate, and emissions decrease faster than before. It would be remarkable – and serious – if the reduction were now not only to be too slow, but to be reversed in the opposite direction. It would be the first time in at least two decades that Sweden's overall national policy has driven increased emissions of greenhouse gases.

The EU's Green Deal contains a broad reform agenda that links the climate transition with other efforts including biodiversity, increased resource efficiency and the circular economy. By contrast, the Swedish government's new policy so far signals a perspective narrowly directed towards the energy sector, specifically in terms of new electricity generation. This focus is too limited to enable the policy to achieve the climate targets in a sustainable way.

High demands on the upcoming climate policy action plan

According to the requirements of the Climate Change Act, the Government must present a climate policy action plan for the current term of office in 2023. The Climate Policy Council's evaluation of current policies, as well as our follow-up of the previous action plan, the input of government agencies and the EU's ongoing reforms, have led to a number of recommendations for this and future action plans.

Design policies that lower emissions and achieve the 2030 climate targets

The Government's climate policy action plan needs to include sufficient efforts to achieve the 2030 targets as well as strategic initiatives that provide the foundation for achieving future milestone targets and net-zero emissions by 2045. One cannot replace the other. Every kilogram of carbon dioxide emitted will continue to negatively impact the climate for centuries to come. There are climatological, environmental, economic and social risks in postponing emission reduction measures.

In last year's report, the Climate Policy Council presented five overarching recommendations for a climate policy action plan that can accelerate the climate transition. The following recommendations are still valid:

- Improve governance of government agencies and coordination among different policy areas and policymaking levels.
- Strengthen goals and policy instruments in key areas.
- Create better conditions for investments that help to achieve the climate goals.
- Carry out a broad knowledge and upskilling initiative for the climate transition.
- Take proactive, coordinated and decisive action in the EU.

The action plan needs to clearly demonstrate how the Green Deal and Fit for 55 package will be implemented in Sweden.

The Government must also ensure that the upcoming action plan – unlike the previous one – lives up to the requirements of the Climate Change Act. In particular, a clear timetable should be created for the implementation of different actions and an assessment of their impact on greenhouse gas emissions.

Prioritise and coordinate implementation

The Climate Policy Council's follow-up of the first climate policy action plan for 2019–2022 indicates that the Government has implemented most of the specific measures in the plan. The

exceptions concern some major reforms that, in several cases, have been investigated but not pursued further by the Government. In our assessment, implementation of the actions in the plan lost momentum at the end of the term of office at the same time as the ministerial Climate working group, led by the Prime Minister, ceased to be active. The Climate Policy Council's evaluations, as well as other reports, show the importance of coordination among different policy areas within the Government and the Government Offices.

Provide a clear, transparent follow-up report

The Climate Policy Council has repeatedly criticised the Government for the fact that the annual climate report to Parliament almost completely lacked a follow-up of the implementation of the climate policy action plan. Even in 2022, it was not reported to what extent or in what way the outgoing government implemented its action plan. This needs to change in the current administration. Systematic follow-up is important for the Government's own work and to create clarity and transparency for citizens in line with the purpose of the Climate Change Act.

Improve decision guidance and processes

On behalf of the previous government, several government agencies have presented decision guidance documents for the upcoming climate policy action plan. The Climate Policy Council's review shows that the proposals in the three documents are insufficient for achieving the 2030 targets. The proposals from the agencies can primarily make an impact in the longer term.

The main explanation for this is that when the proposals were drawn up, existing scenarios indicated that the current policies were adequate for achieving the 2030 targets. This has changed. To avoid a similar situation in the future, the decision guidance for the next action plan should include proposals for measures that together provide greater emission reductions than are required to achieve the targets. This would give the Government the opportunity to prioritise efforts in the action plan based on political direction and unexpected external events.

The climate transition needs to inform all relevant policy areas. The Climate Policy Council therefore has a positive view of the Government's allowing more agencies to take responsibility for guidance concerning the climate action plan. A standing mandate to relevant agencies would further bolster participation and accountability for the climate transition within their respective areas of responsibility. In addition, it would better enable skill-building around climate change for the long term.

RECOMMENDATION

1. Design a climate policy action plan that results in an accelerated climate transition, so that emissions are reduced in the near future and the 2030 climate targets are achieved.
2. Ensure that the action plan covers all sectors and leverages the entire overall policy to reach the long-term target of net-zero emissions by 2045 followed by negative emissions.
3. Ensure that the implementation of the action plan is prioritised and coordinated within the Government under the leadership of the Prime Minister.
4. Follow up the implementation of the action plan in the annual climate report to Parliament.
5. Give relevant agencies a standing mandate to provide decision guidance for the climate policy action plan with proposals that provide emission reductions that exceed the climate targets.

Synergies, conflicts and other societal goals

Phasing out all fossil fuels and reducing greenhouse gas emissions to zero entails a fundamental transformation of society. At the same time, the climate transition is necessary for being able to achieve other broader goals for the economy, public health, welfare, safety and other areas, as well as other environmental objectives. This major fundamental and long-term synergy between the climate targets and other societal goals does not prevent the transition in the short term from creating conflicts – as well as synergies – in relation to other goals and interests.

In order to make wise choices and trade-offs among different goals, it is important to take the climate into account in all policy areas. The direction of climate policy, in turn, needs to consider other societal goals. Policies need to be perceived as fair based on how costs and benefits are distributed, how different actors can express their views, and how existing rights or practices are recognised and taken into account.

A long-term approach in turbulent times

Conflicting goals, and sometimes even synergies, become clearer during a crisis when more is at stake and firm decisions need to be made. One example is how politicians handled the rapid increases in energy prices that occurred in 2022. At short notice, it was decided to take action to mitigate the economic effects on households and businesses. Some of these decisions have clearly hampered the chances of achieving the climate policy targets.

The sequence of events illustrates two points. Firstly, the policies for the climate transition should be made as robust as possible in the face of similar external events. This can be done, for example, through measures for a more efficient use of energy and resources as well as a more diversified supply of energy and other resources.

Secondly, short-term crisis measures should not be designed in a way that impairs our ability to achieve long-term goals. It is inappropriate to change, for example, the greenhouse gas reduction mandate for gasoline and diesel as a rapid crisis measure without analysing the long-term consequences. The function of such climate policy instruments is highly dependent on long-term confidence and stability. Of course, targeted support measures may be necessary during a crisis, but such support should be designed in a way that provides incentives for the climate transition, such as energy efficiency.

In the event that resource price shocks in the future justify more similar policy efforts as in 2022, the Government and its agencies must be better prepared. This would set the course for designing and implementing temporary support measures that are faster, more accurate, and do not counteract long-term societal goals like the climate transition.

Planning and decision-making processes for an accelerated climate transition

As the transition accelerates, it is natural that both conflicts and synergies with other goals or interests become more visible and specific. To exemplify this, the Climate Policy Council has taken a closer look at the large-scale industrial installations, with linkages to the climate transition, that have been launched in upper Norrland. The expansion requires a society wide transformation, and the high pace itself leads to several challenges. Among other challenges, the established planning processes and forms of cooperation are insufficient for managing the speed of industry's transition. This is true both between different political levels and between different stakeholders and actors at national, regional and local levels.

Challenges in terms of working methods and processes include, but are not limited to, permitting processes of various kinds. These processes need to be renewed so that they can withstand an accelerated transition while being predictable and inclusive, able to take into account different interests and making trade-offs between different societal goals. Political will is needed to see the challenges and solve the problems, courage to make priorities and decisions, and skills and resources. Leadership is key.

Impact assessments, government governance and review of societal goals

The climate issue affects all areas of society and needs to inform overall policy. The Climate Policy Council has previously pointed out the need for impact assessments that include impact on the chances of achieving the climate targets in connection with all government inquiries and policy proposals. Furthermore, the Climate Policy Council has emphasised the importance of the Government's highlighting the climate targets in agency instructions and appropriation directions.

The Government's guidance, in turn, depends on how the overarching societal goals are designed. When the previous climate policy action plan was adopted, Parliament supported the Government's potential reformulation of the targets during the review of each societal goal, to make them consistent with the climate targets. Based on a review of all of the more than one hundred goals presented in the Government's budget bill, the Climate Policy Council has identified a number of policy areas where such a review should be prioritised.

A coherent narrative about climate transition

A vital aspect of leadership for social change involves anchoring policies in a broader narrative about *why* change is needed, about the possibility of a better future and about how to get there. Such a narrative needs to highlight the major overarching synergy between halting climate change and the chances of achieving virtually all other societal goals. This would better enable policies to navigate turbulent times, to gain broad acceptance – even for difficult decisions – and could contribute to a common route and faith in the future.

RECOMMENDATION

6. Make society less sensitive to future resource price shocks, for example through measures for a more efficient use of energy, materials and products and a diversified supply.
7. Build up skills and preparedness to be able to design and effectively implement short-term crisis interventions in the future, without these counteracting the possibilities of achieving long-term climate goals.
8. Continue to develop good examples of planning processes and forms of collaboration that can help to accelerate the transition while better leveraging synergies and making trade-offs among competing interests.
9. During the term of office, carry out a review of relevant societal goals to ensure that goals and governance are consistent with the climate targets and aligned with previous parliamentary decisions.
10. Develop a clearer, comprehensive narrative about Sweden's climate transition.

Part I

Current emission trends and policies

Introduction

Rising levels of greenhouse gases in the atmosphere have put the Earth's climate system out of balance, with a rapidly rising global average temperature as a result. Global warming is now just over 1.1 degrees above pre-industrial levels.[1] In addition to higher temperatures, this has led to more extreme weather events, melting sea ice and rising sea levels. All this, in turn, is causing alterations in seasonal patterns, shifts in the distribution range of different species and changes in ecosystem species composition. The social and economic consequences of climate change are becoming increasingly apparent in our communities.

Global greenhouse gas emissions from fossil fuels remain high and reached a new top level in 2022.[2] According to the Paris Agreement target, global warming should be kept well below 2 degrees above pre-industrial levels, and preferably limited to 1.5 degrees in order to avoid the most drastic negative consequences of a changing climate. For this to succeed, emissions must urgently trend downward. If emissions remain at today's levels, we have only about ten years before we exhaust the carbon budget for reaching the 1.5-degree target.[a] Just because we face major challenges in reaching the 1.5-degree target does not mean that there are fewer reasons for reducing emissions. Every tenth of a degree makes a difference in the severity of the effects of climate change. The lower the concentration of greenhouse gases in the atmosphere, the lower the risk of the most serious consequences. To achieve the goals of the Paris Agreement, carbon dioxide emissions must be reduced to zero worldwide. With the climate policies of the EU and Sweden, we intend to take our share of responsibility.

The role of policy in the climate transition

Reducing greenhouse gas emissions to net zero entails a fundamental shift in society – a transformation.[3] The Climate Policy Council uses the term "climate transition" to describe this transformation: a shift away from fossil fuels to a fossil free society without any net emissions of greenhouse gases into the atmosphere.[4]

The elements that the path to net-zero emissions can contain are well known, although not all solutions are equally well developed. In last year's report[4], the Climate Policy Council described four key areas for the climate transition that recur in both Swedish and international studies:

- A more efficient use of energy and resources (including reduced consumption of carbon-intensive goods and services)
- Zero-carbon electrification
- Biomass from forestry and agriculture
- Carbon removal and storage (either in forests and land or through technical measures).

The vast majority of measures that are bringing us closer to zero emissions can be linked to any of these four key areas. These measures are discussed in several sections of this report and involve using technical measures as well as transforming institutions, business models and behaviours.

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[a] Within certain probabilities, the IPCC estimates that the carbon budget will be 500 Gt CO2 starting in 2020. Today we have used up about 120 Gt. Thus, 380 Gt remain. IPCC (2021). Sixth Assessment Report. Summary for Policymakers.

Climate change has several drivers. It is becoming increasingly profitable to choose zero-emission, more resource-efficient alternatives over fossil-fuel and resource-wasting alternatives. But we cannot solely rely on technology and economic progress to bring greenhouse gas emissions down to zero quickly enough. Policy plays a central role in the climate transition. It is the task of policy to foster the necessary changes on the part of citizens and organisations. Policies need to formulate a vision of society without fossil fuels. Leading the way towards that vision requires balanced, evidence-based legislation, clear support and significant institutional reforms. The key tasks of policy also include managing any potentially conflicting goals and interests, a topic developed in Part II of this report. Many dimensions, decision-making processes and policy instruments need to be part of policies that will drive the climate transition. These include specific instruments with a clear purpose of supporting and influencing stakeholders in the transformation. Leadership and governance – broader institutional aspects – are also crucial. One example is policy's ability to formulate goals that create meaning and a common direction, as well as the interaction among climate targets and other societal goals.

In previous reports, we have highlighted seven criteria that are essential for the ability of policy to help create an economically, environmentally and socially sustainable climate transition. They are summarised in Figure 1 and described in more detail in the Climate Policy Council's 2020 report.[5]

Figure 1. Seven criteria for an impactful policy for climate change.

Lessons learned ahead of the new climate policy action plan

Part I of this report describes and analyses how overall policy has developed in different ways over the past year. In each chapter, we at the Climate Policy Council discuss what lessons can be learned for the climate policy action plan that the new government, according to the requirements of the Climate Change Act, will present in 2023. Chapter 1, which summarises the latest emission trends, serves as a starting point for further analysis.

The Climate Policy Council's mission is to evaluate whether the Government's overall policy is in line with the climate goals decided on by the Government and Parliament. The Government's overall policy also includes Sweden's actions in the EU. Since the EU has increasing ramifications for Sweden's climate policy, Chapter 2 describes at a general level the role the EU plays and how its ongoing reform agenda will affect Sweden's climate policy.

Chapter 3 follows a review of the policy pursued in 2022 from both the previous Andersson administration and the current Kristersson administration, which took office following the parliamentary elections. The previous government's last climate report to Parliament is briefly commented on in Chapter 4, as well as suggestions for improving climate reporting in the future.

The end of the term of office in autumn 2022 also signalled an end to Sweden's first climate policy action plan. The Government has not done its own follow-up. Instead, in Chapter 5, we present our own follow-up of the first climate policy action plan. The lessons learned from this follow-up are useful in the preparations for future action plans.

The Climate Policy Council's mission also includes evaluating the data and models on which the Government bases its policy. Therefore, Chapter 6 in this year's report contains an analysis of the background material for the upcoming climate policy action plan that the Government has ordered and received from various state agencies. It is essential to leverage experiences from this process when developing future action plans.

1. Climate targets and emission trends

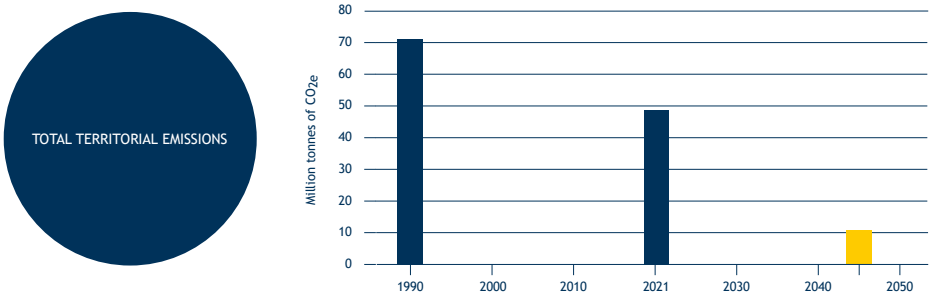
This chapter presents the various targets in the Swedish climate policy framework and how greenhouse gas emissions have evolved from 1990 to 2021, which is the latest year that has available official emissions data. Emission trends are reported both at an aggregate level and by sector. Sweden is also a part of the EU's climate policy and goals, which are described in more detail in Chapter 2.

1.1. By 2045, Sweden must reach net-zero greenhouse gas emissions

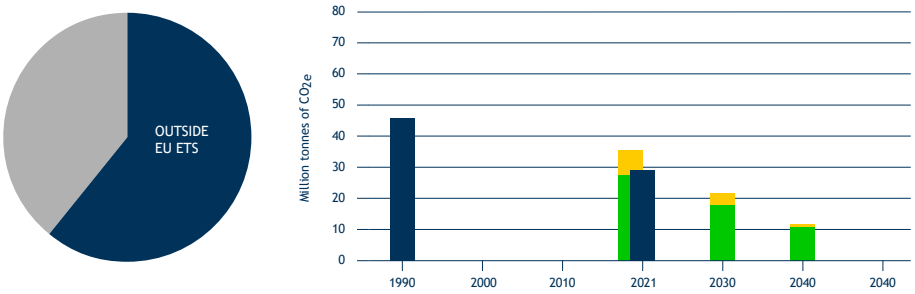
The overarching goal of all environmental policies is the generation goal, which calls for handing over to the next generation a society where the major environmental problems are solved without causing increased environmental and health problems outside Sweden's borders. The generation goal has been operationalised in 16 environmental quality objectives. One of these is "Reduced climate impact", which means that "the global average temperature increase is limited to well below 2 degrees Celsius above pre-industrial levels and preferably limited even further to 1.5 degrees Celsius above pre-industrial levels." This objective is based on the global Paris Agreement target. To achieve this environmental quality objective, a climate policy framework was established in 2018 consisting of the Climate Act, five interim targets for the environmental quality objective and the Climate Policy Council.

The overarching goal of the climate policy framework is for Sweden to have no net emissions of greenhouse gases by 2045, followed by negative emissions. Parliament has decided that emissions within Sweden's borders should be at least 85 percent lower in 2045 than in 1990 (see Figure 2). The territorial emissions included in the Swedish 2045 target can be divided into two parts: emissions included in the EU Emissions Trading System (EU ETS) and emissions that are not part of the EU ETS (non-ETS). The latter are instead included in the EU's effort-sharing regulation (ESR). In addition to the overall 2045 target, there are three Swedish interim targets for non-ETS emissions that should be achieved by 2020, 2030 and 2040, as well as an additional Swedish 2030 interim target for emissions from domestic transport, excluding domestic flights (these are part of the EU ETS).

The overall target for 2045 applies to Sweden's total territorial emissions of greenhouse gases. It does not include emissions from ships and aircraft that are refuelled in Sweden but have a destination outside Sweden's borders (called international bunkers). The objectives of the climate policy framework are summarised in Figure 2.

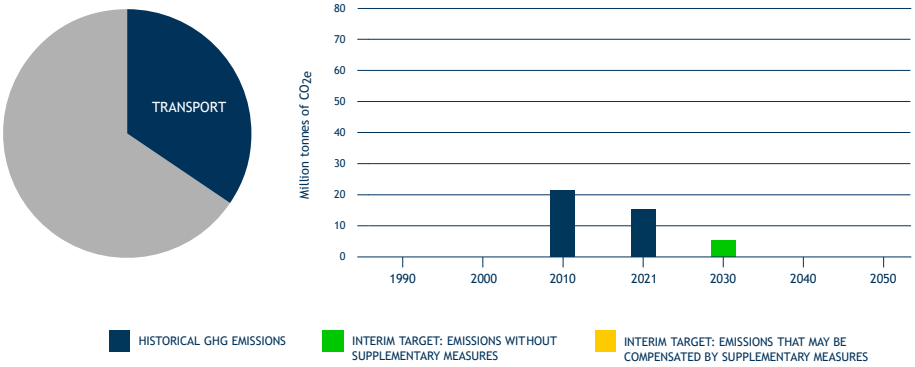


Sweden must reach net-zero emissions by 2045. This means that greenhouse gas emissions should be at least 85 percent lower by 2045 compared to 1990. The remaining 15 percent may be compensated for by supplementary measures. After 2045, negative emissions should be achieved.



Interim targets for non-ETS emissions

- By 2020, emissions should be 40% lower than in 1990. A maximum of 13% can take place through flexible mechanisms. This interim target has been met.
- By 2030, emissions must be at least 63% lower than in 1990, of which no more than 8% of the reduction may be achieved through supplementary measures.
- By 2040, emissions must be at least 75% lower than in 1990, of which no more than 2% of the reduction may be achieved through supplementary measures.



Interim targets for the transport sector
By 2030, emissions for domestic transport (excluding CO2 emissions from domestic aviation) must at least 70% lower than in 2010.

Figure 2. Targets in the Swedish climate policy framework. Emission trend from 1990 to 2021.
Source: Swedish Environmental Protection Agency

The climate targets (in addition to the interim target for domestic transport) can be partly achieved by crediting what is known as supplementary measures, which provide certain flexibility for achieving the targets. The supplementary measures may consist of:[6]

- Increased net removal in forests and land
- Capture, transport and storage of biogenic carbon
- Verified emission reductions through investment in other countries.
- Capture of greenhouse gases in the atmosphere through other technical measures.

For Sweden to achieve negative net emissions after 2045, the supplementary measures must be greater than Sweden's greenhouse gas emissions are at that time. Similarly, the EU's climate objectives contain different types of flexibility. (Read more in Chapter 2.)

Sweden reached the 2020 interim target, which states that non-ETS emissions should be 40 percent lower than 1990 levels. This target was achieved using supplementary measures under the clean development mechanism (CDM), equivalent to 0.9 million tonnes in reduced greenhouse gas emissions.[a] CDM allows for verified emission reductions through investment in other countries as defined by the regulations of the Kyoto Protocol (which preceded the Paris Agreement). At the UN's COP 26[b] climate conference in Glasgow in 2021, a new regulatory framework was adopted to eventually enable also counting emission reductions in other countries towards the target under the Paris Agreement (Article 6). There are some differences between the old and the new regulations. Above all, the new regulatory framework addresses the creation of a global market for efforts to reduce emissions.

[a] The target allowed 13 percentage points of the 1990 emission reduction to be achieved through CDM. The end result in 2020 was that CDM equivalent to 0.9 million tonnes of CO2e was used, or approximately 2 percentage points.

[b] Conference of the Parties. Regular conferences where representatives of the parties to the UNFCCC meet and make decisions. COP26 was the twenty-sixth COP meeting.

FACT BOX 1. NEW CLIMATE TARGETS FOR CONSUMPTION AND EXPORTS HAVE BEEN PROPOSED BY THE CROSS-PARTY COMMITTEE ON ENVIRONMENTAL OBJECTIVES

Another way to calculate emissions is through consumption-based emissions of greenhouse gases. These are the emissions from a country's total consumption of goods and services, regardless of where the emissions occur. Consumption-based emissions are a way of illustrating the total carbon footprint of a country and its population.

For Sweden and many other developed countries, consumption-based emissions are higher than territorial emissions (see Figure 3). Total consumption-based emissions in Sweden were approximately 79 million tonnes in 2020. This is a decrease of 11 percent compared to 2019. The decrease was partly due to the decline in travel resulting from the Covid-19 pandemic. Since 2008, emissions from Sweden's consumption have fallen by 27 percent, of which emissions that have occurred abroad have fallen the most.[2]
The calculation method for territorial and consumption-based emissions differs. The results for consumption-based emissions should therefore be interpreted with some caution, especially if the statistics are broken down at a more detailed level.

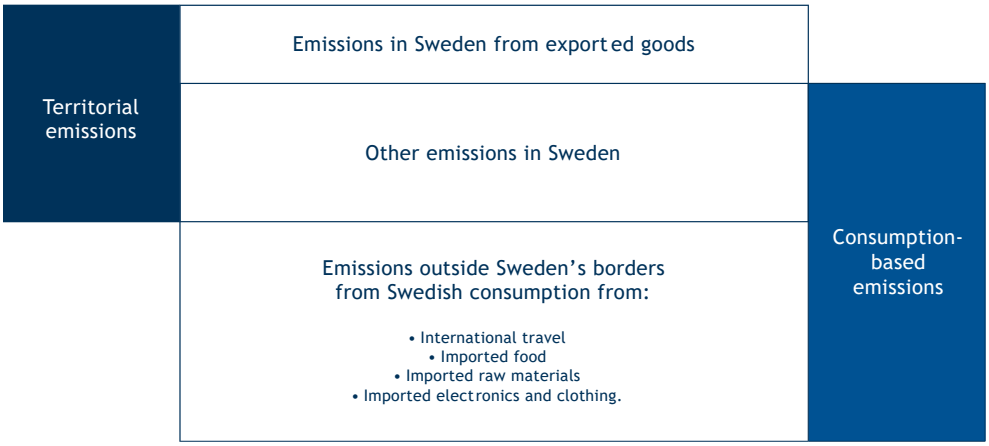


Figure 3. Territorial and consumption-based perspectives on emissions
Source: Larsson et al. (2021), Konsumtionsbaserade scenarier för Sverige. Adapted by the Swedish Climate Policy Council.

According to the UN Framework Convention on Climate Change (UNFCCC) on which the Paris Agreement is based, countries are responsible for the emissions that occur within their borders. Consumption-based emissions distribute these emissions differently and include emissions not covered by the Paris Agreement, such as international shipping and aviation. Countries can reduce their imported emissions in several ways. Examples include by helping other countries with their emission reductions, by reducing their consumption of material- and energy-intensive goods and services, and by using instruments that are aimed at imports, such as climate tariffs.

In April 2022, the Cross-Party Committee on Environmental Objectives appointed by Parliament proposed a new climate target for Sweden's consumption-based emissions and a new target for the climate benefit of Sweden's exports. The new targets are summarised, together with the territorial climate targets, in the objective that "By 2045, Sweden must have a negative global climate footprint".[7] This means that the emissions caused by Swedish consumption that occur in other countries should also reach net zero by 2045. The Committee's report on Sweden's global climate footprint was circulated for comments in the autumn of 2022. The Government Offices' compilation of the consultation opinions reveals that many of the consultation bodies are positive to the proposals.[8] The Government has also directed Statistics Sweden to develop statistics on the climate benefits of exports. Statistics Sweden will finalise this task in April 2024.

1.2. Emission trends in Sweden

In 2021, territorial greenhouse gas emissions were nearly 48 million tonnes, which is 33 percent lower than in 1990. Emissions for 2021 decreased by 5.5 percent compared to 2019, the last full calendar year before the Covid-19 pandemic. However, emissions increased by 3.4 percent compared to the previous year, 2020. The increase in 2021 is largely due to a recovery in the economy, after emissions had fallen more than usual during the pandemic.[10]

Figure 4 shows territorial emissions trends since 1990. Emissions have been falling gradually since the early 2000s, except for in 2021 and 2010, when they increased because of the economic recovery that followed the global financial crisis. Much of the decrease since 1990 is due to a reduced use of fossil fuels to produce electricity and heat.

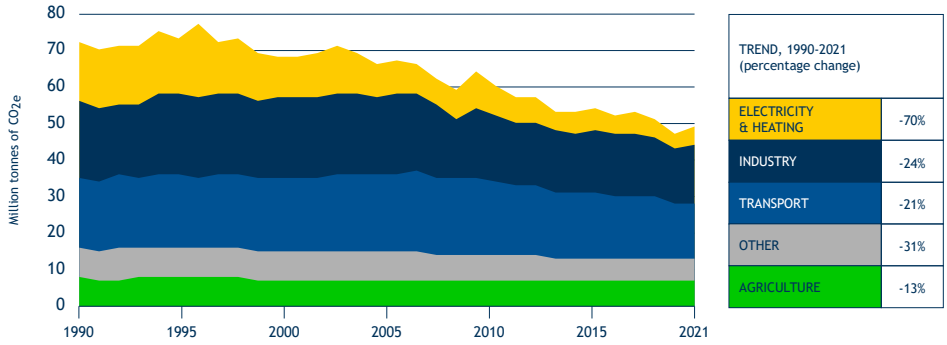


Figure 4. Sweden's greenhouse gas emissions by sector, 1990–2021, in million tonnes of carbon dioxide equivalent (CO2e). The sector *Other* includes emissions from industrial machinery, product use[c] and waste management.

Source: Swedish Environmental Protection Agency

Emission trends vary by sector

Greenhouse gas emissions within the EU ETS include major installations in industry and in electricity and district heating production, as well as carbon dioxide emissions from domestic flights within the EU. Non-ETS emissions include those from domestic transport, agriculture and other sources, such as industrial machinery, product use and waste, as well as smaller energy and industrial facilities. Figure 5 shows the share of emissions in different sectors that is covered by EU ETS.

[c] The use of products containing fluorinated gases and solvents, includes leaking cooling systems, heat pumps and air conditioners, as well as the use of lubricants, solvents and paraffin, which generate greenhouse gases.

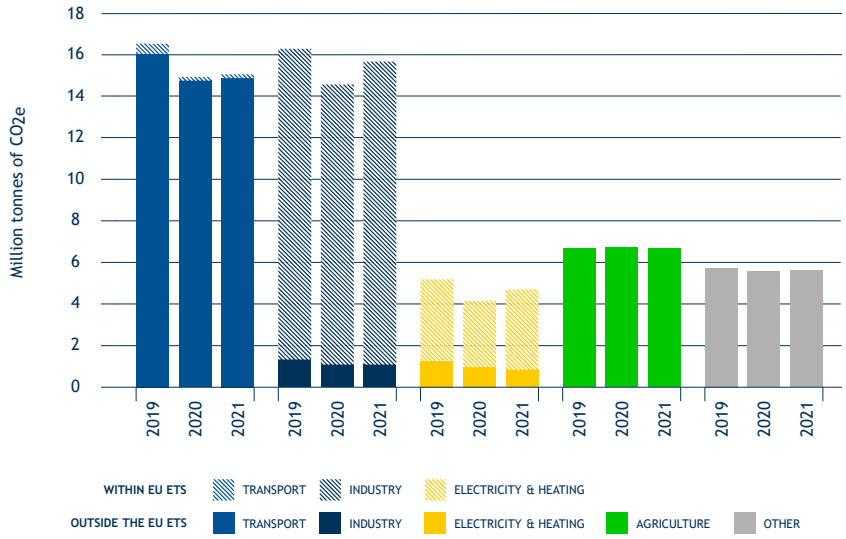


Figure 5. Sweden's territorial greenhouse gas emissions in 2019–2021, by sector. The striped area of the bars indicates emissions included in the EU emissions trading scheme. *Other* includes emissions from industrial machinery, product use and waste.

Source: Swedish Environmental Protection Agency

Total territorial emissions outside the EU ETS in 2021 totalled approximately 29 million tonnes of carbon dioxide equivalent, a decrease of nearly 37 percent since 1990. Emissions remained broadly unchanged compared to 2020. EU ETS emissions were approximately 19 million tonnes of carbon dioxide equivalent in 2021, nearly 11 percent higher than in 2020. Since the system was introduced in 2005, emissions have decreased by 19 percent.

Emissions from **domestic transport** accounted for about one-third of Sweden's total greenhouse gas emissions and were about 15 million tonnes of carbon dioxide equivalent in 2021. This is a decrease of 21 percent since 1990. Transport emissions increased marginally in 2021 compared to 2020. Total traffic[d] has increased steadily since 1990, except for during the Covid-19 pandemic when traffic instead decreased. The fact that emissions have not increased at the same rate is mainly due to an increased share of biofuels and to energy efficiency improvements and electrification of the vehicle fleet. In 2021, traffic started to increase again but did not reach the same level as before the pandemic.

In 2021, **industry** also accounted for about one-third of Sweden's total greenhouse gas emissions, almost 16 million tonnes of carbon dioxide equivalent. Emissions from industry have decreased by about 24 percent since 1990 but increased by 4 percent in 2021 compared to 2020. The gradual decline since 2006 is mainly due to switches in the type of fuel (coal from fossil fuels to natural gas, and fossil fuels to biofuels and electricity), ongoing energy efficiency measures and reduced production volumes in the iron and steel industry during the first decade of the 2000s.

[d] Expressed in vehicle kilometres.

Greenhouse gas emissions from **electricity and heating** were nearly 5 million tonnes of carbon dioxide equivalent in 2021, a 70 percent reduction since 1990. Emissions increased by approximately 14 percent compared to the previous year (2020); however, this entailed a decrease of almost 10 percent compared to 2019. The increase in 2021 can largely be explained by a colder year compared to the previous year and high electricity prices, which spurred the production of electricity based on fossil fuels. The decline compared to 2019 partly depends on the fact that 2019 was a colder year than 2021, and because fossil fuels continued to be phased out.

Emissions from **agriculture** in 2021 were nearly 7 million tonnes of carbon dioxide equivalent. Emissions have decreased slightly compared to 1990, but in percentage terms less than in other sectors. The agricultural sector's emissions primarily consist of methane from animal digestion, methane and nitrous oxide from livestock manure, and nitrous oxide and carbon dioxide from cropland. Greenhouse gas emissions from agriculture pose a more difficult challenge than in other sectors because the climate impact of ruminants and the use of fertilisers are difficult to reduce to zero.

Emissions from the category *Other* in Figure 5 are dominated by industrial machinery, which emitted about 3 million tonnes of carbon dioxide equivalent in 2021. Product use stood at 1.4 million tonnes while waste accounted for 1 million tonnes. In total, other emissions have decreased by 31 percent since 1990 and account for about 12 percent of Sweden's total emissions. The calculations of machinery emissions are highly uncertain, making it difficult to draw conclusions about emission trends.

FACT BOX 2. CLIMATE POLICIES AROUND THE WORLD

Climate policies reach record numbers: In 2010, only 25 percent of the world's countries had climate targets, while only 10 percent of countries lack them today. Of the world's 195 countries (as defined by the UN), 56 have passed climate laws and more than 10,000 cities have voluntarily committed to implementing climate actions.

Much cheaper climate technology: Reducing emissions is much cheaper than it was before. Solar energy costs only 15 percent of what it did ten years ago, while wind power costs half of what it did ten years ago.

Technology and industrial development instruments are popular: Instruments designed to promote the development of new green industries are popular, especially aid schemes for renewable energy.

Emissions pricing is used to a limited extent: Although we know that emissions are reduced when we put a price on them, only 20 percent of the world's emissions are still priced through taxes or quota systems.

Climate policy works: Government climate policy works, and it reduces emissions. However, there is too little research available for us to draw conclusions about which measures are most effective in different circumstances.

Democracy promotes climate policy: Research suggests that a lack of democracy and problems with corruption hinder the development of well-functioning national climate policy governance.

Many areas of public policy matter: It is not enough to simply introduce a good climate policy. Public regulations and instruments for achieving other goals are also important for a country's climate impact.

Municipalities and cities are vital to the climate transition: Municipalities and cities around the world are responsible for some key areas of the climate transition: urban planning, transport infrastructure and local business development.

Legal proceedings are becoming more common but their effects uncertain: Since 2015, at least 37 lawsuits have been filed by actors questioning whether countries are doing enough to reduce emissions, such as the Urgenda Foundation's lawsuit against the state of the Netherlands. Climate actors seem to win court cases less often than those who want to continue emitting greenhouse gases, but there is too little research to be able to draw clear conclusions.

More, and better, media coverage of climate issues: The climate issue is being covered more often, more broadly and in a more nuanced way than before around the world, not only in Western countries.

Source: IPCC assessment report, "Climate Change 2022: Mitigation of Climate Change", April 2022

1.3. Emissions need to be reduced more quickly than before

Sweden's total territorial emissions have decreased by 33 percent compared to 1990 and need to be reduced by at least 85 percent by 2045 for Sweden to meet its long-term climate target. This means that emissions must be reduced by an average of at least 2 million tonnes each year until

2045. On average, total emissions have fallen by just under 0.8 million tonnes since 1990. During the period 2004–2014, Sweden's emissions decreased at most by an average of 1.5 million tonnes, or 2.4 percent annually. After that, the emissions curve flattened out until 2018. The emission trend in recent years is difficult to assess because of the one-off effects of the Covid-19 pandemic in particular. Emissions must be reduced at a faster pace than before if Sweden is to achieve the long-term climate target.

The conditions for reducing emissions are different depending on the sector, so emission trajectories will look different depending on the sector. It cannot be expected that the emission reduction rate, especially in industry, will be completely even. Major technological shifts, such as the production of fossil-free steel, and sudden disruptions in the world around us, such as Russia's invasion of Ukraine, can produce abrupt fluctuations or incremental effects on emission reductions. Total accumulated emissions over time are crucial to keeping the global average temperature below the Paris Agreement target, not exactly which year countries' emissions reach net zero. It is therefore important for Sweden and all other countries to reduce near-term emissions at a faster pace than has been accomplished so far.

EU ETS emissions are primarily governed by the regulations for emission trading that are determined in the EU. Sweden's interim target ahead of 2045 therefore only applies to non-ETS emissions. According to the interim target for 2030, emissions should be reduced by 55–63 percent compared to 1990 levels, depending on whether supplementary mechanisms are used. This means that emissions must be reduced by 0.9–1.3 million tonnes annually by 2030, compared to the average reduction of 0.5 million tonnes since 1990 or about 0.9 million tonnes annually since 2005.

In the past, non-ETS emissions have mainly decreased in the heating sector. In that sector, not many emission volumes remain to be removed. Of the remaining emissions, about half come from domestic transport, which has its own interim target. Together, transport and industrial machinery (with engine emissions from non-mobile machinery) account for 60 percent of current non-ETS emissions. Even apart from the specific interim target for transport, a large part of next year's emission reductions in Sweden thus need to take place in the transport sector.

2. Link between Sweden's and the EU's climate policy

The Climate Policy Council is tasked with evaluating the Government's overall policy relative to the climate targets. Overall policy also includes the Government's actions in the EU. In addition, the conditions for Swedish climate policy are significantly affected by EU policy. Many changes are currently underway in the EU regulatory framework. This chapter provides an overview of those changes that might affect climate policy developments in Sweden.

In the spring of 2023, Sweden holds the Presidency of the EU. This means that Sweden will play a pivotal role in reaching agreement on several parts of the EU's comprehensive reform programme in terms of the climate.

In 2019, the EU laid the foundations for comprehensive reforms in the areas of climate, energy, biodiversity, resource efficiency and circular economy through the Green Deal, its comprehensive strategy for sustainable development. As a key component of the Green Deal, the EU adopted a European climate law ahead of the UN's climate change conference in Glasgow in 2021 (COP26).[11] The law aims to reduce net greenhouse gas emissions by 55 percent by 2030 compared to 1990 levels. The long-term goal is for the EU to achieve a balance between greenhouse gas emissions and removals (net zero emissions) by 2050. After that, the EU is expected to have negative emissions, meaning a net removal of greenhouse gases. The EU Climate Law not only regulates emission reductions but impacts climate adaptation measures.

The EU Climate Law also regulates the role of the new Scientific Advisory Board on Climate Change established in 2022. [a] The Advisory Board is independent and intends to serve as a point of reference for the EU on scientific knowledge relating to climate change. In particular, the work programme of the Advisory Board directs it to conduct dialogues with relevant stakeholders including national climate councils, such as the Climate Policy Council.

Following adoption of the Climate Change Act, the European Commission presented a highly comprehensive reform agenda called Fit for 55, or the Fit for 55 package.[12] This package aims to achieve the stricter targets and largely involves updating and tightening existing legislation, strategies and targets. It will place stricter requirements on EU member states' climate policies, as well as on proposals for more EU-wide instruments. Figure 6 shows the diverse initiatives in Fit for 55.

The various components of the reform package were negotiated in 2022 by the European Parliament, the Council representing member states[b] and the European Commission. The work has been affected by Russia's invasion of Ukraine, which caused a spike in fuel and electricity prices mainly due to reduced supply of fossil-based gas (also called natural gas). As a result, in May 2022 the European Commission presented the REPowerEU plan, which proposed both temporary measures to cushion the price shocks and longer-term reforms.[13] The aim of

[a] The European Scientific Advisory Board on Climate Change consists of 15 scientific experts and is headquartered at the European Environment Agency (EEA).

[b] In the EU, member states are represented by the European Council and the Council of Ministers. More horizontal issues and strategic orientation are dealt with by the member states in the European Council, while legislative work by the member states is carried out primarily within the framework of the Council of Ministers. In the European Council, the member states are represented by their prime ministers, while the Council of Ministers is represented by the respective specialist ministers. In actual negotiations with the European Parliament and European Commission, the Council is represented by the country holding the Presidency.

REPowerEU reforms is to more rapidly end Europe's dependence on fossil fuel energy in general and natural gas from Russia in particular.

Despite the energy crisis, with subsequent rising inflation and an expected downturn in the economy, the negotiations led to decisions on the essential elements of the Fit for 55 package. Examples include a new effort-sharing scheme for emissions outside the EU Emissions Trading System (EU ETS), a revised LULUCF Regulation[c] to increase carbon removal from land use, tightening and extending the existing ETS, and a new ETS covering transport and buildings. But several difficult issues remain for the Swedish Presidency to resolve during the first half of 2023.

Figure 6. Components of Fit for 55. Adapted from the EU Commission.[12]

Comment: The colours indicate the focus of the various initiatives for reducing greenhouse gas emissions. Green indicates initiatives connected with emissions trading, grey concerns energy-related initiatives, medium blue addresses transport, yellow is for the land use sector, and dark blue is for overall effort sharing.

The EU's previous regulatory framework, together with the proposals in Fit for 55, consist of a large number of detailed rules that, large and small, affect governments, authorities and various stakeholders. The scope of this report cannot be comprehensive for all areas; instead, the Climate Policy Council chooses to focus on selected areas that are assessed to be highly relevant to Sweden's national climate policy.

[c] In emissions reporting, LULUCF stands for "Land Use, Land-Use Change and Forestry".

2.1. EU climate policy both hinders and enables climate action in Sweden

The UNFCCC and the Paris Agreement together create a global framework for all countries' climate policies. The EU, not its member states, is responsible for the global commitments of both the UNFCCC and the Paris Agreement. Although Sweden is obliged to act in line with the EU, it has scope to adapt its strategies to national conditions. The EU has developed a broad set of rules and regulations that drive the Swedish climate transition while in some cases limiting the type of measures Sweden can use.

The EU began to develop climate objectives and regulations back in the 1990s, and a complex and comprehensive governance architecture has gradually emerged since then. Some key elements have existed for almost two decades, such as the EU's overall emission reduction targets, the EU Emissions Trading System (EU ETS), effort sharing for residual emissions, and common regulatory frameworks for renewable energy and energy efficiency. The EU has also taken joint decisions on, for example, product standards in the common market, emission requirements for vehicles and rules for the common electricity market. As time has passed, EU climate policy has matured and the governance system has evolved, including the Climate Law and the Scientific Advisory Council.

The EU has tightened its overall climate targets several times, often as a result of processes during international climate negotiations.[14] In this context, the EU has also specified how the target can be achieved through contributions from emission reductions under the EU ETS (see Section 2.3), emission reductions in the sectors not included in this scheme (see Section 2.2) and net removals in the land use sector (LULUCF, see section 2.4). In parallel, Sweden has developed its own national climate targets for territorial emissions. In the past, these have gone further than those proposed by the EU, but more recently they have become more similar as a result of the EU's raised ambitions.

As part of the EU's governance, Sweden is affected by extensive reporting requirements for climate policy. Initially, EU member states had to submit a wide variety of energy and climate reports to the European Commission, but in 2018 it was decided that the bulk of national reporting would take place every ten years through integrated national energy and climate plans.[15] Sweden submitted its first plan to the European Commission in 2019, covering the period 2021–2030. The current plan will be updated in 2024. In the plan, Sweden has reported its national climate targets (including the domestic transport target) as well as its contribution to achieving the overall EU targets for renewable energy and energy efficiency. For renewable energy, an indicative trajectory[d] is presented leading up to 2030, when the share should reach 65 percent. For energy efficiency, the reported target is to halve energy intensity[e] between 2005 and 2030.[16, f]

[d] The indicative trajectory forms the basis for the European Commission's evaluation of whether member states are on track to achieve the EU-wide targets.

[e] Energy intensity is reported as energy input relative to GDP (kWh/krona).

[f] In the long-term scenarios presented by the Swedish Energy Agency in 2021, the share of renewable energy varies between 63% and 75%. Energy intensity is reduced in scenarios by 46-47% compared to 2005. Swedish Energy Agency, 2021. "Scenarier över Sveriges energisystem 2020", ER 2021:6.

2.2. Effort-sharing regulation affects Sweden's carbon budget

When it was decided on, effort-sharing regulation (ESR)[17] of 2018 aimed to secure 30 percent emission reductions within the EU for non-ETS sectors including transport, buildings, agriculture, waste and certain less emission-intensive industries.[g] The reduction is to be achieved by allocating the carbon budget for these sectors among the different member states in national emission targets. For Sweden, the 2018 effort sharing entails a reduction in emissions by 40 percent by 2030 compared to 2005 levels. On 8 November 2022, the Council of Ministers and the EU Parliament agreed that the EU's total emissions covered by the ESR will decrease by 40 percent during the corresponding period.[18] For Sweden, this means a 50 percent increase in the requirement for emission reductions between 2005 and 2030. For each member state, the 2030 target is the end point of a reduction pathway defining the annual emission reductions for the years 2021–2030. [h]

Several mechanisms are built into the ESR to increase the potential to attain the targets:

1. **Borrow**. If emissions are higher than the annual limit for a year, the Government can borrow a limited amount of annual emission allocations (AEAs) from subsequent years.

2. **Save**. If emissions are lower than the carbon budget, AEAs can be saved for future years.

3. **Transfer carbon budget between countries**. A member state can transfer a certain percentage of its allocated emissions to other member states, if they are not needed to meet its own target. There are no corresponding restrictions for those who want to use AEAs from another member state.

4. **Use EU ETS.** It is possible for some countries to use a limited share of EU ETS allowances to meet effort-sharing commitments. The amount corresponds to approximately 0.8 million tonnes annually for Sweden. Sweden has until the end of 2023 to announce whether it intends to use this mechanism for the period 2025–2030.

5. **Leverage surpluses under the LULUCF regulation.** There are some, albeit limited, possibilities to transfer surpluses from LULUCF in order to meet effort-sharing targets. The restrictions are different for different countries. Sweden can use a total of 4.9 million tonnes over the period 2021–2030 to meet its commitment. According to the provisional agreement on the new ESR, this amount will be divided into two equal parts for the period 2021–2025 and 2026–2030, respectively.

It is unclear whether AEAs from other countries will be available that Sweden can utilise. The European Commission's latest assessment[19] shows that most member states might struggle to meet their current 2030 targets under the ESR. If several large countries do not reach their targets, there may be a shortage of and thus competition for AEAs. There are currently no decisions on a common market for such entities, but exchanges between countries are expected to take place through bilateral agreements.

In an agreement from December 2022, it was decided that emissions from road transport and buildings, which make up a large part of the emissions included in the ESR, will be included in an emission trading system separate from the existing system. This new system goes by the acronym

[g] As part of the overall EU (including EU ETS) target of 40% emission reduction.

[h] Information on the annual national emission levels can be found in the European Commission's Implementing Decision (EU) 2020/2126.

ETS-BRT (emissions trading system for buildings and road transport). Despite the creation of this new trading system, emissions from these sectors will continue to be included in the emissions covered by the effort-sharing regulation for which member states are responsible.[20] The system will thus act as a new common economic instrument, but there is no guarantee for member states that they will meet their commitments under the effort sharing. ETS-BRT is described by the European Commission as a complement to national instruments in the road transport and building sectors. The new trading system is scheduled to enter into force in 2027 or 2028, depending on fuel price trends.

Comparison between Swedish 2030 targets and upcoming EU target

The Swedish national emission targets for 2030 and 2040 cover the same emissions as the emission requirements imposed on Sweden under the ESR. These emission targets apply to emission sources not covered by EU ETS (see section 2.3). However, the targets compare emissions with different base years and differ regarding the flexibility mechanisms that can be used, which means that a comparison is difficult. Table 1 presents an attempt at such a comparison.

Table 1. Comparison of the Swedish national interim targets for 2030 and the new requirements under EU effort sharing.

	Emissions, millions of tonnes	**Change over 1990**	**Change over 2005**
Sweden's non-ETS emissions in 2021	29	-37%	-33%
	Carbon budget, millions of tonnes	**Change over 1990**	**Change over 2005**
Sweden's national interim targets for 2030, with supplementary measures*	21	**-55%**	-52%
Sweden's national interim targets for 2030, without supplementary measures*	17	**-63%**	-60%
Sweden's targets according to ESR	22**	-53%	**-50%**

*The supplementary measures are described in Chapter 1. They can consist of: 1) increased net removals in forests and land, 2) capture, transport and storage of biogenic carbon, 3) verified emission reductions through investment in other countries and 4) direct capture of greenhouse gases from the atmosphere through other technical measures.

** Carbon budget applies without flexibility mechanisms.

Comment: Both the national interim targets and the EU's effort sharing concern the territorial emissions that lie outside the EU ETS. The numbers in bold are the officially determined figures for each target.

The revision of the ESR agreed in November 2022 brings the ESR target closer to the Swedish national targets. However, the Swedish targets for 2030 are still somewhat more ambitious. The extent of the difference depends on the availability of supplementary measures for the national target and flexibilities under the ESR.

One difference between Sweden's climate policy framework and the EU regulation is how strictly the pathway to achieving the target years is regulated. Sweden only uses indicative paths to guide policy until the years 2030 and 2040. The EU has a stricter system in place, with set emission reduction levels that must be achieved for each individual year, which in practice is a form of carbon budget. This might become the guiding principle for Sweden's climate policy in the coming years.

2.3. Revision of the EU ETS

The EU's emissions trading system, the EU ETS, is often described as the cornerstone of EU climate policy. It is regulated centrally, although member states have a certain degree of freedom as to how revenues from the system can be used and the extent to which compensation mechanisms are used. The EU establishes both a common carbon budget and methods for allocating allowances to different types of installations in industry and energy production. In 2021, the EU ETS comprised approximately 39 percent of Sweden's territorial emissions.

Under the Fit for 55 package, a reduction in the carbon budget of installations within the EU ETS has been decided on. The reduced carbon budget corresponds to a 62 percent reduction in emissions in 2005–2030 and means that the carbon budget will be reduced by more than 4 percent annually, which is a tightening compared to before.[i] This represents a significant tightening that can be expected to drive an increase in the prices of emission allowances. The starting point for the allocation of allowances is sales by auctioning, yet a large proportion of allowances are still distributed free of charge to sectors identified as particularly exposed to global competition.[j] According to a provisional agreement between the Council of Ministers and the European Parliament from 17 December 2022, these allocations will be gradually phased out.

Linked to the gradual phase-out of free allocations, a carbon border adjustment mechanism (CBAM) will be introduced to protect sectors exposed to competition. The system will be introduced in 2026 and applies to importers of iron, steel, cement, artificial fertilisers, electricity, and hydrogen.[21] Importers will be required to purchase CBAM certificates corresponding to the carbon dioxide emissions generated during production. The price is linked to the price of allowances in the EU ETS, but the number of certificates that must be obtained is adjusted to the degree of free allocation for the EU ETS industries and to the extent that the producing country has a carbon pricing policy. The mechanism is intended to promote competitive neutrality among companies within and outside the EU, thereby reducing the risk of emissions being transferred from the EU to other parts of the world rather than being reduced. The emission price only applies to imports into the EU. Some have criticised this as insufficient since it only discourages imports of carbon-intensive goods but does not contain a mechanism that creates reasonable conditions of competition for the portion of EU production that is exported.

For the long-term 2045 target, the EU ETS plays an important role as a driver for the necessary transition, especially in industry. Therefore, a high level of ambition within the system is also important for the Swedish climate target. To reach Sweden's interim targets for 2030 and 2040,

[i] The carbon budget is gradually being shrunk by the annual reduction factor to reach the final 2030 target. As a consequence of the enhanced target, the annual reduction factor in 2021-2030 will increase from 2.2% to 4.3% in 2024-2027 and to 4.4% in 2027-2030. In addition, there will be two one-off reductions in the emissions ceiling, 90 million tonnes in 2024 and 27 million tonnes in 2027, creating new starting points for the annual reduction factor in subsequent years.

[j] In total, 57% of allowances for non-mobile installations in the EU are subject to auctioning with a buffer of 3%, which can be taken for free allocation if necessary. For Sweden, free allocation is significant and corresponded to just over 90% of emissions in 2021.

EU ETS developments play less of a role because Sweden does not include EU ETS emissions in these targets.

2.4. EU regulation of LULUCF emissions

As mentioned in the introduction, the Climate Policy Council in last year's report highlighted carbon removal and storage as one of four key areas for the climate transition. In this area, Sweden is affected by the LULUCF Regulation[22], which sets the rules for greenhouse gas emissions and removals from land use, land-use change and forestry within the framework of the EU's climate targets for 2021–2030. Among other provisions, the regulation requires each member state to calculate a forest reference level[k] for the periods 2021–2025 and 2025–2030.

In November 2022, the Council of Ministers and the European Parliament reached an agreement on an amendment to the LULUCF regulation.[23] It includes a target to achieve an annual net removal in forests and land across the EU of at least 310 million tonnes of carbon dioxide equivalent by 2030, corresponding to an increase of roughly 15 percent over current levels.[162]

A nationally binding target has been imposed on Sweden that entails an increase in net removals of approximately 4 million tonnes annually by 2030 compared to the average emissions in 2016–2018. This corresponds to an increase in net removals of around 10 percent. 2030 is not far off, so developing a strategy for achieving the target is urgent. In August 2022, the Cross-Party Committee on Environmental Objectives received an additional directive[24] to propose a strategy with intermediate targets, instruments and measures that will help Sweden achieve its LULUCF commitments. The task must be reported on no later than December 2024. Previously, the government inquiry on Climate policy pathways[6] proposed a strategy for supplementary measures according to the Sweden's interim targets, which include removals in forests and land. Current and previous governments have decided on individual efforts in this area but have not yet taken a position on the inquiry's proposal for an overarching strategy.

2.5. EU regulatory framework for the energy transition

Renewable energy and energy efficiency have been at the heart of EU climate policy since the 1990s. Several directives have been in place with different focuses and levels of ambition and with varying degrees of binding requirements for the member states. For example, the overall EU target of at least 20 percent renewable energy in 2020 was linked to various national commitments, where Sweden received the most ambitious target of 49 percent.

The corresponding national binding commitments are not linked to the current target of 32% renewable energy in the EU by 2030, the enhanced targets proposed in the Fit for 55 package (40% renewable energy), or the ambition expressed within REPowerEU (45% renewable energy). On the other hand, member states are expected to contribute to the achievement of the common goals and must report national ambition levels in the integrated national energy and climate plans, which Sweden has also done.[l]

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[k] The Directive requires member states to calculate a reference level for net emissions or removals from managed forest land. How this is to be calculated is described in detail in the Directive and must be based on continuous sustainable forest management practices as documented during 2000-2009.

[l] This is regulated in the so-called Governance Regulation (EU) 2018/1999.

The Energy Efficiency Directive sets out energy efficiency targets relative to energy use in a reference scenario. The ambition level for energy efficiency was initially 20 percent by 2020 and was raised in 2018 to 32 percent by 2030. [m] Under the Fit for 55 package and REPowerEU, the European Commission proposed tightened targets for energy efficiency, and in March 2023 a provisional agreement was reached between the Council and the EU Parliament on enhanced targets. Although there are no national targets for energy efficiency, as in the case of renewable energy, member states are expected to contribute and account for national contributions to increased energy efficiency.[15]

The Renewable Energy Directive[25] sets specific targets for renewable energy for the transport sector. These, along with regulations from the EU's fuel directive, require member states to reduce emissions from fuel use. These regulations serve as a minimum ambition for individual member states and are relevant for the revision of the reduction obligation[n] proposed by the Government (see Chapter 3). The draft revisions on the table also include separate targets for both industry and buildings.

The Renewable Energy Directive also specifies sustainability requirements for biofuels. These determine both which raw materials may be used to meet the renewable energy targets and which biofuels can be subsidised using various instruments. In addition, the transport sector has specific limits on the share of renewable energy that can come from arable crops. The development of these regulations for sustainability requirements has been important for Sweden and has clearly affected which biofuels are allowed to be used within the framework of the reduction obligation and as tax-exempt clean fuels. During the ongoing revision, further restrictions on which raw materials meet the sustainability criteria have been a major issue for Sweden, not least when it comes to raw materials from forestry. Both the previous and current governments and forest sector stakeholders have expressed concern that these will worsen the conditions for Swedish forestry practices.

Within the framework of REPowerEU, several proposals have been submitted that can directly affect the conditions for establishing and possibly expanding renewable energy in Sweden. These include identifying areas particularly suitable for renewable energy where permitting processes will be faster, as well as requirements for installing solar panels on certain buildings.

In the area of transport, the EU regulatory framework has been central, not least when it comes to regulating vehicle emission performance, which has driven the development of more energy-efficient vehicles. The Fit for 55 package has proposed stricter requirements, including a ban on the sale of vehicles with internal combustion engines starting in 2035.

The Energy Taxation Directive[26] contains minimum taxes on electricity and fuels. Historically, Swedish fuel taxes have by a margin exceeded the EU's minimum taxes, but in the current debate on lower taxes as compensation for high fuel prices, the desire to reduce taxes below these minimum tax levels has been expressed by politicians (see Chapter 10). Historically, a major problem has been that the Energy Taxation Directive in principle prevents the differentiation of tax rates among different fuels that can be used in petrol and diesel engines. A recasting of the existing directive is underway that can potentially improve the ability to differentiate taxes among different types of fuels based on their emission performance.

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[m] The percentage targets related to an intended future energy use developed in a reference scenario.

[n] The reduction obligation is a policy instrument that aims to promote the use of biofuels in petrol and diesel fuels in order to reduce greenhouse gas emissions in the transport sector while providing long-term stable conditions for biofuels in Sweden (see Chapter 3).

2.6. The EU's common agricultural policy

To a significant extent, Sweden's agriculture is governed by the EU's common agricultural policy (CAP). A modernised CAP applies for the period 2023–2027, under which agricultural policy must be based on ten objectives including a climate target.[27] The climate target addresses counteracting climate change as well as adapting agriculture to climate change.[o]

Each EU country must draw up a national strategic plan for implementing the CAP. This plan must cover financing for income support, rural development and market measures and must contribute to the achievement of the ten objectives. The European Commission has developed a toolbox that member states can use and adapt to an individual country's circumstances. In September 2022, the Swedish government decided on a strategic plan for 2023–2027. The plan was approved by the European Commission in October 2022. The Swedish Board of Agriculture has estimated that approximately SEK 3.3 billion of the SEK 60 billion[p] included in the strategic plan contributes to reduced emissions of greenhouse gases.[28] This total includes financial support for precision agriculture, catch crops and cover crops as well as for wetland and pond management. Several of the subsidies within the framework of increased competitiveness, including subsidies for energy crops, are also considered to have a positive climate effect.

2.7. EU state aid rules

For EU climate policy, carbon regulations and pricing have played a fundamental role in underpinning the climate transition, not state aid. Following the U.S. decision through its Inflation Reduction Act of 2022 on a climate policy that is strongly driven by government aid, the EU's position has become increasingly difficult to maintain. As a general principle, state aid is prohibited within the EU, but it can be accepted under certain conditions and the EU Commission provides guidelines for which state aid is permitted. The guidelines are based on the state aid rules contained in the EU Treaty as well as opinions and judgements of the Court of Justice of the European Union and the European Commission's Directorate-General for Competition.

While the 2014 guidelines called for more features of competition in climate-related state aid, more liberal guidelines were issued by the European Commission in 2022. Member states must notify the Commission of their state aid measures except those under block exemption[q] as determined by the Commission. The 2022 state aid rules extended the various forms of aid covered by the block exemptions.

During the pandemic, special temporary state aid rules were introduced to facilitate support to the business community. These temporary rules were phased out on 30 June 2022. During the Covid-19 pandemic, the EU also set up the Recovery Fund, which earmarked a significant share of contributions to actions relevant to the climate issue. Sweden, for example, requested funds worth

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[o] The others are: ensuring a fair income for farmers, increasing competitiveness, improving the position of farmers in the food supply chain, caring for the environment, preserving landscapes and biodiversity, supporting generational renewal, contributing to a thriving countryside, protecting public health and the quality of food, and promoting knowledge transfer and innovation.

[p] Of the total budget, SEK 45 billion comes from the EU and SEK 15 billion from Sweden. https://jordbruksverket.se/stod/programmen-som-finansierar-stoden/strategiska-planen–for-eus-jordbrukspolitik

[q] Block exemptions mean state aid that does not have to be communicated to the European Commission. The types of state aid concerned are specified in the Block Exemption Regulation 651/2014.

SEK 33 billion of which 44 percent were for achieving the climate targets, according to the European Commission's assessment.[r]

State aid rules have a key role to play in enabling and supporting the implementation of the Green Deal. At the same time, member states must only provide state aid when it acts as an incentive and is necessary to bring about a development that the market cannot address. In addition, state aid must disrupt the market as little as possible, be proportionate and be implemented in a transparent manner. A current Swedish example where the rules for state aid play an important role is a proposed support system for carbon capture and storage from biomass-fired plants (bio-CCS). Talks are currently underway between the Swedish government and the European Commission on whether the proposed instrument should be considered as compatible with the EU's state aid rules.[29] Another case concerns the electricity subsidies proposed in the autumn of 2022, when Swedish authorities had to revise their intended electricity support to companies based on the state aid rules (see Chapter 10).

The guidelines are not binding on the member states, but they are binding on the Commission. Member states can go against the guidelines, but this can lead to long delays. If a member state has distributed state aid that then turns out to be illegal, the company that received the aid will have to pay it back. The precise wording of the state aid rules may therefore be crucial for developing national practices.

At the beginning of 2023, the European Commission signalled an additional revision that would apply only for the next 36 months, as opposed to the ten-year periods normally covered by the guidelines. A proposal for new rules was sent to member states for consultation on 1 February 2023. It is very rare to introduce new rules only one year after a major revision process, but the turbulence resulting from the Covid-19 pandemic, the ongoing energy crisis and the challenges posed by the U.S. Inflation Reduction Act were considered to justify the changes.

The proposal from the European Commission included simplifications in the calculations of state aid and processes that speed up approval. It also included new support for green investments in strategic sectors at risk of relocating to the U.S. or other non-EU countries. In addition, the Commission signalled that all types of renewable energy would be eligible for state aid. A revision of the block exemptions is expected in 2023. It is up to each member state to decide whether and how to make use of the possibilities to provide support to businesses under these guidelines.

2.8. Comments and conclusions

The EU is a key climate policy player

It must be viewed as a remarkable and significant success that the EU's 27 member states, each with a variety of conditions and circumstances, managed to agree on significant climate-related reforms during the turbulent year 2022. Although more needs to be done, the EU clearly appears to be a global leader in the climate transition and is now a major driving force in relation to the governments and parliaments of member states.

[r] The plan included reforms and investments in climate action. Among the latter, existing national climate policy investments such as Climate Leap and Energy Leap dominated, in addition to investments in railway infrastructure and buildings. The Council of the European Union took implementing decisions on the recovery fund in April 2022.

With the Green Deal, the EU has come further than the vast majority of member states' governments, including Sweden's, in its ambition to integrate the climate agenda with energy, biodiversity, resource efficiency and circular economy in a cross-sectoral strategy. This ambition is essential for achieving more sustainable development.

Decisions made in the EU have major implications for Sweden's climate policy

EU policy plays a crucial role in Sweden's efforts to achieve the climate targets. In essence, the EU's regulations bolster and support Sweden's targets and climate policy direction. The EU's reform process and ambition to take a leading global role in achieving the Paris Agreement goals give Sweden the opportunity to influence developments throughout Europe and, as part of the EU, take a leading role in the global transition. An example of Sweden's proactive participation emerged in the EU ETS reform that was carried out ahead of the fourth trading period (2021–2030). The significance of the EU for climate decisions justifies a clear strategy for Sweden's climate efforts within the EU in the upcoming climate action plan.

In many cases, the EU also has a driving effect on Sweden's efforts. The new LULUCF regulations require a larger carbon sink in forests and land and will create new challenges around how this should be combined with the use of forest resources. Clearly the EU also has a sharpened focus on energy efficiency. This might justify a greater focus on energy efficiency, compared to energy supply in Swedish climate policy. As mentioned earlier, in the 2022 report, the Climate Policy Council highlighted a more efficient use of energy and resources as a key area in the transition (see the introduction in this report).

There are also examples of EU regulations that have made it difficult to use effective instruments in national climate policy. One is the current fuel taxation regulation from the Energy Taxation Directive. It is now being reworked to lay a better foundation for supporting fuels with a lower climate impact.

EU climate targets have approached Sweden's level of ambition

The Climate Policy Council's overall picture is that the EU's increased ambitions mean that the requirements for Sweden's emission reductions according to the EU's ESR have clearly approached the national goals that the Swedish Parliament has already determined. In this context, it is an advantage that Sweden has already focused its climate policy on ambitious goals.

There is uncertainty about the extent to which there will be enough available annual emission allocations (AEAs) within the EU or overachievements from the LULUCF sector in Sweden that could significantly contribute to achieving the Swedish targets within the ESR. Against this background, the Climate Policy Council believes that it would be risky and potentially costly to base Sweden's strategy on an extensive use of these flexibility mechanisms. Nor would it be aligned with the goals of Parliament, and Swedish businesses, to become a leader in the climate transition.[30-33]

3. Climate policy in 2022

In this chapter, the Climate Policy Council compiles the key government decisions from 2022 that are relevant to achieving the climate targets. Since 2022 was an election year that brought a change of government, the review is divided between the previous government and the new government that took office on 18 October 2022. The current government mainly presented its new policy in its 2023 budget bill, while the previous government's decision had a more widespread distribution of its proposals during 2022 until election day in September. We also review the two governments' policies in 2022.

Table 2 summarises a selection of the major interventions for achieving the climate targets in 2022 from both the previous and the current government, as well as whether and to what extent these efforts contribute to or counteract attainment of the targets. As the table shows, changes in transport policy, in particular from the current government, have thwarted our chances of achieving the climate targets.

The interventions are described in more detail in sections 3.1–3.2 for the previous government and in sections 3.3–3.4 for the current government. The description of the previous government's efforts is less extensive, mainly because the specific decisions were significantly fewer. This can partly be explained by the fact that the period January–September does not contain a regular budget proposal and that the change of government meant a shift in policy, which was reflected in the 2023 budget bill presented in November. A broader follow-up of the previous government's policy can be found in Chapter 5, which contains an account of the first climate policy action plan.

Table 2. Selection of former and current government interventions for achieving the climate targets.

Former government		Current government	
Suspended increase in reduction obligation.	↓	Reduced reduction obligation to EU minimum level in 2024.	↓
Temporarily reduced energy tax on fuel through September 2022 and on the CO_2 tax on diesel used in machinery, ships and certain boats starting on 1 January 2022.	↓	Temporarily reduced energy tax on fuels through 2026.	↓
Initiation of commissions of inquiry to develop a strategy for the EU's LULUCF commitment for Sweden as well as a bioeconomy strategy.	↗	Abolished bonus for green cars.	↓
Mission to analyse and provide suggestions for the effective governance of agencies concerning climate	↗	Scrapped reform of the travel allowance and increase in the deduction amount for passenger cars.	↓
New law banning the extraction of coal, oil and natural gas in Sweden.	↗	Reduced railway maintenance.	↘
Appointment of a commission of inquiry to propose economic instruments promoting the transition to a circular economy, and presentation of a ministerial memorandum on improved funding opportunities for the business sector's green transition.	↗	Strengthening of charging infrastructure for electrified transport.	↑
Mission to develop an action plan for charging infrastructure and tank infrastructure for hydrogen.	↗	Improved and expanded efforts around supplementary measures (incl. bio-CCS, rewetting, international efforts).	↑

Comment: The direction and colour of the arrows indicate the impact of each intervention for achieving the climate targets. Red arrow = negative impact. Green arrow = positive impact. Lighter colour = a slightly positive or negative impact.

3.1. Former government's climate policy in 2022

In the emission sectors related to transport and machinery, the previous government took several decisions that increased emissions in both the long and the short term. Among other actions, a proposal was put forth to change the terms for the reduction obligation through the proposal to, in 2023, pause the annual increase in the biofuel mix in gasoline and diesel. In addition, the Government temporarily lowered the energy tax on gasoline and diesel for six months in 2022.[34] The decisions were made quickly in response to the rising price of oil, which was mainly a consequence of Russia's invasion of Ukraine (for a more detailed review, see Chapter 10.) The Government also extended the previously decided tax cut on diesel in agriculture, forestry, and aquaculture until the first half of 2023 and further reduced the tax on diesel used in machinery, ships and some boats retroactively from 1 January 2022.[35,36]

When the Government adopted the transport infrastructure plan for the period 2022–2033, the appropriation for urban environment agreements decreased compared to the previous plan. The transport infrastructure plan aims to promote sustainable urban environments and to encourage an increased use of public transport or bicycles as well as sustainable freight transport.[37] The

reduced appropriation goes against both the proposals from the climate law inquiry and previous recommendations from the Climate Policy Council to strengthen governance in the direction of a more transport-efficient society.

As for the LULUCF regulation and supplementary measures, the previous government appointed two commissions of inquiry. The parliamentary Cross-Party Committee on Environmental Objectives was directed to develop a strategy for how Sweden should live up to the EU's commitments for biodiversity and LULUCF. This task will be finalised in early 2024.[24] A commission will also produce proposals for a national strategy for a sustainable bioeconomy. This task will be finalised in October 2023 and is expected to come up with proposals and follow-up measures for developing a sustainable, competitive, and growing Swedish bioeconomy.[38]

The Swedish Agency for Public Management was directed to analyse the state agencies' roles, responsibilities, and conditions for contributing to the climate targets. The agency reported on this mission in December 2022, and its recommendations included clearer guidance from the Government Offices in communications with the authorities when ordering background material and the creation of a new climate analysis function at the ministry. The agency also proposed that the Climate Policy Council be given the task of producing an overview of all implemented, ongoing and decided climate initiatives.[39] Several recommendations were in line with what the Climate Policy Council stated in its 2022 report, which had a special focus on the Government's governance of its agencies.

The Government appointed two more commissions with a certain connection to the climate targets. One is a commission that will propose economic instruments for promoting the transition to a circular economy. This task will be finalised in April 2024.[40] The other commission presented a ministerial memorandum in August 2022 on improved opportunities for financing the business community's green transition.[41] The focus of this commission was to make it easier and more attractive to invest in the green transition. The report also stated, in line with the Climate Policy Council and the Agency for Public Management's report, that more strategic coordination of climate policy is needed.

The Swedish Energy Agency was directed by the Government to develop an action programme for charging infrastructure and tank infrastructure for hydrogen. This mission will build on the electrification strategy and provide a picture of the current situation and a forward-looking analysis of how the expansion of the charging and tank infrastructure can take place.[42] In the interim report from January 2023, an overview was presented of existing missions, regulations, state subsidies, deductions and requirements regarding charging infrastructure and tank infrastructure for hydrogen.[43] The final report will be published in November 2023.

In September 2022, the Electrification Commission presented its final report. The Commission consisted of representatives from the business sector, academia, and the public sector, and was directed to accelerate electrification of the transport sector. The report presents the activities carried out by the European Commission. The purpose of these activities was, for example, to reduce the time it takes to connect charging infrastructure to the grid and ramp up the expansion of charging infrastructure in housing complexes.[44]

In June 2022, the Government appointed an Electrification Council to support its work on implementing the national electrification strategy decided in March 2022 and valid through 2024.[45] The Government also directed the Swedish Energy Market Inspectorate to analyse and compile lead times and costs for connecting charging points to the grid, as well as propose how to shorten the lead times. The inspectorate concluded that the main reasons for long lead times for

connecting charging points are because efforts to improve the network are too slow and processing times at the grid companies too long. In its report from December 2022, the inspectorate proposed a series of measures to shorten the connection process. Examples of these measures include digitising capacity maps and imposing reasonable fees on connection requests to the grid companies, since many applications do not result in a connection.[46]

A commission was appointed to strengthen the incentives to expand wind power generation. The report will submit proposals that strengthen the municipalities' incentives to contribute to wind power expansion. The commission will report on its task in March 2023.[47]

Parliament voted through the Government's proposal for a law prohibiting the extraction of coal, oil, and natural gas (also called fossil gas), as well as stricter rules for extracting alum shale in Sweden.[48] The law does not contribute to direct emission reductions and has little practical significance since Sweden has negligible reserves of fossil fuel energy, but it might have a certain signal value, especially in international contexts.

3.2. Effect of former government policy on climate targets

The number of climate interventions in 2022 decreased compared to the previous year. The vast majority of efforts involved the Government's appointing new commissions of inquiry and tasking authorities with missions, which may have significance in the longer term. However, these efforts did not contribute to any change in 2022. Based on the four key areas of climate change, the largest share of all investigative directives and government missions was for a more efficient use of energy and resources. On the other hand, most of the few concrete decisions, such as bills or regulations, addressed various aspects of zero-carbon electrification. Few decisions concerned biomass or carbon removal and storage.

One important specific decision relevant to achieving the climate targets was the previous government's decision to adopt the transport infrastructure plan for 2022–2033 in June 2022. This is an example of a long-term decision on substantial resources that was made without taking sufficient account of climate targets. The preparation process had clearly demonstrated the disagreement among the relevant agencies regarding the role of transport planning in achieving the targets. Many consultation bodies stress the need for stronger interventions for a more transport-efficient society. Already in its 2021 report, the Climate Policy Council recommended that the Government, against this background, should make a change in its approach to the infrastructure bill and upcoming plan. We can now state that yet another national plan has been decided without transport planning being significantly adapted to the intentions of the climate policy framework. It should be pointed out that the now decided plan covers about half the period to 2045 when Sweden is to have achieved net-zero emissions of greenhouse gases.

The effects of the rapid changes in the world around us, primarily Russia's invasion of Ukraine, which drove up fuel and electricity prices, prompted the Government to act quickly. Unfortunately, a short-term focus predominantly aimed at avoiding and cushioning price increases for households and companies prevailed, while long-term climate actions were partly set aside (read more in Chapter 10).

In the Climate Policy Council's overall view, the previous government lost momentum in climate policy at the end of its term of office, even considering that it did not get its own budget through for 2022 and did not have time to present a budget for 2023. In practice, the Ministerial Working Group on Climate Policy ceased to function, and the Government did not produce any bills

based on the major inquiries of the legislature, such as the Phase-Out Inquiry or the Climate Law Inquiry (read more in Chapter 5.)

3.3. Current government's climate policy in 2022

The current government took office in October 2022 and consists of three parties, the Moderate Party, the Christian Democrats, and the Liberal Party, with the support of the Sweden Democrats. In the government statement, the Government highlighted four demanding tasks facing Sweden. One of them states that Sweden must emerge from the energy crisis in order to reach its climate targets and give back reasonable electricity prices to the Swedish people. The other tasks involved crime, the economy, migration and integration, and NATO membership.

The so-called Tidö Agreement, an agreement between the government parties and the Sweden Democrats, formed the basis for the new government's accession. The Tidö Agreement's section on climate and energy for the most part consists of announced policies for new electricity generation, especially nuclear power. In addition, the following four areas were mentioned that have a connection to policies for achieving the climate targets:

- Support and instruments should be effective on an overall level.
- Charging infrastructure should be expanded.
- Environmental permitting processes should be simplified and shortened.
- Investments in carbon capture via CCS should be implemented.

Non-ETS emissions

The new government made several decisions early on that are expected to increase emissions from the transport sector, some of which have been implemented while others are under preparation.

The Government has announced that it not only wants to temporarily suspend the reduction obligation as the previous government decided but go further by introducing a permanent reduction in the reduction obligation for fuel starting in 2024. A bill on a reduced reduction obligation is set to be presented in September 2023.

The bonus part of the bonus-malus policy instrument for promoting climate-efficient vehicles was abolished by the Government as of 8 November 2022. This means that the bonus of up to SEK 70,000 for buying a passenger car that emits less than 50 grams of CO_2 per kilometre was removed. In 2022, roughly 120,000 car buyers had received a bonus at a cost to the state of about SEK 7 billion. The policy instrument also includes a malus part, which means that buyers of new cars pay a higher vehicle tax during the first three years, based on established CO_2 emissions levels per kilometre. The malus part remains and can be expected to reduce emissions in the future, but the extent of its effect is currently not estimated. The National Institute of Economic Research and Swedish Environmental Protection Agency have previously estimated that, without the bonus malus system, emissions from passenger cars could be about 1–2 percent higher by 2030, all other factors being equal.[49,50]

The Government decided to scrap the upcoming reform of a new transport-mode-neutral travel allowance, which Parliament had voted in favour of in June 2022. The new technology-neutral travel deduction would mean that the tax reduction for travelling between one's home and

workplace would be paid regardless of the means of transport and would be regionally differentiated. The idea was that it would increase the incentives to use more public transport and energy-efficient travel and thus help to meet the climate targets. Instead, the Government increased the deduction amount for trips to work using one's own car from SEK 18.50 per Swedish mile (10 km.) to SEK 25, and the fuel deduction for travel using a company car from SEK 6.50 per Swedish mile to SEK 12.

A temporary reduction in energy tax on petrol and diesel by 80 öre per litre from 1 January 2023 and three years ahead was decided by the Government at the same time as the automatic GDP indexation of fuel taxes was resumed. The net effect on the price at the pump was thus small (see Chapter 10 for more details).

In the state budget for 2023, appropriations for railway maintenance are reduced by 750 million and are reallocated to road maintenance. The Government has also decided not to complete the expansion of new main lines for high-speed trains. For the three stages of the previously planned high-speed lines Ostlänken, Hässleholm-Lund and Gothenburg-Borås, the goal of achieving speeds above 250 kilometres per hour has been abolished. Instead, the Government has directed the Swedish Transport Administration to identify solutions that can reduce the cost of the expansion already included in the national plan for transport infrastructure for 2022–2033, as well as modify certain solutions without high-speed adaptation.

The Government is bolstering investments in charging infrastructure through the Climate Leap for the next few years. To this end, the Climate Leap has received an increase in funding of SEK 400 million for 2023 and SEK 500 million annually for 2024 and 2025. The budget bill also includes proposals for a temporary tax exemption for the benefit of charging at the workplace in order to facilitate the transition to an emissions-free vehicle fleet. This tax exemption will apply through the end of June 2026.

Support for energy and climate efficiency improvements has increased by SEK 400 million annually for the period 2023–2025. Investments will contribute to energy efficiency improvements in single-family houses that are heated with direct-acting electricity or gas, including through an investment grant for the conversion of heating systems and energy efficiency renovations. The aim is to reduce vulnerability to high energy prices and increase the security of the energy supply.

In the Government's budget bill, the appropriation for infrastructure for electrified transport has been increased by SEK 90 million for 2023, SEK 1 billion for 2024 and SEK 505 million for 2025. The appropriation can be used for purposes such as supporting public stations for quick charging of electric vehicles, investments in land and infrastructure for the expansion of stationary charging and hydrogen refuelling for heavy transport, and the expansion of infrastructure for electric trucks. The aim is to increase the availability and capacity for charging vehicles along the major roads.

EU ETS emissions

Fossil fuel consumed in heat production or combined heat and power (CHP) production in a plant covered by the ETS has been exempt from carbon tax since 1 January 2023, according to a government decision. These plants were previously burdened with both the cost of emission allowances and a carbon tax. This is expected to increase greenhouse gas emissions in Sweden but to a lesser extent affect emissions within the European trading system's carbon bubble. At the

same time, CHP plants contribute to even power distribution during critical periods, especially at low temperatures in winter, and currently replace fossil-fuel-based electricity production in Northern Europe, which is probably less efficient.

LULUCF and supplementary measures

The Government has stepped up its investments in bio-CCS through support that will be distributed over the period 2026–2046 to the providers who can capture and store carbon dioxide at the lowest cost. The Geological Survey of Sweden (SGU) has also been tasked with investigating suitable sites for carbon storage in Sweden. The Government has also given extra funds to the Swedish Energy Agency to serve as a national centre for CCS development.

The Government has extended its investment in peatland rewetting and is making it permanent. However, the total allocation for measures for valuable nature will decrease by about 1 billion annually over the next three years.

The Government has decided on SEK 6 million for 2023 and SEK 100 million annually for 2024 and 2025 to develop a programme for international climate investments. It will be implemented in accordance with Article 6 of the Paris Agreement, which addresses mechanisms for cooperation among countries and emissions reduction trading (see also section 1.1). The investments are expected to help Sweden achieve its climate targets as supplementary measures. At the same time, the Government is cutting development assistance by SEK 7 billion for 2023 and more for the coming years. This might affect climate-related development assistance and efforts in other countries, but it does not affect the fulfilment of the Swedish climate targets.

Other decisions that can affect climate target attainment

The Government has put forward a draft bill for enabling the expansion of nuclear power installations in new locations. The proposal, which is planned to take effect in March 2024[51], also removes the provision limiting the number of reactors in operation to ten.

To enable investments in an expansion of nuclear power plants, the government parties have announced an increase in the Government's green credit guarantees of SEK 400 billion specifically for new nuclear power, and with more generous terms than for the current green credit guarantees.

The Government intends to scrap the current reduction in the fee for connecting offshore wind power to the grid. This is a change relative to the direction that has prevailed since the 2016 energy agreement.

The commission on strengthening incentives for the expansion of wind power received somewhat changed directives. The commission's original directive stated that the proposals could be financed either through the state budget or by operators. The current government changed this so that the proposals will be completely financed by the operators. The commission must present its report by 31 March 2023.[52]

The county administrative boards have been tasked with promoting shorter lead times and permitting processes for wind power. The Swedish Energy Market Inspectorate will continue its work to halve the lead times for permitting processes for electricity grids and secure a robust electricity market. An injection of resources was given to the relevant agencies for this purpose.

As of 1 January 2023, the subsidy for solar cell installations for private individuals will be raised from 15 to 20 percent. The Government has assessed that the proposal has little effect on greenhouse gas emissions, as the pace of installation is already high and is not considered to be limited by the size of the tax deduction.[53] The Government has also announced a review of the requirements for building permits for integrated solar cells.

According to the Government, environmental permitting in accordance with the Environmental Code will be simplified and shortened to facilitate the green transition for the business sector. The Government has thus requested proposals from a commission of inquiry to make the review process more flexible, efficient and predictable. The Government has not yet announced whether it intends to present any bill regarding proposals for the same purpose that was investigated during the previous term of office.

Value-added tax on repairs to bicycles, shoes, leather goods, clothing and household linens will be increased from 6 percent to 12 percent starting on 1 April 2023. Although the short-term price effect is small, the measure can be expected to cause a small increase in greenhouse gas emissions from the newly produced goods that will potentially replace the repaired goods, since it no longer pays as much to repair old products compared with buying new ones. If the change delays the transition to a more circular economy, including through its signal value, the long-term effect may be greater. Regardless, the tax change contributes to a lack of continuity for market participants.

The Government decided on 22 December to dissolve the commission, which was directed to propose a new obligation system for energy efficiency known as white certificates, about three months before the investigation was to be completed. Obligation systems would aim to achieve a market-based, cost-effective instrument that could increase the energy efficiency rate in Sweden and thus contribute to achieving the energy and climate policy targets. The commission submitted its unfinished draft of the final report as background material for the Ministry of Climate and Enterprise on 31 December 2022.[54]

The Government has moved parts of the Government Offices from the Ministry of the Environment, which has been removed, to a new ministry called the Ministry of Climate and Enterprise. This ministry oversees issues related to the climate, environment, energy, business, innovation and the circular economy. The Government justifies the change as a step in taking a holistic approach to climate change. The new ministry is also responsible for issues concerning radiation safety and outdoor recreation. A small part of the former Ministry of the Environment was moved to the newly established Ministry of Rural Affairs and Infrastructure, which was previously two separate ministries.[55]

3.4. Effect of current government policy on climate targets

Near-terms emissions are increasing, and policy is insufficient for achieving the 2030 targets

The policy decided on or announced by the current government thus far is expected to contribute to an increase in greenhouse gas emissions over the next few years. This applies primarily to emissions from the transport sector, but also from machinery. The Government also makes this assessment in its climate report to Parliament.[56]

This obviously makes it more difficult to achieve the interim target for domestic transport by 2030. But it also makes a great impact on the chances of achieving the overall national interim targets for 2030, as well as the target that, according to EU effort sharing, was imposed on Sweden by the same year. Both of these targets cover all non-ETS emissions, about half of which come from domestic transport. (see also section 2.2).

The Government's decisions affect all three legs of the transport sector's climate transition.[a] **A transport-efficient society** is counteracted by withdrawing the travel deduction reform, increasing the current travel deduction, reducing fuel taxes and reducing the appropriation for railway maintenance. When it comes to **emissions-free, energy-efficient vehicles**, the expansion of charging infrastructure can help to step up the pace of conversion of the vehicle fleet, while the abolished bonus in the bonus-malus system, as well as the decisions on the travel deduction, reduced the incentives to purchase more emissions-efficient vehicles. Within the third and final leg, **renewable fuels**, the Government's announced cut in the reduction obligation from 2024 onwards is expected to contribute to sharply increased emissions.

All other things being equal, the transport policy presented thus far will lead to an increase in greenhouse gas emissions in the short term. Neither the interim target for domestic transport by 2030 nor the national 2030 target for non-ETS emissions appear to be achievable unless robust new measures are decided (see also section 1.1).

The announced sharp reduction in the reduction obligation is the single measure that has by far the greatest negative impact on the potential to achieve the interim goals in 2030. However, the intention of the Government's lowering the reduction obligation to the "EU's minimum level" is still unclear. It is also not a given that there will be a formal minimum level for blending biofuels in the EU after the negotiations around the 55% package are finalised.

Given this uncertainty, the Swedish Environmental Protection Agency has not yet been able to present any scenarios for expected emission trends by 2030 with its currently announced policies. But it is possible to say something about the magnitude of the effects that can occur. According to the Swedish Energy Agency's 2022 checkpoint review, the reduction obligation was, according to current regulations, expected to reduce emissions from domestic transport by approximately 5 million tonnes by 2024. The total impact was expected to increase in the coming years to a decrease of around 7 million tonnes in the transport sector by 2030 compared to if the reduction obligation did not exist.[57] In addition, the reduction obligation gives an expected reduction effect for industrial machinery emissions of approximately 2.7 million tonnes in 2030 compared to if the reduction obligation did not exist, according to the Government's assessment.[58]

Everything else being equal, a sharp reduction in the reduction obligation from 2024 onwards can thus be expected to **increase** emissions by several million tonnes during this year, followed by correspondingly higher emissions relative to earlier emission scenarios. In addition, the Government estimates that the decisions on reduced fuel taxes, modified travel deductions and abolished bonuses for green cars together will lead to an increase in greenhouse gas emissions of around 0.5 million tonnes in 2024 and, everything else being equal, of up to 1 million tonnes by 2030.

To be able to compensate for the expected increase in emissions resulting from decisions already made, the Government will need to present new far-reaching initiatives, not least in the transport

[a] These three legs for the transformation of the transport sector were formulated in the report "Strategisk plan för omställning av transportsektorn till fossilfrihet (SOFT)" prepared by several authorities in collaboration.

sector. These will need to cover all three pillars of the transport sector's transition: vehicles, fuels and a more transport-efficient society. The last pillar includes urban planning and policy instruments that favour public transport and bicycle and pedestrian traffic as well as limit the expansion of car traffic if other alternatives are available.

There is little chance of identifying sufficient emission reductions in other sectors in the relatively short term to compensate for increased emissions in the transport sector. This is true for emission sectors such as agriculture, machinery and non-ETS areas.

The Climate Policy Council has previously warned of the risks of too one-sided a focus on a specific policy instrument or measure, such as in this case increased biofuel blending, especially with regard to the availability of sustainable biofuels at reasonable prices. The announced cut in the reduction obligation exposes this risk and its consequences for achieving the targets that arise from a sudden change in policy when there is not enough other governance in place.

Besides the transport sector, the Government has made decisions that are expected to help reduce climate impact from land use and climate investments in other countries. These efforts do not help reduce emissions in the sectors covered by the emission targets. In the Swedish framework, they are counted as supplementary measures and in the EU they contribute to the LULUCF target and possibly flexibility mechanisms within the emission reductions imposed on Sweden in the EU effort-sharing regulation. According to the Government's assessment, the short-term effects of these efforts are very small, while by 2030 they can have contributed to emission reductions equivalent to up to 1 million tonnes each.

In addition, the Government has decided on a number of initiatives that either primarily contribute to facilitating the transition within the EU ETS, such as increased funding for the Green Industry Leap or streamlined permitting processes, or that provide more difficult-to-assess effects on the chances of achieving the climate targets, such as proposals for improving the conditions for building new nuclear reactors.

3.5. Conclusions and recommendations

The previous government lost momentum in climate policy at the end of its term. The efforts in 2022 mainly involved new commissions of inquiry and government missions, while the Ministerial Working Group on Climate Policy ceased to be active and the Government did not produce any bills based on the major investigations during the term of office, such as the Phase-Out Inquiry or the Climate Law Inquiry.

Sweden's climate policy has lost momentum

The policy presented thus far by the current government is not sufficient for achieving the climate targets for 2030. On the contrary, instead of rapidly reducing emissions, changes decided and announced to date will, in the Government's own assessment, increase emissions in the near future. Sweden's climate policy has lost momentum.

For several years, the Climate Policy Council has been stating that the climate transition needs to accelerate and emissions must decrease faster than before. It would be remarkable and have serious consequences if the reduction were now not only to be too slow, but to be reversed in the opposite direction. It would be the first time in at least two decades that Sweden's overall national policy has resulted in increased greenhouse gas emissions.

An action plan is needed that lowers emissions and leads to achievement of the 2030 targets

The climate policy action plan, that the Government is required to present in 2023 according to the Climate Change Act, must contain both sufficient efforts to achieve the 2030 targets and strategic initiatives that lay the groundwork for achieving future interim targets and net-zero emissions by 2045. One cannot replace the other. It is not only the end goal that determines whether the climate targets can be achieved, but how we get there. The interim climate targets are important because it is cumulative greenhouse gas emissions that determine whether the Paris Agreement goals can be achieved. Every kilogram of carbon dioxide emitted continues to affect the climate for centuries. Therefore, there are climatological, ecological, economic and social risks in postponing emission reduction measures. Vigorously reducing emissions by 2030 is also part of Sweden's obligations as a member of the EU.

One of the purposes of the climate policy framework is to create stability from one term of office and government to the next. Naturally, a new government has the mandate to change policies that affect the path towards the climate targets, but it needs to take a stance with regard to the Climate Change Act and the common goals that Parliament has decided on in broad agreement. If existing instruments are abolished or weakened, they must be replaced by others. Pivots announced without much basis for investigation create a lack of continuity and uncertainty for the business sector and all others involved. It also risks sending signals that weaken the Government's climate leadership in the international arena.

A full breadth of policy is needed to reach net-zero emissions

Of the four key areas for climate change identified by the Climate Policy Council (see introduction to Part I), it is clear that the Government has quite high hopes for zero-carbon electrification.

As for the other three key areas, the Government has presented proposals for increasing carbon removal, including investment in bio-CCS. A few proposals concern energy efficiency, but overall it is clear that the Government's policy thus far (and already when the current government parties were in opposition) has deprioritised efforts for a more efficient use of energy and resources. While the EU's Green Deal constitutes a broad reform agenda that links the climate transition with initiatives for biodiversity, increased resource efficiency and circular economy, the Swedish government's new policy at this time signals a narrow focus on the energy sector, specifically on new electricity production. The Climate Policy Council shares the view that more zero-carbon electricity must be produced, but believes that the Government's focus is too narrow for the policy to lead to achieving the climate targets in a viable way.

Policies for achieving the long-term goal of net-zero greenhouse gas emissions followed by negative emissions must cover all sectors and leverage the breadth of overall policy. Zero-carbon electrification is an essential part of the climate transition, but policies need to cover all key areas in order for the climate targets to be achieved in a sustainable way.

RECOMMENDATIONS

- Design a climate policy action plan that results in an accelerated climate transition so that emissions are reduced in the near future and the 2030 climate targets are achieved.
- Ensure that the action plan covers all sectors and leverages the entire overall policy to reach the long-term target of net zero emissions by 2045, followed by negative emissions.

4. Assessment of the Government's climate report

Under Section 4 of the Climate Change Act, the Government must submit an annual climate report to Parliament in the budget bill. This report must include:

- An account of emission trends
- An account of the key climate policy decisions during the year and what those decisions might mean for emission trends
- An assessment of the potential need for further actions, and when and how decisions on such measures can be taken.

Since the first report in 2018, the climate report has been presented as a sub-annex to the budget bill for expenditure area 20, "General Environmental Protection and Nature Conservation".

4.1. Transparency in climate reporting should be strengthened

Even if the climate report meets the requirements of the law, it can be enhanced. In previous reports (including from 2022), the Climate Policy Council has proposed four improvements to climate reporting in the Government's budget bill:

- Present the climate report on a cross-cutting level, in the same way as in the budget statement.
- Report impact assessments even for new proposals in the budget bill.
- Report all emissions-impacting decisions for a specified period of time.
- Include a systematic follow-up of actions from the climate action plan.

The Climate Policy Council notes that in the latest budget bill, the Government has not moved the climate report to an appropriation-breakdown level. The Government has made impact assessments for certain proposals in the budget bill and states that they will provide more details when the climate policy action plan has been presented. It is still not clear what time period the climate report covers. The report also still lacks a clear follow-up of the actions presented in the action plan.

4.2. Conclusion and recommendations

In previous climate reports, the Government has responded to the Climate Policy Council's recommendations from the preceding report. In the climate report in the 2023 budget bill, the Government has stated that it will come back with comments on several of the assessments and recommendations presented in the Climate Policy Council's 2022 report. The Council expects the Government to fulfil this commitment and clarify in what way it will respond in the future.

The Government has made qualitative and in some cases quantitative impact assessments of the changes in policy instruments proposed or announced in the budget bill, which the Climate Policy

Council welcomes. In the climate report, the Government writes that it intends to supplement it with detailed impact assessments in future climate reports. The Climate Policy Council believes that the report should be developed with a summary of the overall impact in the short and long term and a summary of the supplementary measures separately, linked to relevant objectives at the EU level.

The purpose of the climate policy framework was to enable climate policy efforts to be characterised by a long-term approach, continuity, clarity and transparency. A clearer and more accurate climate report would make it easier to follow up and assess the Government's climate policy. In the bill, the government at the time wrote the following about the Climate Act: "A law describing the Government's climate policy efforts in a concrete and clear way also enables everyone to access information about how this work will take place. The opportunity to consult the regulatory framework and understand how efforts are developing and which next actions should be taken increases."

Against this background, the Climate Policy Council considers it problematic that the Government's climate reports to Parliament have so far not included any follow-up of the central governing document – the climate policy action plan. Future climate reports should clearly report on the state of implementation of the climate action plan.

RECOMMENDATION

- Follow up the implementation of the action plan in the annual climate report to Parliament

5. Account of the first climate policy action plan, 2019–2022

Under section 5 of the Climate Act, each new government must, no later than in the year following general parliamentary elections, present a climate policy action plan for the coming term of office. The action plan must contain the Government's planned climate policy actions during the term of office and a description of how the Government considers that these actions will affect the chances of achieving the climate targets. In 2019, the first climate policy action plan was presented within the framework of the climate policy framework.[31] In this chapter, a weighted assessment is made of what the first climate policy action plan delivered and did not deliver relative to the Climate Change Act.

Leading up to 2045, a total of six more action plans will be presented, and each one must contribute to reducing greenhouse gas emissions and improving the chances of achieving the climate targets (see Figure 7).

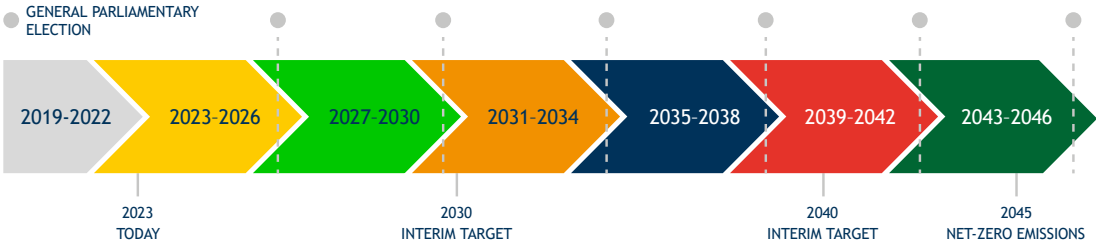


Figure 7. Timeline of the upcoming climate policy action plans through 2045.

This year, the Government will present its climate policy action plan that will apply for the current term of office, 2023–2026. In its 2023 budget bill, the Government writes the following about the action plan (our translation):

> "[The action plan] will point out the direction of climate policy during the term of office, what measures are being implemented and how the government intends to work to create the conditions necessary to pass net zero emissions by 2045 and beyond that achieve negative emissions. The climate goals in the climate policy framework and Sweden's commitment to the implementation of the Paris Agreement are guiding both for the short-term measures within the term of office and for the Government's planning in a twenty-to-thirty-year perspective."

According to its instructions, the Climate Policy Council must submit an assessment of the climate policy action plan within three months of its publication.[59] This was done in the Council's 2020 report. In its 2021 and 2022 reports, the Council has subsequently followed up on the plan's implementation. For the Government, there are important lessons to be learned from the work on the first action plan.

5.1. Contents of the first action plan

The action plan is a tool of government and therefore does not require approval by Parliament in terms of content. However, the Climate Act prescribes the contents of the plan in eight points (see Table 3). In its 2020 assessment, the Climate Policy Council concluded that most of the points were not met in the previous plan.

Table 3. Assessment of the climate policy action plan for 2019–2022 relative to Climate Act requirements.

Contents of the climate policy action plan as prescribed by the Climate Act	**Climate Policy Council comments**	
Sweden's commitments within the EU and globally.	The Government presented Sweden's commitments within the UN Climate Convention, the 2030 Agenda and the EU as well as the Kigali Addendum and the Montreal Protocol.	
Historic greenhouse gas emission data up to the last reported emission inventory.	Emissions data were reported.	
Projected emission reductions.	Scenarios were presented, as well as supplementary analyses for policy instruments.	
Outcome of emission reduction measures taken.	The Government did not report on the outcome of emission reductions for the individual measures taken.	
Planned emission reduction measures with an approximate indication of when these measures can take effect.	Few proposed interventions had an accompanying timetable.	
The extent to which agreed and planned emission reduction measures can be expected to contribute to the achievement of the national and global climate objectives.	Not available.	
The extent to which decided and planned measures in different expenditure areas affect the chances of achieving the national and global climate objectives.	Not available.	
Which additional measures or decisions might be needed to achieve the national and global climate objectives.	Not available.	

Comment: Green indicates fulfilment of the legal requirements. Red indicates non-fulfilment of the legal requirements.

The Government has mainly met the requirements for the parts that have reported goals and existing policies, even if reporting on the effects of individual measures taken has been inadequate. However, there are no deadlines for the proposed measures or analyses of whether they are sufficient to achieve the climate targets and what additional measures may be needed. Since these elements were missing, it was difficult from the start to determine to what extent and in what way the action plan could improve the chances of achieving the climate targets. The Climate Policy Council found it remarkable that the fundamental issue of the policy's target attainment was not taken into account in the plan. Thus, the action plan did not meet the ambitions of the Climate Act.

A clear goal for Sweden to become the world's first fossil-free welfare country was formulated in the action plan, as was the importance of broad commitment and support throughout society for achieving the climate goals and targets. The Climate Policy Council believes that change processes require legitimacy, openness and inclusion, and to achieve this, the policy must be transparent. A clear narrative about a zero-emissions society is a key driver of transformative change. The joint responsibility for achieving both our national objectives and the global goals must be a fundamental point of departure for this vision. However, a coherent general picture of the transition and a narrative about the path to get there were missing from the plan.

The Swedish Environmental Protection Agency was the only government agency tasked with delivering decision guidance for the action plan. In the Government Offices, oversight for developing the action plan lay with the then Ministry of the Environment's climate unit and was prepared as one in a series of cases. Other relevant ministries therefore had a reactive role in preparing the proposals. This counteracted the possibility of integrating the climate perspective in all government policy areas, which is an explicit ambition in the Climate Act. Here, lessons can be learned from the work on the fiscal framework and the budget process, which is clearly regulated and has broader oversight in the Government Offices and government agencies.

In June 2020, the Government established a Ministerial Working Group on Climate Policy tasked with implementing and following up efforts around the climate policy action plan. The working group consisted of ministers from the relevant ministries and was headed by the Prime Minister. A state secretarial group and a smaller office at the climate unit at the Ministry of the Environment were also affiliated with the working group. The Climate Policy Council believes that the model of a working group for climate policy led by the Prime Minister supports a broadening of accountability in the Government, the integration of the climate issue in other policies, and the secured prioritisation and implementation of the action plan.

The Government summarised its action plan in a memorandum that listed 132 planned interventions. Of these, about 30 percent were expressions of raised levels of ambition, a direction or, in general terms, an indication that a review should take place. About 40 percent of the actions were planned inquiries and missions to government agencies that the government intended to appoint during its term of office. The remaining 30 percent of the listed actions were more specific plans for new or tightened instruments that the plan envisaged to be introduced through to decision and implementation.

The actions were described and distributed across four cross-cutting areas: cross-sectoral measures, emission sectors, supplementary measures and international climate actions (see Table 4). The plan contained about one-fifth cross-sectoral proposals. Just over two-thirds were sector-specific proposals, of which transport made up the majority. Only three points concerned agriculture, which accounts for about 14 percent of emissions. More than one-tenth of the efforts were targeted to the international level, including the EU. A few proposals concerned supplementary measures.

Table 4. Interventions from the climate action plan, with a breakdown by area in the plan.

General area and total proposals per area	**Subarea**	**No. of proposals**
Cross-sectoral measures (27)	Mainstreaming the climate issue in all relevant policy areas	3
	Pricing of greenhouse gas emissions	6
	Financial markets	4
	EU Emissions Trading System (EU ETS)	1
	Consumption-based emissions	3
	Public procurement	3
	Research and innovation	2
	Local and regional climate efforts	5
Emission sectors (84)	Construction	3
	Industry	11
	Electricity and heating sector, and waste	9
	Forestry and other land uses	3
	Agriculture	3
	Industrial machinery	3
	Transport	52
Supplementary measures (3)		3
European and international climate actions (18)	EU	6
	Regional climate collaboration	1
	Global implementation of the Paris Agreement	2
	Funding international climate efforts	3
	Climate and trade	6

In its assessment of the action plan, the Climate Policy Council welcomed the Government's presentation of a broad action plan with planned interventions in many different sectors, from local to international level. This is in line with the ambitions of the Climate Change Act. On the other hand, the interventions were generally diffusely described and lacked implementation timetables. It was not stated how the plan would be followed up and communicated.

A clear and transparent follow-up of the plan's implementation was not put in place during the term of office either. This lack of information and transparency made it difficult for Parliament, the public and concerned stakeholders to follow the plan's implementation and the Government's climate policy, and ultimately demand accountability (see Chapter 4). This was hardly in line with the Climate Change Act's purpose of creating increased transparency, clarity and a long-term perspective in climate policy. It also made it more difficult for the Climate Policy Council to evaluate the Government's policy.

5.2. Follow-up of implementation

In the action plan, the Government argued that the climate transition must be considered from a holistic perspective and that the climate issue must be integrated in all relevant policy areas, not just in policies that primarily aim to reduce emissions. To ensure this ambition, the former

government proposed three comprehensive measures for Parliament to take a position on in conjunction with the approval of the first climate policy action plan:

- A review of all relevant legislation in order for the climate policy framework to have an impact
- The Government's potential reformulation of its various societal goals to better align them with the climate targets. This should be carried out during the next review of each societal goal.
- A clarification of the regulatory framework so that climate impact assessments are done in the relevant policy areas.

The climate law inquiry, which was directed to review the legislation and propose how to achieve increased integration of the climate targets, presented its interim report in the spring of 2021 and its final report on 15 May 2022, but never resulted in any specific proposals from the Government.[60] No societal goals were reformulated during the previous term either, despite the fact that the Government itself highlights several policy areas in the action plan that are clearly tied to climate policy but in their goal formulation lack a reference to the climate targets. Chapter 9 contains an in-depth look at this theme.

With regard to the regulations for impact assessments, the Government, through the Ministry of Finance, in August 2022 presented the memorandum "Better impact assessments".[61] It proposes introducing a new requirement for impact assessments to contain a specific description and calculation of the effects of the proposal or decision relevant to reducing or increasing GHG emissions or removals in Sweden and abroad. The memorandum also suggests that if effects of this kind cannot be calculated, this should be justified. The Government proposed that from 1 January 2024, instructions to the Swedish Environmental Protection Agency should be clarified with regard to assisting in method development, guidance and training within its remit, in connection with the ordinance on impact assessment regulation.

During the summer of 2022, a joint government guidance was also presented on how to assess how different policies and measures affect GHG emissions and removals.[62] The guidance was intended to be used as background material for developing the upcoming action plan. The Climate Policy Council has repeatedly pointed to the need for impact assessments that take climate targets into account and thus welcomes these initiatives. But even on this point, the third point of the interventions decided by Parliament, the Government did not follow through on what it stated in the plan, despite the fact that changes to impact assessment regulations are decisions that the Government has full control over and do not require parliamentary decisions or external inquiries.

The Climate Policy Council regrets that the Government failed to pursue the three points that were specifically highlighted in the action plan for integrating the climate issue in all policy areas, although some steps were taken during the term of office.

There are some examples of important actions in the plan that were implemented during the term of office. The Green Industry Leap has received an increase in funding, climate requirements have been introduced in public procurement, emission allowances within the EU ETS continue to be abolished and climate declarations for new buildings have been introduced. Furthermore, green government bonds have been issued, a national electrification strategy has been presented

and the Cross-Party Committee on Environmental Objectives has presented proposals for new climate targets for the climate impact of consumption and climate benefit from exports.

Table 5. The 132 actions in the climate policy action plan and their achievement status.

	Number			
	Completed	**Started**	**Not decided**	**Not applicable for follow-up**
Missions and commissions of inquiry	49	2	1	-
Specific interventions	29	5	5	-
Goals and priorities	-	-	-	41

Since the Government has not presented any follow-ups of its own, the Climate Policy Council has, according to what can be assessed, presented annual follow-ups of the plan's implementation (see Table 5). The 132 proposed interventions were of varying natures. Several expressed ambitions and priorities in various sectors have not been possible to follow up on because it has been difficult to assess the extent to which they have been achieved and how active the Government has been on the issues. There are roughly 40 such interventions. The other more than 90 points in the climate action plan were so specifically formulated that they could be follow up. These include planned commissions of inquiry or government missions to state agencies as well as specific planned initiatives, such as new or modified policy instruments. By the end of 2022, a large majority of these actions from the action plan had been implemented. However, the Climate Policy Council notes that the most thorough reforms, with the greatest potential effect on the chances of achieving the climate targets, have not been implemented. Besides the fact that the climate law inquiry has not yet led to any specific policy changes, and no societal goals have yet been integrated with the climate goals, no comprehensive tax reform that included a green tax reform was carried out. Nor can transport infrastructure planning be said to have changed in any more profound way.

One conclusion made by the Swedish Agency for Public Management in a recently published report is that the government agencies have not perceived the action plan as a guiding document.[39] The link has been weak between the policy proposed in the action plan and the agencies' missions during the term of office. This strengthens the Climate Policy Council's view that the action plan has not been the strategic document for guiding climate policy it is intended to be during its term of office.

FACT BOX 3. LESSONS FROM THE GLOBAL CLIMATE TRANSITION AND OTHER COUNTRIES' CLIMATE POLICIES

To a great extent, Sweden's climate policy is designed as part of the EU's common climate policy. The EU's efforts to reduce greenhouse gas emissions are, in turn, part of a larger global transition. Ongoing climate change is a genuine global problem where national governments continue to have the most important role to play in solving the problems. The international research literature has evolved, and now places greater emphasis on institutions and decision-making processes for climate policy, and on the fact that climate change cannot be achieved using single policy instruments.

The following are some policy recommendations from the IPCC.

Develop tailored national policy packages: Each individual policy action or intervention has a limited effect on its own. To achieve a successful transition process, packages of measures are needed, but how best to put these packages together varies between countries and over time.

Tailor climate policies to national contexts: It is not only the difference in emissions profile that determines which climate policy will work. Countries' political systems, material and economic resources, culture and tradition can also play a role.

Make a broad assessment of climate policies: Climate policy instruments should not only be evaluated according to their effect on emission trends. Other criteria should also be taken into account, including both the positive and negative aspects of, for example, economic effectiveness, distributional effects, side effects, transformative potential and institutional capacity for implementing policy instruments.

Source: IPCC assessment report, "Climate Change 2022: Mitigation of Climate Change", April 2022.

5.3. Conclusions and recommendations

The action plan to be presented this year will be the second one since the climate policy framework was decided on. It is vital for it to include policies that remove identified obstacles to the transition in both the short and the long term. The plan must include both efforts that contribute to emission reductions in the near future as well as strategic efforts that need to happen now to continue to drive down emissions towards the net-zero target, which must be met by 2045.

In its 2022 report, the Climate Policy Council presented the following five overarching recommendations regarding the contents of the upcoming climate policy action plan:

- Improve governance of government agencies and coordination among different policy areas and policymaking levels.
- Strengthen goals and instruments in key areas.
- Create better conditions for investments that help to achieve the climate targets.
- Carry out a broad knowledge and upskilling initiative for the climate transition.
- Take proactive, coordinated and decisive action in the EU.

The recommendations are very much still valid. The next climate policy action plan following the 2023 plan will not be presented until 2027, just three years before the 2030 targets are to be achieved. Therefore, it is the 2023 climate policy action plan that essentially must lead to Sweden's achieving the 2030 targets. The plan has to accelerate the transition.

Based on the Climate Policy Council's previous assessment of the former government's action plan and our annual follow-ups, the following conclusions can be drawn:

- The Council notes that the first climate policy action plan contained a wide range of policy proposals in different sectors and at varying levels of decision-making. Since the transformation of society fundamentally affects all policy areas, both the current and future governments must continue to take a broad approach to the issue in all future action plans. It is also high time to realise the Climate Act's intention of specific integration of climate targets throughout all policy areas.
- For the same reason, it is important that all areas of government feel a sense of ownership concerning the climate transition and the action plan's implementation. The Climate Policy Council considers that the Working Group on Climate Policy appointed by the previous government contributed to this. Coordination within the Government and among the ministries around implementing the action plan needs to be prioritized, and from a legitimacy perspective the efforts in some way should be led by the Prime Minister.
- Although responsibility for designing the action plan lies with the entire government, there should be a clear division of responsibilities linked to the proposed measures. In addition to the Climate Policy Council, several central authorities have asked for clearer governance from the Government around the climate targets.[4,39] The potential of the climate policy action plan as a tool for steering towards the targets should be better utilised.
- During the previous parliamentary term, the Government and its agencies gradually improved the assessments of how different initiatives affect the chances of achieving the climate targets. It is important to continue to take steps in this direction, and for the upcoming action plan to better describe both the expected impact of individual interventions and the overall contribution of the plan for achieving the climate policy objectives.
- As highlighted in Chapter 4, and in several previous reports from the Climate Policy Council, the annual climate report to Parliament should include a follow-up of the implementation of the action plan. Like the budget statement, the climate policy action plan in principle covers all societal goals and expenditure areas.
- Following up and communicating the actions in the plan in a transparent and understandable way is an important part of ensuring support for the policies pursued among the public and relevant stakeholders. Therefore, it is important for the Government to prioritise this in the upcoming action plan.
- The policies that will enable the transition and allow us to achieve the climate targets rely on broad acceptance among citizens and other societal actors. The Government should use the action plan to create a coherent overall picture of the transition. The plan should include the Government's overall perspective on the transition process, what it will lead to, what the path looks like, and how stakeholders are given the chance to do their part and contribute to the transition.

The Climate Policy Council concludes that the upcoming climate policy action plan must contain sufficient efforts for achieving the 2030 goals and strategic efforts that lay the groundwork for reaching net-zero emissions by 2045. The Government also needs to ensure that this action plan – unlike the previous plan – lives up to the requirements of the Climate Change Act, especially in terms of timetables and assessments of the measures' effects on greenhouse gas emissions. Similarly, it is important that the plan effectively integrates Sweden's implementation of the EU Green Deal and the Fit for 55 package.

RECOMMENDATIONS

- Develop a clearer, comprehensive narrative about Sweden's climate transition.
- Ensure that the implementation of the action plan is prioritised and coordinated within the Government under the leadership of the Prime Minister.

6. Analysis of decision guidance documents for the climate policy action plan

In preparation for designing the upcoming climate policy action plan for the 2023–2026 term, the previous government directed three more agencies to produce decision guidance for the plan: the Swedish Agency for Growth Policy Analysis (for the business sector' climate transition), Transport Analysis (for transport data) and the County Administrative Board of Uppsala (for regional and local perspectives in the transition). These decision guidance documents were reviewed during the autumn of 2022, and many agencies, including the Climate Policy Council, wrote referral responses. In addition to the documentation from the agencies, the Swedish Environmental Protection Agency (EPA) is to provide guidance for all parts of the action plan by 15 March of the year following the general parliamentary election.[63, a]

In addition to evaluating how the Government's overall policy aligns with the decided climate targets, the Council's remit includes evaluating the guidance and models on which the Government bases its policy. This chapter assesses the Government's missions to its agencies, the contents of the agencies' decision guidance and the process behind producing this guidance. In addition to the Government's missions and the agencies' reports, the Climate Policy Council has commissioned an interview survey with responsible officials at the Government Offices and the agencies involved in order to increase our understanding of the process and efforts.[64]

The Council has assessed whether the agencies' decision guidance is appropriate and sufficient for developing a plan that can accelerate the transition and achieve the climate targets. The Government's mission has been assessed relative to the Climate Act's requirements for action plan content, which is described in Chapter 5 and in the Council's previous evaluations of the Government's governance of the agencies. The agencies' processes for delivering guidance that meets the missions' requirements are also important for evaluating the Government's political leadership and the continued development of its governance.

6.1. Missions to the government agencies

The missions for the three agencies called for developing proposals for policy initiatives in the plan and assessing how they can contribute to achieving the climate targets.

The three missions[65-67] are similarly designed, but with some exceptions. For example, the mission to the Agency for Growth Policy Analysis calls for making a sector-specific obstacle analysis as a starting point for the efforts, while also taking into account efforts from the other two missions. This does not apply to the other missions, which may seem strange. Interaction among the three parallel missions would probably have been facilitated if the agencies had had the same starting points.

In addition, each agency was supposed to co-operate with the Swedish EPA and the Swedish Energy Agency, as well as the many other agencies specified in each mission. The three responsible agencies were to report to a total of four ministries: in addition to the Ministry of the

[a] This year, the Swedish EPA's mission has been extended until 15 April.

Environment, also to the Ministry of Climate and Enterprise, the Ministry of Rural Affairs and Infrastructure and the Ministry of Finance.

The choice to allow two more purely research- and analysis-oriented agencies and a county administrative board to be responsible for analysis, collaboration and secured input was a new approach on the part of the Government in preparing the action plan. Prior to the first climate policy action plan, only the Swedish EPA was tasked with producing decision guidance. Since the overarching purpose of the Climate Act is to integrate the climate issue in all policies, the Climate Policy Council takes a positive view of the intention to broaden perspectives and delegate responsibility to more agencies and ministries and, in addition, broaden the collaborative process to include more agencies in the efforts to produce action plan input. The decision to directly involve regional and local authorities via a county administrative board is also considered by the Council to be a positive step.

The decision guidance was expected to present a comprehensive proposal that contributes to achieving the national and global climate goals and the climate transition in the business and transport sectors and at both local and regional levels. In addition to the Climate Act, climate targets and the previous climate policy action plan, the agencies were to take into account the Climate Policy Council's previous reports. They were also expected to consider ongoing processes within EU legislation as well as within the Electrification Commission, the Cross-Party Committee on Environmental Objectives and commissions of inquiry, such as the Climate Law Inquiry and the Phase-Out Inquiry.

Common to the missions was the request to the agencies to rank and justify their proposals based on their importance for the climate transition, including direct and indirect effects on emissions in the short and long terms. The Government also asked for several other parameters to be factored into the ranking, including about how the proposals would affect the fulfilment of other societal goals including other environmental quality objectives, the 2030 Agenda, socio-economic effects, redistribution policy, employment, gender equality and regional development. Consequences for total defence and the effects of the proposals on the state budget were to be reported, along with synergies sought and any conflicting goals. The proposals were to include measures to be implemented in the next action plan period (2023–2026).

The Government made it clear that the agencies should assess the cost-effectiveness of their proposed measures on the basis of short-term, long-term, direct and indirect climate effects. However, cost-effectiveness was to be viewed as a component of a broader socio-economic efficiency analysis. In addition to cost-effectiveness, relevant criteria for this analysis included, for example, feasibility, redistribution effects, spillover effects, and conflicts or synergies with other societal goals. In 2022, the Swedish EPA, together with the Swedish Energy Agency, the National Institute of Economic Research and the Swedish Transport Administration, produced national guidance for climate impact assessments. This would serve as a starting point for preparing the agencies' decision guidance.

Compared to the specified missions given to the Swedish EPA[68,69] to produce decision guidance for the previous and upcoming climate policy action plans, these three missions provide clearer instructions for developing the proposals and formulating their contents. They are therefore more specific in terms of content. Transport Analysis' mission is the most detailed, and is the only one that specifies which area **not** to include in the proposal, namely taxation.

The Government Offices believe that the missions were clear, specific and appropriate, albeit extensive. They considered the timeframe of one and a half years for developing the missions

reasonable, and they perceived that the agencies understood what was expected. One argument that the Government Offices have given for why these three agencies were charged with fulfilling the missions was to secure proposals that would be feasible and thus legitimate. The Government Offices also believed that they had had a good dialogue with the agencies when the missions were designed.

However, the three responsible agencies perceived the missions very differently. Representatives from the Agency for Growth Policy Analysis believed that their missions were too broad, imprecise and therefore unclear, while representatives from Transport Analysis and the County Administrative Board of Uppsala perceived their missions as clear. In the case of Transport Analysis and the county board, both the internal project management and collaboration with other agencies and stakeholders seem to have functioned well, while the Agency for Growth Policy Analysis expressed friction both within the agency and in dealings with other stakeholders. It is clear that the three processes have functioned quite differently, and it is reasonable to assume that in the end this has also affected the outcomes and results of the three reports.

6.2. The process and proposals from the agencies

A total of 91 proposals for measures are presented from the agencies, where the Agency for Growth Policy Analysis accounts for just over half and Traffic Analysis and the County Administrative Board of Uppsala for around 20 proposals each. The proposals differ substantially in nature, involve different administrative levels, and cover different areas and sectors, and they respond to the missions to varying degrees.

The Council considers that it is not possible to deduce the extent to which the proposals (either individually or collectively) can be expected to contribute to reducing greenhouse gas emissions. The missions make clear that the proposals should be ranked based on their effect on emission reductions, although several other factors must also be taken into account in the assessment. This has been challenging for all three agencies, and none have succeeded in delivering a satisfactory ranking based on the Government's requests. Below follow brief analyses of each decision guidance document followed by overall conclusions and recommendations.

County Administrative Board of Uppsala guidance[70]

This county administrative board was directed to propose measures that develop the capabilities of regions and cities to successfully transition. The board's proposals revolve around the need for strengthened leadership, increased expertise and capacity, better and more effective coordination and improved follow-up. All the proposals link to the mandated powers of the regional and local authorities and to one or more of the obstacle categories that the board, together with many stakeholders[b], has identified. The obstacles involve the lack or insufficient scope of vision, direction, goals and leadership; organisational capacity and resources for a sustainable transition; framework conditions and requirement levels. The Climate Policy Council's conclusions on how the governance of the agencies is inadequate relative to the climate targets and the Climate Act are one of several clearly defined starting points for the board's work.

[b] The County Administrative Board of Uppsala took the initiative to carry out its own obstacle analysis together with external stakeholders, such as municipalities, regions, the Swedish Association of Local Authorities and Regions, the Klimatkommunerna association, Viable Cities, energy offices, BioDriv Öst, Drive Sweden and Fossil-Free Sweden.

All proposed measures undergo a qualitative assessment of their potential that includes both short-term and long-term impacts, economic consequences (including cost-effectiveness and impact on the state budget as well as regional and municipal budgets) and how the proposal contributes to other societal goals. In several cases, the proposals are linked and it is described how they support each other and thus contribute to efficiency in implementation. In a few cases, linkages are also made to the other two missions when synergies with proposals from the other reports are revealed. The mission specifically stated that the proposals should have an impact in both the short and the long term. The county administrative board estimates that almost all of their proposals will have an impact in the form of emission reductions over the next four years. However, these have not been quantified to any great extent. The proposals mainly involve changing their approaches and organisation to enable the measures to be implemented, but their effects are difficult to quantify.

All proposals from the county administrative board address the recommendations of the Climate Policy Council in last year's report regarding the content of the upcoming action plan. Primarily, the proposals involve boosting knowledge and skills at the local level by, for example, creating an advisory centre for experimental activities, generating new statistics and investing in skills development around peatland rewetting. Many proposals also involve strengthening governance through better and more effective coordination of new proposals and existing processes.

The board proposes that regional authorities be given a clearer responsibility for increasing and applying climate requirements in municipal and regional public procurement processes. Another proposal that gives regions more responsibility involves improving their ability to support transport-efficient communities. The board notes that many municipalities currently lack the resources to take a consistent, strategic approach to mobility issues, and that better coordination is needed between the municipalities and regions.

The Climate Policy Council notes that the decision guidance from the County Administrative Board of Uppsala is consistently based on qualitative analyses and methods. Because of the lack of quantitative impact assessments, it is not possible to deduce the extent of potential emission reductions or the success of the proposals from a socio-economic perspective. However, this can be partly expected since "soft governance", as stated in the county administrative board's proposal, is difficult to quantify. On the other hand, the Council believes that there is great potential to step up the pace of transition by better coordinating governance between the different administrative levels (region and municipality), actively collaborating with local stakeholders and simultaneously boosting capacity through skills enhancement and resource allocation. The holistic view presented in the decision guidance, where most of the proposals are interconnected and build on each other, is exemplary from a climate transition perspective.

The county administrative board and cooperating agencies are satisfied with the process for producing the decision guidance. Unlike the other two agencies' action proposals, there are no specific opinions or reservations attached to their report. The mission was perceived as clear and the board at an early stage agreed with the Government Offices on what the expectations were and how they would interpret the mission. The mission was prioritised by county board management, resources were freed up and efforts quickly got underway. The Climate Policy Council believes that this, together with the early involvement of cooperating agencies, municipalities and regions, contributed to a thorough final report.

Transport Analysis guidance[71]

In total, the Transport Analysis agency presents 23 proposals categorised into three areas of action: a transport-efficient society (9 proposals), sustainable renewable fuels and energy-efficient vehicles (7 proposals) and transport modes (7 proposals). In addition to its main report submitted to the Government, the agency attaches several supporting guidance reports.

Transport Analysis notes that several key instruments for Sweden's achievement of the climate targets are already in place. The proposed measures should be seen as adjustments and complements to them, as well as the EU regulations that the Fit for 55 package in particular will bring. In general, Transport Analysis believes that EU policy will have a significant impact on the content of the next climate policy action plan. Several action proposals should be viewed in the light of this. The proposals presented were based on the assumption that the interim target for domestic transport would be achieved, given that the agreed policy remains in place and aims to increase the robustness of the transition over time. Furthermore, the focus was on the achievement of the climate targets in a more sustainable and cost-effective way. Transport Analysis writes that if the conditions change, for example if fuel taxes or the reduction obligation level is reduced, new policy instruments must be proposed. Of the four key areas for climate transition identified by the Climate Policy Council, almost 70 percent of the proposals concern the key area of more efficient resource and energy use.

Most of the proposals concern road traffic, but two cross-modal measures are presented. For one, it is proposed that the Swedish Energy Agency be commissioned to investigate which additional fuels and modes of transport can be included in the reduction obligation leading up to 2030, how the system should be designed after 2030, and whether it is appropriate to convert the reduction obligation into a national emissions trading system. Secondly, the agency proposes that Parliament add "a transport-efficient society" to the current five guiding principles[c] of transport policy.

Representatives from Transport Analysis believe that implementation of the mission has functioned well. This is also confirmed by the cooperating agencies who were involved in the efforts at an early stage. The various processes in the project were informed by an open and trusting collaborative climate. The area of a transport-efficient society seems to have been somewhat challenging for those involved because of perceived ideological divisions on the issue. The agency put forward a certain self-criticism that there was possibly a bit too much focus on car traffic in terms of public transport.

All proposals in the decision guidance are estimated to have limited effects in terms of emission reductions leading up to 2030 and thus have little impact on the achievement of the interim target for domestic transport. On the other hand, Transport Analysis estimates that the measures will reduce emissions in the longer term over the period 2030–2045, as they in many cases concern areas like urban planning and infrastructure.

Traffic Analysis is the only one of the three agencies that was specifically restricted in its mandate from the Government on making proposals regarding taxation. The Climate Policy Council considers this a remarkable request and difficult to justify. In its report, Transport Analysis points out that tax policy is generally a highly effective way to steer towards the climate transition and urges the Government to include taxes in the upcoming action plan. The agency refers to its own

[c] The current principles are: 1) customers should be given great freedom of choice to decide how they want to travel and how transport should be arranged, 2) decisions on transport production should be decentralised, 3) collaboration within and between different modes of transport should be promoted, 4) competition among transport operators and transport alternatives should be promoted, and 5) the socio-economic costs of transport should be a starting point when designing transport policy instruments.

background report[72] and the discussion currently underway there about a potential development of the bonus-malus system, a road tax, preferential taxation and a congestion tax as essential pieces of the puzzle for achieving the climate targets.

In the introduction, conflicting goals are touched upon on a general level, such as the use of biofuels, increased use of batteries and valuable metals, and the rebound effects[d] of energy efficiency improvements. However, the conflicting goals are not mentioned in the individual proposals, which is a shortcoming. The agency ranks its proposals according to a separate model, so it is not clear how the proposals are connected and relate to each other or the whole. The Council therefore agrees with the Swedish EPA and Swedish Energy Agency, who point out that proposals lack an overall picture and impact assessments relative to goal fulfilment ahead of the 2045 target.

The lack of a holistic analysis also means that vital perspectives and proposals for the transport sector's transition are not included in the decision guidance, as the Swedish Energy Agency and Swedish EPA point out. Examples of such vital perspectives and proposals are infrastructure use and energy efficiency improvements in the short term. Another perspective that is missing is the railway system's potential and capacity challenges, which is highlighted by both the Swedish Transport Agency and the Swedish Transport Administration.

Agency for Growth Policy Analysis guidance[73]

Decision guidance from the Agency for Growth Policy Analysis consists of 47 proposals that support a more rapid and efficient transition of the business sector. Roughly half of the proposals are cross-sectoral and half are sector-specific. The agency itself divides cross-sectoral measures into the following areas: EU policy as a cornerstone, funding, skills supply, public procurement and expanded learning processes. Sector-specific measures are divided into the following areas: industrial machinery, electrification, industry, plastic incineration, and housing construction and land use. About ten background reports were produced within the framework of the mission.

In the reports, the Agency for Growth Policy Analysis discusses the methodological difficulties in ranking the proposals based on climate impact, cost-effectiveness, employment, competitiveness and gender equality. Among other challenges, they highlight the problem of the lack of harmonisation of the impact assessments and thus the difficulty of comparing them. The agency instead chooses to rank the proposals as follows: 1) proposals that are considered well investigated or well justified and show great potential to be implemented, 2) recommendations that are not considered sufficiently investigated or specific, 3) proposals for continued development that show promise but are not sufficiently investigated because they neither have an impact analysis nor are specific. It is difficult to get a picture of the impact of the proposals in general and, in particular, the volume of emission reductions the proposals can potentially contribute to. The link is unclear between what needs to be done to achieve the goals and what measures are proposed.

The proposals are assessed for impact to a negligible extent. The discussions about conflicting goals and synergies with other societal goals are not very developed either. The focus of the entire report is on the transition of the business sector rather than on proposals that directly reduce emissions. This means that it is difficult to quantify the climate impacts. In relation to the key

[d] The costs of a particular energy service (for example, travelling a certain distance by car) are reduced when implementing an energy efficiency measure. It may mean that a certain portion of the energy savings is eaten up by using part of the freed-up financial resources for energy-using activities. This is known as the rebound effect.

areas identified by the Climate Policy Council for achieving the climate targets, most of the proposals are contained in the agency's guidance in the area of energy and resource efficiency improvements. There are slightly fewer proposals in the areas of zero-carbon electrification and carbon removal and storage. Almost none exist for biomass. The Council notes that the agency presents decision guidance only meets the mission's requirements in part, and that it lacks a overall narrative of the transition of the business sector as well as an assessment of the proposals' effects on emission trends, both individually and collectively.

One proposal in the decision guidance is to give the Cross-Party Committee on Environmental Objectives the task of reviewing and adjusting the national climate objectives so that they more clearly link to and contribute to EU climate policy (see chapters 1 and 2 for a discussion of the targets and the relationship between Sweden's national objectives and EU goals). The proposal is justified by the lack of harmonisation between national and EU targets. Thus, a territorial target for Sweden, relative to the EU's emissions trading system (EU ETS), can result in weakened competitiveness for Swedish companies. This in turn can lead to carbon leakage, meaning that businesses will move from Sweden to avoid emission requirements. Both the Swedish Energy Agency and the Swedish EPA distance themselves from this proposal in the special opinions annexed to the agency's report.

Management at the Agency for Growth Policy Analysis was initially hesitant to receive the mission because it felt that it did not possess the required experience and skills. Moreover, it saw itself as an evaluative authority and not an agency that proposes policy measures. The Government nevertheless chose to make this agency responsible for decision guidance around the business sector's transition. The agency was given a significantly higher budget than the other two agencies[e] in order to engage outside experts. The agency appointed an external reference group early on to support the project team and quality-assure the results.

The process was perceived by most participants as having shortcomings involving internal disagreement on interpreting the mission. Furthermore, shortcomings were perceived regarding collaboration, acceptance and dialogue as well as time and continuity. Both the Swedish Energy Agency and the Swedish EPA, in their attached opinions, criticise the process and the fact that they were not given the opportunity to quality-assure the proposals, which is why they express that they also do not support the final report in its entirety.

The Agency for Growth Policy Analysis is the one of the three agencies that has used the highest number of outside assignments as input for its own analysis. It also has the broadest mission, covering multiple sectors that act under varying conditions. In many of these guidance documents, especially from the Swedish Energy Agency and the Swedish EPA, there are more elaborate analyses of the proposals than is shown in the summary final report.

6.3. Conclusions and recommendations

The Council considers that the agency missions are, on the whole, appropriately formulated with a view to receiving proposed policy measures for achieving the climate targets. It is positive that responsibility has been broadened to include several agencies. In addition, it is positive that the agencies are expected to perform impact assessments of the measures and expose both conflicting objectives and synergies with other policies.

[e] Growth Policy Analysis: 7 million. Transport Analysis: 4 million. County Administrative Board of Uppsala: 3 million.

Proposals in the decision guidance are inadequate for achieving the climate targets

The main question for our analysis is whether the decision guidance documents are appropriate and adequate for the Government to be able to present an action plan with the potential to accelerate the climate transition and achieve the climate targets. Since so few proposals have a quantified impact assessment, it is impossible to assess the extent to which the nearly 100 proposals can provide sufficient emission reductions in the near future to achieve the targets.

In addition, the conditions for achieving the targets are different today than when the mission was assigned. At the time, the latest emissions projections from the Swedish EPA indicated that the 2030 targets could be achieved with policies that were already decided.[74] This is no longer the case. With the current policies, emissions are expected to increase in the coming years, especially from the transport sector (see Chapter 3). The decision guidance provided by the three agencies is insufficient to fill the current gap between target and forecast for 2030. This applies in particular to the domestic transport target. It also creates great difficulties in reaching the target for all non-ETS emissions. Based on the Government's current situation, additional decision guidance is therefore needed in order to provide greater emission reductions in the near term.

Since the transport sector has a special interim target for 2030, it was easier for Transport Analysis to assess how much importance they would place on proposals that reduce near-term emissions. For the other sectors, there was no clear benchmark to be met in terms of the level of ambition of the various proposals. All in all, the Government received few proposals that could contribute to emission reductions within the next few years. Now that the policy has changed in a short time, this will be a crucial shortcoming when the Government is to design the climate policy action plan. Similarly, policy shifts or external changes may quickly change the conditions on more occasions in the future. One lesson is that the Government should explicitly commission proposals that can provide significant emission reductions in each sector, both in the short and long terms, in addition to requirements for target attainment according to current scenarios. This would make the guidance more robust both relative to external events and, for example, changes of government following parliamentary elections. It would also increase the leeway for an incoming government to choose how it wants to meet the Climate Act's requirements for the action plan. Not all proposals have to be implemented, but such a request would stimulate agencies and others involved to increase the creativity and specificity of their proposals.

The process of producing decision guidance shows clear shortcomings

What apparently all three agencies struggled with was the requirement for ranking the proposals. The agencies present three different variants, but none correspond to what the mission expressed. This suggests that this part of the mission was difficult to carry out.

Several interviewees highlight that better coordination of the missions from the Government Offices would likely have resulted in better decision guidance. Greater coordination among the missions would have been desirable, as it should reasonably have improved synchronisation among the proposals from the three missions. In general, the Council also regards it as a weakness that clear descriptions of synergies are lacking in the proposals.

In order to make it easier for the agencies, the Government should have attached a summary of the ongoing relevant processes to which the agencies could relate their efforts. The agencies spent much time on getting such an overview themselves. For future missions, this should be included from the start. In a recent report, the Swedish Agency for Public Management also underscores

this as a more general problem in terms of the Government's governance of the agencies in the climate transition.[39]

Our review shows that a clear, transparent and accepted process is essential for obtaining a well-designed, quality-assured end product. It is clear that, on this point, efforts around the business sector's transition fell apart.

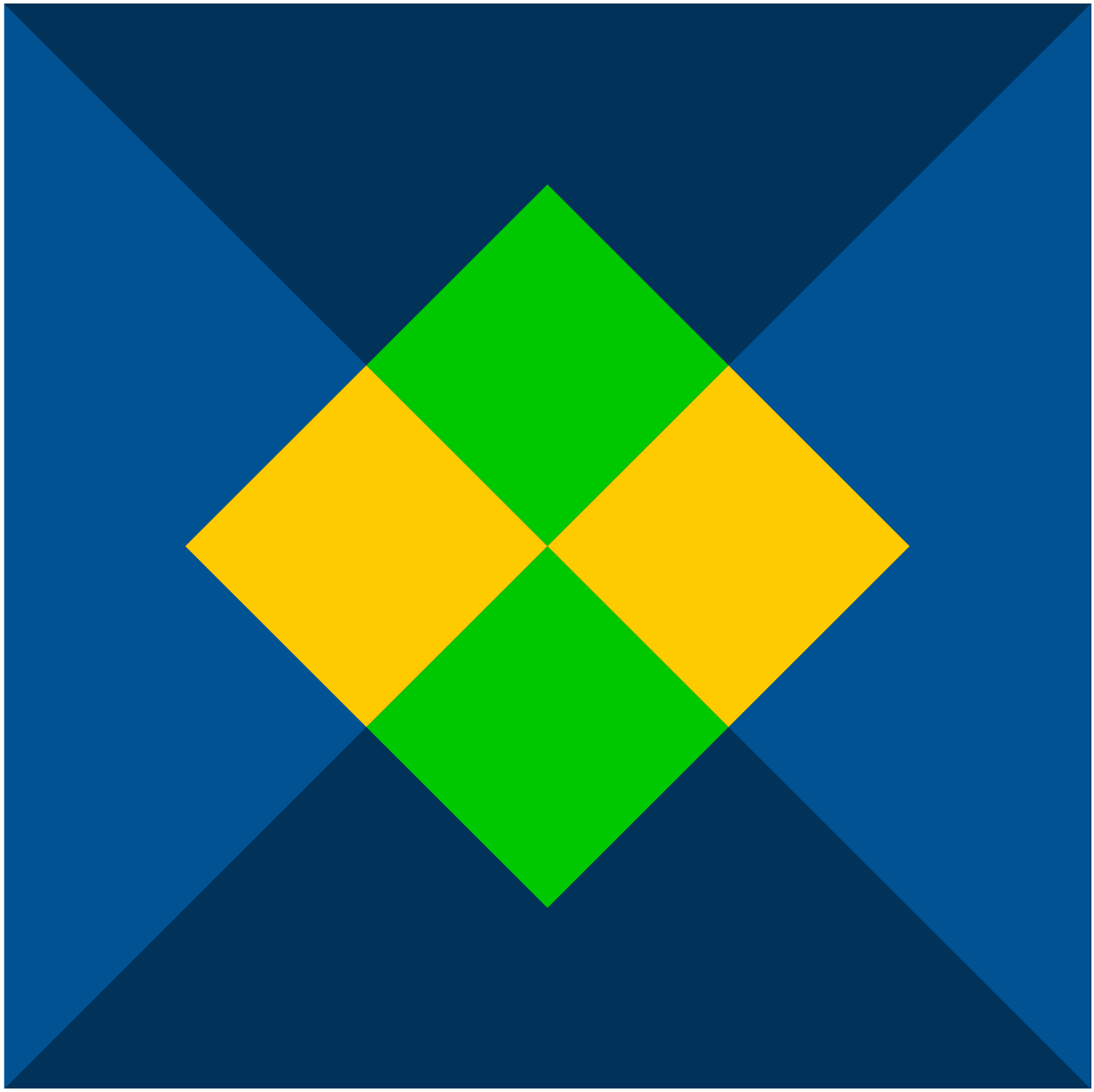
The Council stands by its previous recommendation that the Government should give several agencies a standing mandate to provide decision guidance for the climate policy action plans. Such an arrangement would support broader responsibilities, long-term skills building and step-by-step learning. According to the Climate Act, a climate policy action plan must be presented again every four years, and continuity should inform follow-up as well as development. In addition, some form of recurring coordination process or organisation among the agencies involved is also likely to be needed.[4,39] The Government should also consider the proposal from the Swedish Agency for Public Management to develop the action plan as a more governing document for the agencies as well in order to leverage the plan's full potential.

RECOMMENDATIONS

- Give relevant agencies a standing mandate to provide decision guidance for the climate policy action plan with proposals that provide emission reductions that exceed the climate targets.

Part II

Synergies and conflicts in climate policy



Introduction – synergies, conflicts and goal trade-offs

Our ability to reverse the trend and significantly cut greenhouse gas emissions is in many ways better now than ever before. At the same time, achieving this requires a drastic transformation of society that will have impacts throughout society in different ways. Therefore, it is increasingly important to understand the linkages between climate policy and other policy areas in terms of goals and trade-offs. Identifying synergies and managing conflicts with other goals will be crucial for implementing the transition needed to achieve the climate targets.

Maturity, momentum and backlash

The Climate Policy Council's last two reports describe how, through underlying long-term changes, the climate transition has reached a new level of **maturity**. Renewable energy now costs less than fossil-based energy sources in more and more applications, the business sector is seeing more and more business opportunities for emissions-free solutions, and broad support for the climate transition has been expressed in nearly all countries. A stronger institutional framework is also in place for climate change – from global to national level and, increasingly, at the regional and local levels.

Several events in recent years have also renewed the **momentum** for the transition. In several countries, climate policy efforts have increased sharply, in particular with the EU Climate Law and the Green Deal (see Chapter 2). Over the past year, the U.S. Congress has also decided on comprehensive reforms for the climate transition with a focus on industrial policy and green investments. The measures taken by governments around the world to limit the harmful effects of the Covid-19 pandemic also reminded us that collective action and rapid change are possible when we face a serious crisis. Over the past year, Russia's invasion of Ukraine has shaken all of Europe and reinforced the reasons to end its overreliance on imported non-renewable energy.

In parallel, the shocks society is facing are resulting in new difficulties or **backlashes** to the climate transition. When political and economic resources are focused on an acute pandemic or a sudden flare-up of war close to home, there is an obvious risk for other ongoing, crises and long-term goals to take a back seat. A shock or crisis also risks leading to stress and fear, as well as weakened confidence in the future and trust in our shared ability. In such a situation, it can be especially tempting for political leaders and opinion shapers to present or demand simple solutions to complex problems. When the acceleration of climate change actually takes place, it will – paradoxically – also cause backlash. When the changes become large-scale, more people will be affected, and strong interests in the current order will come under threat. Goal conflicts then become more obvious.

But the potential of the transition's synergies becomes clearer, too, as the transition accelerates. Advances in technology are opening up new opportunities, new businesses are creating new jobs and faith in the future, and people are adapting new behaviours and finding that they improve well-being. Even more opportunities lie ahead. A new, more sustainable world can be envisioned.

All this is happening at the same time. And at the crossroads of history, things get messy. It can be difficult to distinguish patterns and act wisely when we find ourselves in flux.

Synergies and conflicts

Against this background, the Climate Policy Council has chosen to focus the thematic part of this year's report, Part II, on synergies and conflicts between the climate goals and other societal goals. We wish to provide decision support that can boost the capability of policies in making wise goal trade-offs and political choices to maximise synergies and better manage conflicts in goals.

The report can be viewed as a continuation of last year's report on acceleration and priorities for the climate policy action plan. Last year, the Climate Policy Council described how we view the transition away from our dependence on fossil fuels to a society without net emissions of greenhouse gases, and how the transition can and must accelerate. In this year's report, we deepen the discussion by taking a closer look at how synergies and conflicts can arise in several different dimensions. The Council also highlights how the goal of a just transition, or a just transformation, should be understood from multiple perspectives.

Chapter 7 provides a theoretical, fundamental basis for how to view synergies and conflicts, both between different overarching societal goals and between different interests in the transition. To flesh out the discussion, Chapter 8 provides some brief thematic descriptions of synergies and conflicts that may arise in key areas of the climate transition. These were presented in last year's report and are described in the introduction to this report. In Chapter 9, we instead turn our focus to the linkages between climate policy and other societal goals for Sweden based on the goals presented in the Government's budget bill.

This is followed by examples of how an external shock, or an accelerated transition, exposes both synergies and conflicts relative to the climate transition. The Council discusses how the Government has addressed these so far and what lessons can be learned for the future.

The first example concerns the spike in energy prices in 2022. Chapter 10 discusses how government policies attempted in different ways to reduce the impact on households and businesses, and how such proposals can affect our ability to achieve climate targets.

The second example, in Chapter 11, highlights synergies and conflicts in relation to the large-scale industrial transition in upper Norrland. The discussion also relates to the recommendations in last year's report on efforts in the climate policy action plan to accelerate the climate transition.

A fundamental synergy

The questions discussed in these chapters are about how different synergies and conflicts can arise around the measures and policies that are formulated to achieve the climate targets. However, the Climate Policy Council here wants to underscore the robust and fundamental long-term synergy between achieving the climate targets and virtually all other societal goals.

If the world fails to halt ongoing climate change, it will be more difficult to achieve the vast majority of other goals in society, such as those for the economy, public health and security, as well as the many other environmental objectives including biodiversity preservation. It is this insight that has inspired the UN, the EU and national governments around the world to drive home arguments for limiting the concentration of greenhouse gases to a level that can prevent the most extreme consequences of climate change.[75] The changes in climate that have already occurred make it more difficult to achieve fundamental goals in many parts of the world.

This fundamental synergy between the climate targets and almost all other societal goals underpins our report and is considered implicitly understood. Our discussion here is thus not about whether or not emission reduction measures should be taken, but is about making choices that maximise synergies and limit, or manage, conflicts with other societal goals as effectively as possible. This not only provides better conditions for achieving many of society's goals in an effective way, but it increases the likelihood that the climate transition will gain acceptance among citizens. In a democratic society, public support is a must for being able to implement major changes in society.

A world without net emissions of greenhouse gases can take many different forms. There are many possible futures within the framework of the climate targets, and many crossroads along the way. Our choices at the crossroads will be guided by economic, social, cultural and value factors. It is not possible to foresee all the potential conflicts or synergies that lie in individual decisions. Nor can research provide answers to what trade-offs should be made between different goals and interests. Such decisions should be weighed in an open public debate and determined by democratic decision-making. This report aims to help policymakers more clearly understand the potential synergies and better manage conflicts between the various goals and interests. It also aims to help strengthen and improve the institutions and processes involved in analysing or determining how different goals are weighed against each other.

7. Synergies and conflicts – perspectives and dimensions

A climate transition in accordance with the Paris Agreement requires rapid and comprehensive changes in society. Many different perspectives need to be taken into account so that balanced, legitimate decisions can be made. To achieve the climate targets, stakeholders from all policy areas must take responsibility and contribute to these efforts, making it relevant to consider all societal goals when designing climate policy. To make the climate transition possible, conflicts with other societal goals and interests thus need to be managed. Leveraging synergies between the climate transition and other societal goals can also facilitate the transition.

Managing conflicts in societal goals involves complex challenges. In this chapter, we present overarching perspectives on how synergies and conflicts between climate targets and other goals can be considered in order to put the analysis in subsequent chapters in context. As discussed, the climate transition stems from the assessment that the transition is necessary for achieving other societal goals, including environmental objectives. The current trend of a rapidly changing climate makes it increasingly difficult for both ecosystems and social systems to adapt, bringing a major risk of negative consequences throughout most of society. From this perspective, there are robust long-term synergies between the climate transition and all the other societal goals. This does not prevent specific strategies and proposals that support the transition from revealing conflicts with different societal goals and interests. Other choices can at times avoid such conflicts or even create synergies instead. In other words, the choice of path becomes central – and it must be navigated in order to maximise synergies while identifying and minimising conflicts.

What is perceived as a conflict between different policy areas does not always involve inherent conflicts in goals. Since methods and strategies for achieving societal goals affect the degree of conflict or synergy, it instead mainly involves which paths are chosen to achieve the goals. For example, a conflict might exist between a climate target and a strategy for achieving the transport sector's accessibility goals if the strategy is based on new infrastructure and increased car use. If the strategy is instead based on improved accessibility via public transport solutions or digital communication, such a conflict can be avoided.

However, actions that resolve one conflict can cause a new conflict to emerge. For example, a conflict might arise between a climate target and a nature conservation goal if a wind power installation is being planned. This conflict can be minimised by choosing a site with nature that is less worthy of protection yet where there is normally less wind. The first conflict can then be minimised, but the new installation can potentially drive up the costs of electricity generation. This would have a negative impact on both the energy policy objective of competitiveness and the economic interests of the individual company. In such a situation, it is vital to weigh and evaluate different parameters as they relate to the different societal goals and conflict dimensions. In this way, a balanced decision can be made. Solutions based on synergies among societal goals can often prove more economically effective, even if they do not appear optimal for achieving individual societal goals considered separately.

7.1. Different perspectives on synergies and conflicts

Synergies and conflicts can be understood at different levels and can vary in nature (see Figure 8). They can exist between different interests, between public and individual interests, and between different individual interests. Public interests are reflected in goals that are based on political decisions or on underlying common aspirations, while individual interests can involve individuals, companies and different groups in society.

The same synergy or conflict can look different depending on the choice of time perspective and geographical perspective. It is not obvious that the transition's benefits and costs will land in the same place either in time or space. The advantages and disadvantages of different types of measures are also influenced by the extent or scale to which they are implemented.

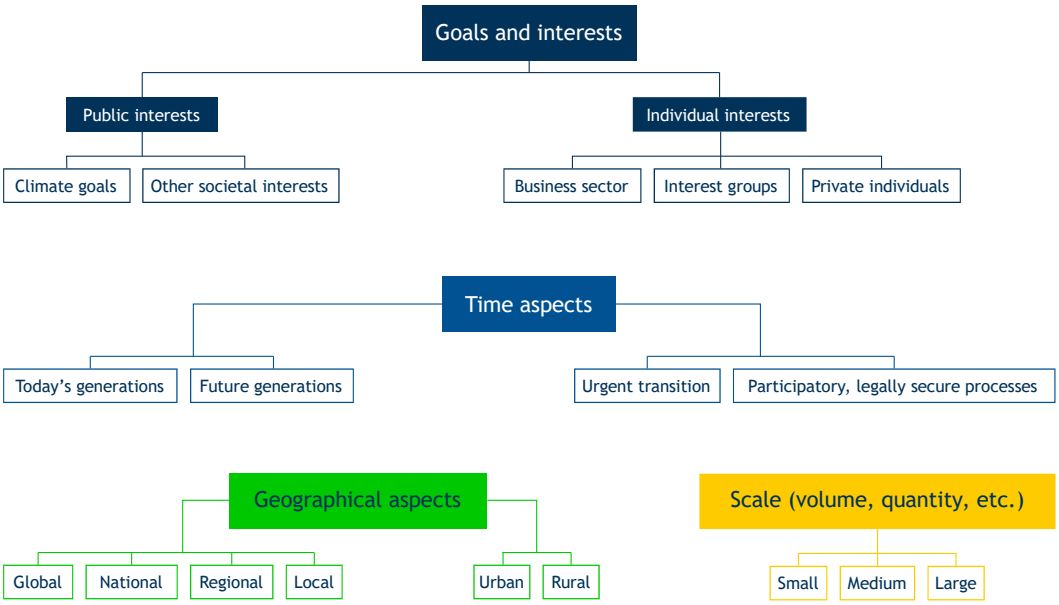


Figure 8. Different dimensions of conflicts and synergies in the climate area.

In the context of climate policy, there are several overarching purposes for drawing attention to synergies and conflicts. On the one hand, it is possible to weigh values in different policy areas against each other, and on the other hand, solutions can be identified that help to reduce conflicts and increase synergies. This in itself is important from a legitimacy perspective in order to increase acceptance of the policy's implementation.[76]

One example is taking local interests into account during land development in order to increase local acceptance, or introducing new measures within the framework of a climate policy instrument to address negative redistribution effects.[77] Resolving conflicts of goals and interests and seeking to leverage synergies can make it easier to make the decisions needed to achieve the climate targets.

7.2. Diverse public interests

One way to consider goal conflicts and synergies is to do so at the wider societal level. Examples of overarching goals include national and EU-wide objectives for different policy areas. Other examples are the sustainable development goals (SDGs).

There can be different types of synergies and conflicts between climate policies and other societal goals. A distinction can be made between synergies and conflicts with other societal objectives that result from climate policy measures and the positive or negative effects on the climate transition that result from measures in other policy areas.[76,78,79] Sometimes there are simultaneous conflicts and synergies among multiple societal goals. For example, most measures for preserving biodiversity are positive for the climate,[80] yet these synergistic solutions can come at the expense of other societal goals such as increased material well-being.

As previously mentioned, an overarching and aggressive long-term climate policy improves our ability to achieve both environmental and other societal goals by mitigating climate change. For example, the risks posed by climate change will decrease for Sweden's environmental quality objectives A Diversity of Plant and Animal Life, A Magnificent Mountain Landscape, Sustainable Forests and A Varied Agricultural Landscape. Climate change can also pose risks to other interests, such as food security and various forms of infrastructure.

The specific strategies[a] and measures implemented to reduce climate impact can give rise to synergies as well as conflicts with other societal goals.[b] Details of these strategies influence the types and extent of the conflicts and synergies that arise. The choices made to achieve the climate target are thus significant. The choice of strategy can also be influenced by the follow-up measures that are chosen when analysing attainment of the various societal goals.

Chapter 8 illustrates the importance of strategy selection by exemplifying synergies and conflicts that arise if and when measures are implemented in the four key areas of climate transition identified by the Climate Policy Council.[c] These strategies can be considered general strategies for the transition. The follow-up measures chosen for the various societal goals are also essential, as they in turn affect how the strategies are shaped. Chapter 9 provides an overview analysis of synergies and conflicts between the climate targets and different societal goals, as described for different policy areas in the Government's 2023 budget bill.

7.3. Public interests and individual interests

One possible way to categorise synergies and conflicts is to distinguish between interests at the wider societal level and the interests of individual stakeholders and interest groups.[d] These

[a] Here, we choose to interpret the concept broadly to mean choices made to achieve the goals. These can be presented in explicit strategy documents, instructions to various state agencies, etc., but can also manifest themselves in specific political decisions on policy instruments. Such choices or strategies are not always clearly stated but are sometimes implied or follow from ingrained ways of thinking or practices.

[b] For example, there are many synergies and conflicts between different strategies and measures for the climate transition and the other 15 environmental objectives; see, for example, Hildingsson and Johansson (2016), "Governing low-carbon energy transitions in sustainable ways: Potential synergies and conflicts between climate and environmental policy objectives." Energy Policy 88, 245-252). Discussions on the importance of linking climate and biodiversity are investigated in Pörtner, et al. 2021, "IPBES-IPCC co-sponsored workshop report on biodiversity and climate change", IPBES and IPCC.

[c] The four key areas are: a more efficient use of resources and energy, zero-carbon electrification, biomass from forestry and agriculture, and carbon capture and storage.

[d] In some contexts, the intrinsic value of nature can also be considered an interest. See, for example, IPBES's "Methodological assessment regarding the diverse conceptualization of multiple values of nature and its benefits, including biodiversity and ecosystem functions and services". Here we imagine that these are in some way taken into account within the framework of the environmental quality objectives.

interests often differ, but the boundary between public interests and individual interests is not clear. Public interests, which can be reflected in different societal goals, do not necessarily conflict with those of groups or individuals. For example, a well-functioning business sector is generally viewed as a public interest, which in turn means that the economic interests of companies should be taken into account.

However, it can be important to draw attention to the distinction between public interests and individual interests because drivers can exist for individual stakeholders to formulate their own interests (for example, financial interests) as a public interest in order to give their perspective greater weight and legitimacy.

Conflicts between overarching societal goals and individual interests can arise, for example, if environmental and other societal objectives restrict the possibilities of exploiting certain areas, which can affect corporate profits. In the case of climate action, the impact on the global climate does not in principle depend on the location where the measures take place, while the costs can be absorbed by landowners, municipalities or regions depending on the measure. This can lead to conflicts between public interests and those of individual stakeholders. Synergies can also arise between the climate transition and individual interests when new businesses and the local community benefit from the transition. But the strategies can create winners and losers alike. Power relations and influence for each group can affect the implementation of a strategy or a transition project.

Conflicts often arise between diverging individual interests, especially between developers and the local community, when investments are at stake. The question of how much local communities benefit from a project turns into a potential point of conflict. The benefits can involve financial compensation and jobs, but the degree to which conflicts arise can also be affected by the extent of involvement and influence in the processes surrounding the project. An important reason for reducing conflicts between wider public interests and individual interests as much as possible and, at best, finding synergies between them is that it can facilitate the implementation of climate policies.

7.4. The time perspective

In its report from 2022, the Climate Policy Council makes clear that the transition needs to be accelerated. A faster pace of change means that existing systems and institutions struggle to adapt quickly enough, something that can expose goal conflicts, increase friction and help to mobilise counterforces. But if there are synergies among the various societal goals, acceleration also brings more, or more rapid, benefits to society than would otherwise be the case. In short, the climate transition has to accelerate, and it will lay bare and intensify conflicts as well as synergies. This places new (or greater) demands on policies that can address them.

Friction between different interests in society often emerges in processes of change. Different stakeholders react to changing conditions and shifts in power balances. At the overall level, there is virtually always a certain extent of socio-economic costs involved in change as ingrained behavioural patterns as well as production and consumption patterns are altered.

Clearly, there is a potential conflict between generations. Today's generation must take action if future generations are to have any chance of a decent life in the wake of the effects of climate change. In other words, it is mainly future generations who will benefit from the climate transition while today's generation must bear its costs. The choice of strategy will be affected by

the degree of acceptance of the fact that the costs will not obviously result in short-term gains. This can present an obstacle to implementing an impactful climate policy. Yet one can reverse the perspective, since previous and current generations have caused major emissions through their carbon-intensive lifestyle whose consequences – and costs – must be borne by younger and future generations.

Synergies and conflicting goals can vary in nature depending on whether one analyses future scenarios after the transition is implemented or the processes along the way. The climate transition is fundamental to achieving other societal goals, and a transformed society will bring greater opportunities for people to live a good life than in all other alternative futures. Despite this, the road ahead can be bumpy, presenting significant goal conflicts and difficult choices that must be made.

There is also an inherent risk of a clash between the need for a rapid transition and the democratic processes that ensure acceptance, inclusion, and the opportunity to influence for different groups and interests. Parts of these processes are often sluggish, creating a conflict with the need to act quickly to lower greenhouse gas emissions. At the same time, more drawn-out processes do not necessarily imply inclusion and influence. They can perpetuate a conflict or preserve existing power relations. Although more rapid processes are needed, a high level of legal certainty must still be maintained.

7.5. The geographical perspective

Locations with ample access to land and other natural resources that are important for the climate transition can see increased economic activity. As a result, regions that have had a weak economy can obtain better opportunities for welfare and economic development. The ongoing development in upper Norrland is one example (see Chapter 11).

The climate transition also creates a potential goal conflict between urban and rural areas and among regions, which can affect the legitimacy of policies if the conflict is not managed. The line of conflict might be that much of the infrastructure needed for renewable energy has to be located in remote areas, while the benefits end up (or are perceived to have ended up) elsewhere. This is particularly true if the projects do not generate local jobs to any significant extent. Similarly, increased transport costs as a result of climate policy can pose a greater problem in areas where public transport is scarce, or for certain types of remote industries whose transport costs make up a large part of their total costs.

Conflicts of goals with different environmental quality objectives can also be quite different depending on where the emission reduction measures are implemented. For example, the impact on biodiversity of biomass extraction and wind power production may depend on where the extraction site is located.

Through its direct effects on the global climate, Swedish climate policy impacts developments in the rest of the world, though other consequences of climate policy can also have positive or negative effects beyond Sweden. As for synergies, measures in Sweden might lead to the dissemination of technology that has positive impacts on other countries' ability take part in the climate transition. On the other hand, a potential conflict might be created if an increased use of biofuels is based on fuel imports from other countries, which could in turn lead to indirect effects through increased or changed land use. This could increase the competition for land needed for purposes like food production, posing a threat to food security or contributing to deforestation or

more intensive forestry practices. Nuclear power also has global ramifications because uranium comes from mines outside Sweden. A country's contribution to the expansion of the nuclear power industry could, by extension, also affect the conditions for global nuclear proliferation, with consequences for international security policy. But climate policy in other countries can also impact Sweden. For example, hydropower from northern Sweden might be expected to play a role outside Sweden's borders in order to balance variable electricity production from wind and solar power. At the same time, solar and wind power investments in other countries can increase the availability of energy at low prices in Sweden. More generally, the development of new knowledge, demonstration of new solutions and investments in new technology in the rest of the world will facilitate the transition in Sweden.

Another aspect to consider is the unequal outcome in how the world's countries are affected by climate change. The poorest countries are much more vulnerable to climate change than rich countries, while the rich countries are clearly better positioned to take action to reduce global emissions. Wealthier regions in the world thus shoulder a special responsibility to drive the transition, something that is also a fundamental principle of the UN Framework Convention on Climate Change (UNFCCC). In addition, at COP 27 in the autumn of 2022, a decision was made to support vulnerable countries through a dedicated fund for losses and damages due to climate change.[81]

Another geographical dimension concerns the relationship among institutions that operate at different geographical levels, such as the UN, the EU, the central government and the municipalities. This can be viewed as an institutional perspective in its own right, involving what level is most legitimate to set high-level societal goals at and how decisions at one institutional level work against choices made at another level.

7.6. Extent of measures

An additional perspective concerns the extent to which a measure is implemented. Many solutions can function on a small scale without creating any major conflicts with other goals, while conflicts can grow with more large-scale use. For example, a limited use of bioenergy can be accommodated within existing land use without major problems. Large-scale use, on the other hand, can lead to significantly greater goal conflicts, with greater challenges that must be accommodated within a long-term sustainable land use. The consequences do not change linearly with increased use, but rather exhibit different types of threshold effects.

Scale can also be important for other energy solutions. A greater use of new emission reduction solutions generally drives down costs thanks to economies of scale and the development of improved production methods, making the solution more economically competitive. This has contributed to the exceptional strides in renewable energy and battery technology over the past decade, for instance. Yet on a larger scale, there are challenges around finding suitable sites for production facilities. New problems can also emerge in terms of the availability of materials needed for batteries, generators and solar cells, among other uses.

Economies of scale are a major reason why an efficient use of energy and resources plays a strategically central role in reducing conflicting goals. The efficient use of energy and resources will also be critical to future systems that depend on low-carbon technology in order to reduce conflicts with other goals.

7.7. The justice perspective

A significant factor in ensuring implementation of the climate transition is to strive for justice and create acceptance for and commitment to the issue. The transition will affect resource allocation, balances of power and influence. Existing injustices must not be perpetuated or reinforced, and new injustices must be avoided. Conflicting goals that emerge during the climate transition need to be managed, both in terms of content and process, in a way that is perceived as reasonable and fair.[76,82] A growing body of research, in addition to the IPCC's research reviews, points to the importance of studying and including what has come to be called a just transition or just transformation.[83-87]

What a just transition or transformation should mean in practice for policy is not a given, because justice is an ethical and political concept that is the subject of an ongoing debate. It is worth noting, however, that justice in this context involves much more than economic and redistribution considerations, such as the design of policymaking procedures and the importance of recognising the culture, knowledge and needs of different groups (see Table 6). Gender equality is also a vital part of the perspective on a just transition.[e] Not least in the transport sector, the choice of strategy for lessening climate impact has an impact on gender equality, since the choice of transport mode differs between men and women as groups.[88,89]

Table 6. Three perspectives on a just transition, with examples of content.[87, 90]

Distributive justice	**Procedural justice**	**Recognitional justice**
Consider the distribution of costs and benefits over time, space and among groups, for example by: - creating mechanisms to improve distributional outcomes	*Ensure that institutions, policies, decision-makers and governance methods are and are perceived as legitimate by, for example:* - including affected individuals and groups in the processes and taking their views into account - supporting local participatory capacity-building - creating access to methods for conflict resolution	*Recognise existing rights and rights of use, for example, by taking into account::* - Indigenous peoples' rights - different worldviews, perspectives and values - existing practices and institutions

An example of when both procedural justice and recognitional justice can play a crucial role is during permitting for solar, wind and nuclear power installations as well as for mining of minerals that are significant for the transition. The economic aspect and fair distribution have in turn played a role in the current debate on compensation for high energy prices, which is described in more detail in Chapter 10.

The justice perspective is also apparent in the global climate discussion, which was particularly noticeable at the recent COP27 climate conference in Egypt. Basically, there is an understanding

[e] In 2021, the Swedish Environmental Protection Agency developed a strategy for how gender equality can be considered and integrated in Sweden's implementation of the Paris Agreement. ("Proposal for a strategy to consider and integrate gender equality aspects in Sweden's implementation of the Paris Agreement". Report on the government mission to develop gender mainstreaming from government decision M2020/01518. NV-07656-20").

that high-income countries account for the absolute majority of all historical GHG emissions while many low-income countries are impacted the most by climate change. The debate is mainly about how to fairly share the costs of both emission reductions and adaptation measures. But it also revolves around who has access and can make their voice heard in global negotiations, as well as the right and potential for groups like Indigenous people to continue to live the way they have done for many generations.

7.8. Comments and conclusions

Synergies and conflicts among goals must be considered when choosing the right path to achieving the climate targets

As noted in this chapter, synergies and conflicts among different policy areas related to climate change should be taken into account more closely. This can be done at different levels and based on different principles. It can involve taking synergies and conflicts into account when formulating goals, strategies and various policy instruments, or when making trade-offs in legal texts and plans. During actual implementation, societal goals should be regularly considered within the context of exercising public authority, for example in permit matters under the Environmental Code. At a political level it can involve policy integration, which means increased coordination among different policy areas.[91,92]

Because it can sometimes be difficult to identify strategies that make the different goals compatible with each other, the goals must be prioritised. Prioritising and weighing the various goals, including trade-offs between them, is a key feature of political activity. The review in this chapter reveals the many perspectives and considerations that must be weighed together in an overall assessment of an effective climate policy. This creates a complex situation that policymakers need to address.

To support weighing both positive and negative factors, various decision support tools can be used, such as life cycle assessments, cost-benefit analyses and other forms of multi-criteria analyses. If applied correctly, the methods can be extremely valuable. Yet seemingly accurate results might give the impression of excessive security. Too much emphasis can be placed on things that can be measured compared to things that are more difficult to measure. Data can to varying degrees be uncertain yet have great significance for the results, which can be difficult for policymakers to understand. Relying on individual results from a single method when prioritising goals can therefore be risky.

Different conflicts require different solutions

As mentioned earlier, different conflicts in goals have different causes and in turn require different solutions. First, certain policies and measures for mitigating climate impact will create winners and losers in terms of their consequences (consequential ethics). Such instruments and measures might be justified from a cost-benefit perspective, but they can still create problematic redistribution effects and ramifications for gender equality. One example is high carbon taxes on gasoline, which can have proportionally greater negative economic effects on low-income households and those from rural areas. In such situations, compensatory measures can be meaningful, but these should be designed in an accurate way that does not halt the momentum of the climate transition. The measures do not necessarily need to consist of direct compensation, but can, for example, consist of investments in regional development and public transport. In the

best case, compensation can be designed in a way that promotes the climate transition and encourages or achieves synergies with other socio-political objectives.

Secondly, conflicts also arise because the stakeholders concerned are not allowed to participate and influence the decision-making processes that result in different instruments and measures (procedural ethics). Here, of course, solutions should primarily aim at creating proper conditions for such influence, for example through greater requirements for public consultation.

Thirdly, it can involve the protection of rights (rights ethics), for example when new wind power installations conflict with Indigenous people's rights or reindeer husbandry, or the municipalities' veto right. Here, too, direct compensation or value sharing can offer a way forward. Another important consideration is to create an institutional framework that enables and streamlines the process of establishing voluntary, legitimate agreements between different parties, such as support to Sami communities in consultations and contract negotiations with wind power companies.

This chapter has illustrated many facets of the interplay between societal goals and interests during policy implementation. This interaction can be in the form of synergies as well as conflicts and can span different temporal and spatial scales. Conflicts and synergies usually do not arise at the goal level, but rather depend on the strategies used to achieve the goals. They can also arise during the practical implementation of the strategies through policy instruments and their application. Transparently identifying areas of conflict and potential synergies, enabling participation and influence, and motivating the choices and trade-offs made are key to ensuring that the policies pursued are perceived as legitimate. Framing these choices in a clear narrative about how the climate transition must take place will also be vital. This, in turn, will improve the likelihood of obtaining acceptance of the decisions made from different stakeholders and interest groups. The proposed measures for managing conflicts should, as far as possible, be designed in a way that takes into account those affected while not hampering an accelerated transition.

8. Synergies and conflicts in four key areas for the transition

This chapter highlights some crucial choices in the climate transition related to the four key transition areas previously identified by the Climate Policy Council. The key areas presented in the report's introduction are: a more efficient use of resources and energy, zero-carbon electrification, biomass from forestry and agriculture, and carbon removal and storage. Chapter 8 contains examples related to current topics that illustrate the complexity of the interaction between the climate transition and other societal goals. Strategies for achieving the climate targets must include measures in all of these key areas, but synergies and conflicts with other societal goals and interests can affect the role of the various measures. Trade-offs made in climate policy should take these synergies and conflicts into account.

8.1. A more efficient use of resources and energy

A more efficient use of resources and energy has a positive effect on most environmental policy objectives.[93] This is also true for efficiencies in renewable resources, since intrusion into sensitive environments and competition for scarce bioresources can be limited. Rather, it is technical limits and implementation barriers, including lack of knowledge, financial constraints, and norms and habits, that limit the role of efficiency.

Consuming less meat can bring about positive climate effects by reducing methane emissions and reducing the need for land for food production, while in many cases promoting good health.[94] Eating habits generally interact with the entire land use sector. When there is less need to use land for feed production, the cultivation of energy crops can increase. Different types of meat have different impacts on the environment. Direct greenhouse gas emissions, primarily methane from cattle, are high. Emissions can, to some extent, be counteracted by increased carbon sequestration in the soil.[95] At the same time, other types of meat can pose other sustainability problems, for example as relates to animal husbandry.[96] Meat production can help to increase biodiversity through grazing on natural pastures[97], but this benefit can be achieved with significantly smaller quantities than what corresponds to current consumption levels of meat.[98] Various restrictions on meat consumption can, in addition to nature conservation, be in conflict with farmers' livelihoods as well as the norms, behaviours and preferences of consumers.[99]

In several previous reports, the Climate Policy Council highlights measures for a transport-efficient society, which can fall under the area "A more efficient use of resources and energy", as an essential part of the climate transition. Increased transport efficiency can be achieved through improved logistics, site selection for homes and businesses, and an increased use of more energy-efficient modes of transport like bicycles and public transport, or by achieving the same benefits through other approaches, such as increased teleworking. There are synergies with other goals such as cleaner air, spaces for a greener urban environment, public health effects, increased accessibility for non-motorists and increased gender equality.[100,101] At the same time, the measures and instruments that contribute to increased transport efficiency, such as energy taxes and restrictions on car traffic, can result in a deterioration in accessibility for some.

8.2. Zero-carbon electrification

Zero-carbon electrification consists of a mix of different components and includes new electricity generation, transmission, distribution and various balancing services such as batteries, gas turbines, pumping power and flexible use. The relative role of the components depends on how their various advantages and disadvantages are weighed. In the following, we have chosen to delve solely into synergies and conflicts around two electricity generation alternatives, wind power and nuclear power, since both differ in nature and are central to the debate. Similar analyses can be made for other areas of electrification, such as solar energy, battery and hydrogen power in the transport sector, and grid balancing through transmission and energy storage. It should also be noted that the analyses are influenced by the specific technology solution applied. For example, different types of battery and nuclear technologies create different opportunities and problems, and the location of offshore wind power creates different opportunities and problems than onshore wind power.

Wind power

In parallel with making a key contribution to Sweden's rapidly expanding electricity production, the expansion of wind power has been the subject of much debate in relation to goal conflicts, local influence and redistribution issues. An example of a geographical conflict is when local interests clash with overarching domestic goals to increase the share of wind power in the energy system. The opposition to wind power is motivated by factors like noise, negative changes in the landscape, and other environmental reasons, such as risks to certain bat and bird species. In several cases, conflicts of interest also arise around reindeer husbandry. Local conflicts of goals are also reflected in the municipalities' wind power planning.[102]

The geographical dimension has also been clearly linked to the requirement for municipal approval when obtaining permits for wind turbines. The number of municipalities that reject wind power applications has increased over time, which has been perceived as a general problem. The ability of municipalities to deny permits without justification has been questioned from many quarters, but has also been defended as a way to maintain local influence. Various solutions for enabling the local community to share the economic benefits from wind power have been proposed[a]. Research also demonstrates the importance of local involvement and local ownership of wind turbines in order to increase acceptance of new installations.[85,103]

Examples of goal conflicts with other national interests include environmental interests, reindeer husbandry and the interests of total defence, where Natura 2000 areas and total defence in general limited the expansion of wind power. Wind power is also defined as a national interest, but in Sweden the designation of national interest is weak compared to other countries, when it is used as an instrument to promote wind power. It should be noted that the environmental impact of wind power, such as noise and impact on the landscape, is largely reversible, unlike the impact of many other types of power (such as nuclear power).

In terms of synergies with other interests, wind power's decentralised production and independence from fuel supply can simultaneously help to increase the security of supply and serve as an asset for functioning public services in times of war or crisis.

[a] An ongoing commission of inquiry (M2022:03) is pursuing the question of improved incentives for expanding wind power.

Nuclear power

The advantages and disadvantages of nuclear power are of a different nature than those of wind power. Nuclear power provides certain technical properties, such as inertia and reactive power, which contribute to the stability of the electricity network. It is also less dependent on the weather than wind and solar energy and can thus provide a more even production. [b] Yet because of its tough safety requirements, plants may have to be shut down at short notice if safety deficiencies are identified. If nuclear power is based on large-scale plants, a shutdown can periodically have a major negative effect on security of supply. This thus entails a limitation in terms of planning ability for nuclear power as a resource. The risks of nuclear power are characterised by a low probability of accidents yet serious consequences in the event of an accident, and these can be perceived as existential threats to all of humanity.

The management of radioactive material and the need for long-term storage of nuclear waste pose specific technical and institutional challenges as well as a temporal dimension of conflict between present and future generations. This is demonstrated by the need for storage with a time horizon of the order of 100,000 years. Russia's invasion of Ukraine has also underscored the risks nuclear power plants can pose in the context of armed conflicts. The security policy linkages between nuclear power and nuclear proliferation have been a goal conflict that has often been raised in the past but that today is largely absent from the Swedish debate.

Nuclear fuel requires mining and extensive processing, which also entails conflicts of goals around land use, social sustainability and climate justice, as well as the environment and nature conservation. The alternative is a dependence on imports and accompanying trade-offs in terms of security of supply and other factors.

The most recently built Swedish nuclear reactor was commissioned almost forty years ago, while onshore wind power is in the midst of a robust expansion. An additional difference is thus that conflicts and synergies around wind power are highly specific and visible today, while considerations around possible new nuclear reactors are hypothetical and thus not as clear-cut.

8.3. Biomass from forestry and agriculture

Bioenergy in various forms, such as solid or liquid biofuels, is an energy solution that interacts with several different areas of society. The extraction of bioenergy from forests is closely linked to the development of the forest industry, since it is mainly based on forest industry by-products. Forestry itself is linked to several goal conflicts that concern biodiversity, carbon balances, other industries, and cultural and social functions, and different stakeholders (researchers, government experts, businesses and civil society) have different views on the appropriate balance between different goals. Current forest policy has two official goals that carry equal weight: a production goal and an environmental goal.

Compared with the practice of forestry itself, the extraction of by-products has less impact on the natural environment and carbon balances. However, supply is limited and a greater demand for by-products can drive up the felling of sawn timber.[104] As part of the transition of the economy in a sustainable direction, there is also a desire to step up the use of bioresources to produce

[b] Experience from countries like France shows that nuclear power can be sensitive to elevated temperatures because of its reliance on cooling water.

products like textile fibres and plastics in order to replace materials made from fossil fuels, which limits the possibilities for leveraging bioenergy.

Bioenergy from agricultural land, in turn, interacts with food security. Depending on the choice of crops, the location, crop rotations and management practices, bioenergy can provide synergies in the form of reduced eutrophication, erosion and increased biodiversity.[105] At the same time, an increased production of bioenergy on cropland can indirectly require new land to be found for ensuring sufficient food production. The demand for new land can ultimately contribute to an increased risk of deforestation. In this context, we often talk about indirect climate effects. However, the processes are complex and the conditions for increased bioenergy production depend on several parameters, such as a changed climate, dietary choices, development of cultivation technology and other countries' policies. For example, less meat consumption (see section 8.1) would reduce the need for feed crops and thus potentially free up space for bioenergy production.

The dependence on different ecosystems puts limits on the potential expansion of bioenergy, and thus clearly depends on the scale at which the expansion takes place. The more bioenergy that is used, the greater the expected impact on the land areas will be. And the more intensively managed the land is, the greater the risk of deteriorating conditions for biodiversity. An efficient use of biomass resources is essential for reducing goal conflicts.

While there are many conflicting goals, bioenergy also enables synergies with other societal goals. Extraction is geographically dispersed and can, to some extent, contribute to the local labour market and regional development. Differentiation of the energy supply to the transport sector through an increased use of biofuels can also make energy supply less vulnerable to security policy threats by reducing fossil fuel imports.

8.4. Carbon removal and storage

The removal of carbon dioxide from the atmosphere and its storage in natural and managed ecosystems shows potential to partially offset greenhouse gas emissions and mitigate the impact of climate change. In particular, carbon sequestration solutions can be realised relatively soon and thus help to keep changes in temperature within the requirements of the Paris Agreement goals. Carbon uptake by plants is an essential part of the carbon cycle, and some of the carbon that is absorbed is stored in ecosystems as living biomass or as organic carbon in the soil. Processes that accelerate the binding of carbon dioxide or reduce decomposition can thus help to reduce CO_2 levels in the atmosphere. Deforestation leads to the release of carbon dioxide bound in forest ecosystems, while afforestation has the opposite effect. In the case of existing forests, for example, increased rotation periods can lead to more carbon sequestration in the forest.[106] In agriculture, the increased use of cultivated grasslands in crop rotation can increase carbon storage and less tillage can reduce carbon decomposition.[107-109]

There are clear synergies, but also conflicts, between carbon sequestration measures and other societal goals. Longer rotation periods or the setting aside of forests as reserves can lead to synergies between climate benefits and the preservation of biodiversity and the recreational values of the forest. At the same time, the measures lead to reduced access to biomass from forests, with potentially reduced substitution effects in which biomass replaces energy-intensive building materials or fossil-based raw materials. These trade-offs depend on the time perspective, where a focus on rapid climate impacts generally leads to a greater focus on carbon sequestration

compared to substitution, all else being equal.[110] Since organic carbon benefits agricultural production, an increased use of grassland in rotation with other crops can help to boost fertility and reduce the use of fertilisers. Crops from cultivated grassland is used as raw material in biogas plants and thus can replace fossil fuel. At the same time, an opportunity cost arises when grassland is grown instead of other crops, potentially affecting farming profits and access to food. In addition, in both forestry and agriculture, there is a risk of leakage, meaning that reduced access to forest biomass or agricultural crops via market mechanisms leads to increased production elsewhere.[111]

8.5. Comments and conclusions

As is evident from the descriptions in this section, synergies and conflicts that emerge for actions in the different key areas are often complex and vary in nature. What importance the various synergies and conflicts should be given and how this should affect the mix of solutions is a political question, but considerations and choices must be made.

Due to space limitations, the descriptions reflect only a limited selection of the actions available in the different key areas. For example, carbon capture and storage from biomass combustion (bio-CCS) or the role of batteries and solar cells in a zero-carbon electricity system, technologies that in future scenarios are expected to be critical to the climate transition, are not addressed. But the purpose of this chapter was not to be comprehensive but rather to illustrate the complex considerations that current and future governments will face.

9. Sweden's climate targets and other societal goals

This chapter aims to explore the interaction between climate targets and other societal goals specifically in a Swedish policy context. It builds on the more theoretical review of synergies and conflicting goals in Chapter 7 and the examples from Chapter 8. As our starting point, we consider the goals for various policy areas that have been decided by the Government and Parliament and are reported in the 2023 budget bill.

When Parliament adopted the bill containing the climate policy action plan,[31] it was decided that the climate issue should be integrated in all relevant policy areas; one proposed way was for the Government to reformulate the various societal goals to align them with the climate targets, when needed, during its next review of each goal. In connection with the evaluation of the plan presented in Chapter 5, the Climate Policy Council notes that no such reformulation of the societal goals took place during the last term of office. Such a review would have made it easier to leverage synergies and manage potential conflicts in an organised, transparent way. In this chapter, we therefore highlight a number of policy areas where the Government should review the goal formulations in order to clearly align them the climate targets.

9.1. Societal goals for Sweden

There is no unambiguous or established definition of what can be regarded as goals for the development of Swedish society. Some goals are probably unspoken and implied, while others are given by Sweden's international commitments in the EU or the UN. The goals also vary in importance and priority over different time periods. During crises, such as the financial crisis, the Covid-19 pandemic or Russia's invasion of Ukraine, reprioritisation can happen quickly.

In this general review of the societal goals for Sweden, we have chosen to base our work on the policy goals presented in the Government's 2023 budget bill to Parliament. The budget bill contains 27 different annexes, each presenting the Government's policy in different expenditure areas of the central government budget (see Table 7). Each budget annex describes the goal for the expenditure area and, with varying degrees of detail, the Government's assessment of the goals' attainment. The annexes also describe policy directions for the coming fiscal year. The specified goals are, are in most cases, set by Parliament. In areas with no goals set by Parliament, the Government in some cases formulates its own goals for the expenditure area. The goals of the different policy areas normally apply for several years. They do not change automatically with a change of government, but are often decided by a relatively large consensus in Parliament. Policy conflicts usually revolve around how to achieve these goals.

Table 7. The 27 expenditure areas from the budget bill.

1. Governance	15. Financial support for students
2. Economy and financial administration	16. Education and academic research
3. Taxes, customs and enforcement	17. Culture, the media, religious communities and leisure activities
4. Justice	18. Planning, housing provision, construction and consumer policy
5. International cooperation	19. Regional development
6. Defence and contingency measures	20. General environmental protection and nature conservation
7. International development cooperation	21. Energy
8. Migration	22. Transport and communications
9. Health care, medical care and social services	23. Land- and water-based industries, rural areas and food
10. Financial security for those with illnesses and disabilities	24. Industry and trade
11. Financial security for the elderly	25. General grants to local governments
12. Financial security for families and children	26. Interest on the central government debt etc.
13. Gender equality and introduction of newly arrived immigrants	27. Contribution to the European Union
14. Labour market and working life	

The Climate Policy Council believes that it is reasonable to regard the goals for the expenditure areas in the Government's budget bill as "societal goals" for Sweden. However, this does not mean that this is a complete or unobjectionable description of the goals or values that the policy seeks to achieve. One weakness is that these goals are set in relation to the budget expenditure areas. The goal structure and the annual follow-up linked to each expenditure area can be a limitation. As a result, financial resources might get locked up in the ministries' categorisation into different legislative subjects, the division of budget annexes into different areas or simply the traditional categorisation into different policy areas. As a result, important goals or unstated objectives are not expressed clearly. This applies in particular to those goals not directly linked to government expenditure or those that span multiple expenditure areas. It is well known that governments struggle with governance and follow-up of cross-sectoral issues.[112]

Nor does it appear that all the policy objectives adopted by Parliament are included in the budget bill, at least for security policy.[113] Sweden's security and vulnerability are an example of a cross-sectoral issue that spans many ministries and traditional policy areas.

The public health goals are reproduced in the budget bill under area 9 (Health care, medical care and social services), but its sub-goals for areas like physical activity, eating habits, workplace environment and skills are clearly cross-sectoral. Similarly, so are the climate targets and the Government's climate report to Parliament, which is reproduced under expenditure area 20 (General environmental protection and nature conservation). Many key instruments and policies for achieving the climate targets lie outside environmental policy.

There are also goal formulations in various strategies that have been decided by the Government, such as the circular economy strategy,[114] that are not reproduced and followed up in the budget bill. But strategies of this kind are not considered a legal document of the Government and the status of that type of goal is thus unclear in terms of governance.

In addition to nationally determined societal goals, Sweden, together with all other member states of the UN, stands behind the 2030 Agenda, the UN's 17 sustainable development goals (SDGs) for economically, socially and environmentally sustainable development. Several research reports have analysed synergies and possible conflicts between the goals of the 2030 Agenda at the global level, including SDG 13 on climate action.[78,115] In this report, we do not go into synergies and conflicts between the Swedish climate transition and the SDGs, but stick to describing synergies and goal conflicts that are relevant in Sweden's climate policy. Expenditure area 2 in the budget bill (Economy and financial administration) contains a goal to implement the 2030 Agenda through a coherent policy, both nationally and internationally.[116,117] At the same time, each of the SDGs overlaps with several of the national societal goals that are reproduced in other parts of the budget bill.[118]

9.2. Synergies and conflicts between climate targets and other societal goals

The Climate Policy Council has collected and reviewed all the goals for the different expenditure areas that the Government presents in the 2023 budget bill. We have also asked where there can be important synergies and conflicts with the targets for the climate transition. This involves a total of more than one hundred formulated goals, since most expenditure areas have several different goals for different sub-areas. This chapter presents some overall conclusions from our review.

- Most goals are in category 20 (General environmental protection and nature conservation). These goals are based on the well-developed environmental objective system, which also includes the goal of reduced climate impact.
- There are several linkages between the climate transition and societal goals across a wide range of policy areas. This is an important insight in itself and illustrates the importance of integrating the climate perspective in overall policy, which is one purpose of the Climate Act and the climate policy framework. Curbing climate change, which is the overall aim of the climate transition, is also a fundamental prerequisite for achieving most of the other societal goals.
- Often, but not always, the connections between the goals are two-way, since there are mutual synergies or conflicts between different societal goals. They can, for example, involve conflicts like competing land uses, or synergies such as the benefit of increased walking and cycling from both a climate and a health perspective, which help to achieve both goals at the same time.

- There are strong and obvious connections between the climate transition and the policy areas that address major physical resource flows, primarily expenditure areas 18–24, which concern urban planning and construction, regional development, environment, energy, public transport, agricultural sectors and other industries.
- Policy areas 5–8 and 13, which in various ways have ramifications beyond Sweden's borders, have strong ties with the major overarching synergy of reduced global warming. If greenhouse gas emissions can be rapidly reduced, the risk of growing refugee flows[119] is also reduced, as is the need for international aid for climate adaptation measures. But there are also linkages with the transition in Sweden, something that is often overlooked. For example, reduced use and dependence on imported fossil fuels can boost energy security, and improved integration of people born outside Sweden can support the involvement of the entire population in the climate transition.[120]
- As the climate transition accelerates, connections are also becoming stronger to expenditure areas 14–16, which address education, skills development and the labour market. Everything from basic education and university research to professional development and labour market measures can help us cope with the major skills shift that is required, not least for transitioning to more competitive greener industries.
- The policy areas that focus on the state's management of properties and financial assets, including expenditure areas 2 and 11, also have strong ties to the climate transition. The state manages a significant proportion of all land in Sweden, so governance in this area can either support or counteract the climate transition. The objectives of state wealth management, such as pension funds, can create synergies as well as conflicts with the climate targets depending on how they are designed.

FACT BOX 4. THE CLIMATE TARGETS AND CLIMATE CHANGE ADAPTATION

One interesting link is between the climate targets and climate change adaptation, meaning society's adaptation to the climate changes that are already taking place, the effects we have not managed to avoid and those we can avoid. Adapting to this new environment will require policy prioritisation and relatively large resources. Although a national strategy is in place for climate change adaptation, an official goal for Sweden's climate adaptation efforts has not yet been formulated. Climate change adaptation is thus yet another example of a cross-sectoral goal and prioritisation for national policy that is not included in the budget bill's presentation of policy goals and goal fulfilment.

At the global level, there is an obvious and robust link between efforts to reduce climate impact on the one hand and to adapt to the effects of climate change on the other. These are like communicating vessels, and many studies confirm that the costs of managing major climate changes are higher than the costs of limiting global warming.[121] At the national level, the connection is different. Greenhouse gas emissions have the same effect on global warming, regardless of whether they occur in Sweden or elsewhere. Climate change, on the other hand, has different effects in different places, and adaptation efforts must be tailored to regional and local conditions.

The extent to which we in Sweden are able to reduce our own GHG emissions has a very weak direct correlation with the extent of climate adaptation efforts that must be made in Sweden. However, in this area too, there are synergies and conflicts between different strategies for emission reductions and for adaptation or reduced vulnerability to climate change. An obvious link is that the measures implemented to reduce greenhouse gas emissions should be climate-adapted. A future efficient energy system with a greater share of weather-dependent electricity production should be adapted to the climate in which the electricity will be produced.

The national strategy for climate change adaptation states that:

"Climate adaptation measures complement efforts to reduce climate impact. These two areas of intervention are interdependent and should be coordinated as far as possible. Climate adaptation measures should not discourage measures to reduce greenhouse gas emissions and vice versa."[122]

In the 2023 budget bill, the Government states that climate adaptation efforts are in the development phase, and it considers that the current measures are insufficient. In its first report, the National Expert Council for Climate Adaptation believes that the current division of responsibilities, organisation and instruments create insufficient incentives to ensure that the necessary adaptation measures are put in place. The expert council stresses the importance of broad agreements that enable long-term planning and decisions.[123]

9.3. Review of societal goals

Based on the review that the Climate Policy Council has already undertaken of all expenditure areas in the budget (which is summarised in section 9.1), we can conclude that in very few expenditure areas an explicit link is made to climate targets in the sections of the annexes that define the policy area's objectives. The link is made explicitly in expenditure areas 20 (General environmental protection and nature conservation), 21 (Energy) and 23 (Land- and water-based industries, rural areas and food). These are three areas where an integration of the climate issue is almost a given because of the strong linkages to the climate transition. A clear connection in goal formulations does not mean that there are not any major challenges around integrating the

climate target in parts of the policy, especially in the land-use sectors (this is developed below). Although there is no explicit link to the climate in the goal for expenditure area 22 (Transport and communications), the Government decided with its 2020 budget bill that Parliament's interim target of reducing greenhouse gas emissions from domestic transport will also be an interim goal for transport policy.

In the goal formulations in other expenditure areas, there are no references to the climate targets. On the other hand, connections are made in a few areas under the sections addressing policy direction, for example in area 5 (International cooperation). Although this specification is just as important, it is still meaningful how the policy goals are formulated from a governance perspective in order to set priorities, create momentum for change and facilitate accountability. How the goals are formulated not only affects the work of the Government and state agencies, but it can have spillover effects for other stakeholders.

There are several expenditure areas that are strongly linked to the climate transition without this being reflected in the current goal formulations for the policy. This means that, even if there are few or no examples of agreed goals that are directly incompatible with the climate targets, there is a risk that policies will be designed that fail to leverage synergies and will create contradictions with the climate targets. Thus, most expenditure areas do not refer to climate targets, either in the goal formulations or when describing policy direction, despite the fact that there are many connections, as the discussion in section 9.2 shows. The Climate Policy Council therefore believes that it is important for Parliament and the Government to pursue the ambition to review relevant societal goals to align them with the climate targets.

Below is a brief description of some of the budget bill's expenditure areas where the Climate Policy Council considers that there are obvious points of contact with climate policy. Within these areas, the Government should actively review how current goal formulations can be changed to better integrate with the climate policy goals.

Expenditure area 2. Economy and financial administration

This area includes the central government's property management, which lacks an overall objective set by Parliament in the budget. In various forms, the state owns both large land areas and large building stocks. For example, Sveaskog is Sweden's largest forest owner and the National Property Board manages one-seventh of Sweden's entire land area.

There are several possible synergies and conflicts between the state's role as an owner and manager of land and policies for achieving the climate targets. This can involve opportunities for carbon uptake in forests and land as well as land use in relation to goals and planning input for the continued development of wind power, both in terms of new facilities and upgrades of existing wind farms.[124]

About 6 percent of all non-residential buildings in Sweden are state owned, and can thus play a significant role in energy efficiency and the supply of solar electricity. An ownership policy that integrates the climate transition could serve as guidance and support municipalities and county councils, which together own an additional 30 percent of all the country's properties.

Expenditure area 6. Defence and contingency measures

There are several strong points of contact between the climate transition and Sweden's security and crisis preparedness in a broad sense. Current defence policy calls for a substantial increase in military activities with associated energy use, which can lead to an increased climate impact, at least in the short term. There is a synergy between the climate transition and the strategic security policy benefits of reduced dependence on fossil fuels through an increased use of renewable fuels and electrification, with wind power playing a central role. It is necessary to find a balance in the decisions in this area so that this overarching benefit can be achieved as far as possible without jeopardising our defence capabilities.

Mitigating climate change and increasing climate adaptation measure also have an impact on the general security policy situation, which is reflected in a growing amount of research on the climate and security.[125,126] Key components of Sweden's security of supply, not least the supply of food and water, are both directly and indirectly impacted by climate change.

It would be reasonable for the broader goals that Parliament has decided on regarding Sweden's security, and which affect more than its defence, to also be reported in the annual review of government policy that the budget bill contains. In such a broader perspective on security of supply and safety, the climate transition should also be included. This broader security perspective also applies, of course, to other policy areas, such as international cooperation, trade policy and development assistance.

Expenditure area 14, Labour market and working life, and expenditure area 16, Education and academic research

In short, the objective of area 14 is "a well-functioning labour market". There is no conflict with the climate transition, but this budget area does not reflect the enormous skills shift necessary for the climate transition, one that has already become an obstacle in several areas, like in the development of the electricity system or industry's transition (see also chapters 10 and 11). In last year's report, the Climate Policy Council pointed out that the Government needs to develop dialogues with higher education institutions about the future skill sets for the climate transition. The Government must also improve vocational education and training in areas critical to the transition.

This is not a temporary or short-term situation. The skills transition will last for many years to come, and it must accelerate. The Government should therefore consider a sub-goal for labour market policy, higher education and vocational education linked to the climate transition. This applies to skills supply in a broad sense, both generally and for specific professional categories.

Climate or sustainability is not mentioned in the overarching goals for education at any level, from primary school to university. The topics of environment and sustainable development are included in various governing documents, such as curricula for compulsory schools and upper secondary schools, but were removed from the Education Act when a new school law was adopted in 2010.[127] The Swedish Higher Education Act contains a general paragraph stating that higher education institutions must promote sustainable development.[128] Similarly, sustainable development is part of the knowledge requirements from the Higher Education Ordinance for a number of professional degrees, such as various teaching degrees and business administration degrees.

Expenditure area 22. Transport and communications

The transport sector accounts for roughly one-third of Sweden's total greenhouse gas emissions. An essential part of the climate transition thus involves the transition to sustainable, emissions-free transport. As mentioned above, in conjunction with the 2020 budget bill, the Government decided that the interim target of reducing greenhouse gas emissions from domestic transport, excluding aviation, by at least 70 percent in 2030 would also be an interim target for transport policy. More precisely, the target became an interim target under the so-called impact goal for transport policy, which means that the transport system should "contribute to the achievement of the overall generational goal for the environment and the environmental quality objectives".

Judging by the process of producing the latest national infrastructure plan, the Government's attempts to clarify the goal formulation have not significantly changed the way transport planning is carried out or its results. In several previous reports, as well as the Swedish National Audit Office and various research reports, the Climate Policy Council has highlighted that governance for a more transport-efficient society is weak and unclear.[4,129-131]

Transport is one example of an area that has lacked clear political governance and thus given the agencies inadequate guidance for managing conflicting goals or jointly leveraging potential synergies. Most recently, in its final report[132], the climate law inquiry put forward several specific proposals for clarifying governance for a more transport-efficient society.[a]

The decisions taken by the current government regarding reduced fuel taxes and a lower level of ambition for the reduction obligation further increase the need for interventions for a more transport-efficient society in order to achieve the climate targets. The Climate Policy Council urges the Government to urgently follow up the climate law inquiry's proposals and implement specific changes in order to remedy the highlighted shortcomings. The Government needs to give stronger political signals so that state agencies, regions and municipalities can better leverage synergies and manage conflicts between transport policy and climate policy goals.

At the overall level, transport policy objectives should clarify that the overarching goal for increased accessibility should be developed within the framework of the climate goals, not merely "taking them into account", according to the current vague wording.

Expenditure area 23. Land- and water-based industries, rural areas and food

As described above, there are many possible synergies and conflicts between the goals of land-based industries and the climate targets. The overarching goals align well with the climate targets, and clear references to the area contributing to the climate transition can be found in the goal description. But there are diverging views on how the production goals and environmental goals of forestry in particular should be weighed against each other. This area is also affected by several changes now being negotiated in the EU related to biodiversity requirements and carbon sinks in forests and land. The Council has previously emphasised that the Government must take initiatives to create greater consensus on the contribution of agriculture and forestry to the climate transition and clarify the strategy going forward. The ongoing inquiries in the Cross-Party

[a] These include the regulations governing national and regional transport planning, the regulation of transport conditions in the Environmental Code, as well as changes to the Swedish Transport Administration's instructions, the so-called urban environment agreements and the municipalities' comprehensive and detailed plans in accordance with the Planning and Building Act.

Committee on Environmental Objectives[24] and the bioeconomy[133] should be able to provide the Government with a basis for action.

The political objective for the food supply chain is heavily production-oriented and does not reflect the sustainability perspective found in other goal formulations in this area. The Climate Policy Council has previously emphasised that agricultural policy must be given a clearer and stronger climate focus, not only for ending our dependence on fossil fuels but for achieving climate-neutral or climate-positive agriculture. This, together with the need to create greater consensus on the contribution of agriculture and forestry to the climate transition, justifies a review and further development of the current goals.

Expenditure area 24. Industry and trade

The goal of industrial policy is to bolster Sweden's competitiveness and enable job creation in more, and growing, companies.[134,135] The overarching goal of industrial policy completely lacks an explicit climate perspective. This is true despite the fact that a major part of policies for achieving the climate targets are in practice part of industrial policy, and vice versa. Around the world, climate policy is increasingly becoming industrial policy (see Chapter 11).

Against this background, industrial policy objectives should likely be urgently reviewed in order to reflect upon and contribute to the major industrial transition that has begun and will continue in the coming decades. More of the agencies in this area are pursuing the climate transition to different extents, either on their own initiative or as directly expressed in the Government's instructions or missions. However, all activities should be anchored in the overarching goals, strategy and follow-up of the entire policy area. The business sector is also calling for clear and ambitious goals.

In addition to the general objective of industrial policy, there is a specific objective for tourism policy but not for any other business sectors. The objective for tourism policy was renewed in the 2022 budget bill, which clearly emphasises the focus on "sustainable tourism".

In the 2023 budget bill, the Government proposed that the goal for foreign trade as well as export and investment promotion efforts should be "free, sustainable and rules-based international trade, a well-functioning internal market, growing exports and international investments in Sweden." The explanatory text refers to the fact that free yet rules-based trade should contribute to meeting the goals of the Paris Agreement and the 2030 Agenda. The EU's plans for climate tariffs, called CBAM (see Chapter 2), as well as the proposals from the Cross-Party Committee on Environmental Objectives on additional climate targets for both consumption-based emissions and Swedish exports (see Chapter 1), indicate that the ties between trade policy and climate will become even stronger in the future. It would be reasonable for this to also be reflected in the objectives for this expenditure area.

9.4. Conclusions and recommendations

The societal goals must be reviewed to align them with the climate targets

The annual description of policy direction and outcomes in the budget bill is clearly divided among the different expenditure areas of the central government budget. Such a division does not function very well for cross-sectoral issues such as policies for achieving climate targets. In

addition, the lack of a clear summary of all agreed goals makes it more difficult to conduct follow-up. In several of the expenditure areas, there is no link to climate targets either at target level or in the description of policy direction, despite its obvious relevance for climate policy implementation. Elsewhere, the goals or governance are unclear, which opens up for the Government to push responsibility for resolving the goal conflicts to state agencies. This is problematic because the agencies should be guided by political considerations made by Parliament or the Government. Therefore, the current societal goals must be reviewed in order to align goals and governance with the climate targets.

Policies must take into account synergies and conflicts between the climate transition and other societal goals

Analyses of synergies and conflicts at the overall target level may be important for educational reasons, but they are often of limited value when it comes to shaping actual policy. As shown in chapters 7 and 8, it is often the choice of paths for achieving the goals that decides whether conflicts get more complicated or synergies are created. This also applies to the climate targets. Such choices concern, for example, which sectors and measures should be focused on for achieving net-zero greenhouse gas emissions throughout society, or how we can reduce greenhouse gas emissions from transport. These choices are not about whether or not to take emission reduction measures, but rather involve making choices that lead to goal attainment while leveraging potential synergies and limiting or managing conflicts with other societal goals. Taking other societal goals into account can affect the mix of measures and instruments that is deemed to be most beneficial for reducing climate change. By explicitly managing the relationship between climate policy and other areas of society, the likelihood that the climate transition will be accepted by citizens also increases, which is a prerequisite for implementing such a comprehensive shift in a democratic society.

When analysing possible synergies and conflicts, it is important to consider not only the specific distribution of costs and benefits for the different choices, but the other two justice perspectives mentioned in Chapter 7. This can involve designing processes that give voice to all concerned interests prior to a decision (procedural justice), or considering how a proposed change can take into account existing activities or values. The fact that the costs are often borne today while the greatest profit will materialise in the future should also be taken into account.

Synergies and conflicts must be analysed more systematically

Over the past year, national policy has made it clear that there are underlying or unspoken ambitions that strongly govern policy without them being reflected in the budget bill's target map. Chapter 10 illustrates, for example, how the ambition to maintain households' purchasing power and minimise business costs became a dominant reason for policy action, without this being clearly expressed in the goals that are supposed to guide policy design. The reviews of the societal goals from a climate perspective that Parliament has supported can thus only go so far in integrating the climate perspective in overall policy. Therefore, it is equally important to develop a more systematic practice for analysing potential synergies and conflicts with the climate transition when designing relevant policies.

One step in this direction is the proposal from the Ministry of Finance in its written communication "Better impact assessments".[61] It proposes uniform rules for impact assessments in central government. Under such rules, the accompanying impact assessment to proposals from

government inquiries or agencies for amended policies must include an assessment of the proposal's impact on emissions or removals of greenhouse gases in Sweden and abroad.

Other vital steps concern the Government's governance of state agencies, which the council studied in last year's report. The Swedish Agency for Public Management has since come to similar conclusions as the Climate Policy Council and has submitted a handful of more detailed proposals to the Government on how agency governance can be enhanced. An important proposal from the Swedish Agency for Public Management is that instructions for the relevant agencies should state which tasks the agencies have in contributing to achieving the climate targets.[39]

Both improved impact assessments and enhanced governance could promote a more systematic approach to identifying synergies and conflicts between the climate transition and other societal goals.

RECOMMENDATION

- During the term of office, carry out a review of relevant societal goals to ensure that goals and governance are consistent with the climate targets and aligned with previous parliamentary decisions.

10. Political response to the energy price increases in 2022

In 2022, the issue of surging energy prices landed high up on the political agenda. Both the previous and the current governments, as well as opposition parties, proposed ways to protect households and businesses from the negative consequences. The proposals included changes in the reduction obligation, tax relief and electricity price compensation, all of which affect the chances of achieving the climate targets. This chapter highlights and discusses how the Swedish government and Parliament addressed synergies and conflicts between the climate targets and other societal goals and interests during this period. It serves as an example of how trade-offs between different societal goals can be rapidly impacted by a price shock or other external events, an example that further explores the fundamental discussion in Chapter 7 and complements the broader discussion in Chapter 9.

The specific case analysed in this chapter concerns policies that address the effects of geopolitical turbulence and other energy supply challenges manifested in rising energy prices. These energy price increases have in turn put pressure on households and businesses. Policy measures have been motivated by reasons of fairness and have a clear geographical as well as temporal dimension. The geographical dimension concerns the relationship between urban and rural areas, while the temporal dimension is about the desire to solve short-term problems affecting the conditions for pursuing a stable, long-term climate policy.

There are sometimes good reasons, not least redistribution policy considerations[a], for implementing measures that reduce the negative consequences of unforeseen and rapid external changes on companies and households, so that they do not become unmanageable. However, the way it is done is important, since policy design affects and can undermine the conditions for long-term climate policies.

10.1. Energy markets and pricing

In order to deepen the understanding of the problem and the significance of the proposed actions, a high-level description of how the energy markets work can be useful. We therefore discuss some key aspects below.

The electricity market

The price consumers pay for electricity consists of three main components: the retail electricity price, electricity network charges, and electricity tax and VAT. The relative size of each part varies among users and depends on price variations in the electricity retail market. For 2021, the Swedish Energy Market Inspectorate[136] estimated that the electricity retail price, electricity network charges, and electricity tax and VAT each accounted for one-third of the price, for an apartment customer with an annual electricity consumption of 2,000 kilowatt hours (kWh). For a single-family home customer with annual use of 20,000 kWh, the electricity retail price corresponded to just over 40 percent of the total price, electricity network charges just under 20

[a] Another reason might be that the market at such times cannot always offer protection through measures like fixed-price contracts.

percent and taxes accounted for just under 40 percent. Industry customers are completely exempt from electricity tax and VAT.

The major increases in electricity prices in 2022 were mainly due to an increase in electricity retail prices. These are governed by supply and demand on the common Nordic electricity market, Nord Pool. The Nord Pool area includes Sweden, Norway, Finland, Denmark and the Baltic countries. However, during periods of inadequate transmission capacity, prices need to be differentiated among geographical areas in order to achieve a regional balance between supply and demand. For this purpose, Sweden is divided into four bidding areas each which different prices during different periods.

Nord Pool, in turn, is part of a larger European electricity market. The common market is regulated by the EU's Electricity Market Directive. It is based on one of the pillars of EU cooperation – a free common market. EU regulation of the electricity market aims to reduce trade barriers among countries, even if limited transmission capacity is one such barrier. The idea is that the electrical power system, viewed from an EU perspective, should become both more efficient and more robust by enabling a balance among the different conditions each country has for generating electricity.

Sweden is net importer of electricity only a few hours per year, but a net exporter of electricity for most hours per year (in 2022, Sweden was a net exporter for 98 percent of the year's hours).[137] On average, annual net exports over the period 2011–2020 were approximately 17 terawatt hours (TWh) annually.[138] However, net exports have steadily increased and in 2022 hit a new record of roughly 33 TWh, making Sweden Europe's largest exporter of electricity.[b,139] Net exports provide climate benefits when they replace fossil-fuelled production outside Sweden's borders.

Since the different countries' electricity systems are linked together, market prices for electricity end up at a similar level in nearby areas as long as there is available electricity transmission capacity, regardless of the extent of exports or imports. It is therefore natural for electricity prices in Sweden to be adjusted to those in the rest of Europe. Higher prices in Germany lead to higher prices mainly in southern Sweden, due to the possibility of selling electricity at a higher price in Germany. Since there are shortages in transmission capacity within Sweden, prices in northern Sweden can remain at a lower level depending on what the electricity balance looks like in each area.

Figure 9 illustrates how spot prices in bidding area 4 (southernmost Sweden) largely follow price developments in Germany at the same time. Spot prices in bidding area 1 (northernmost Sweden) have been significantly lower for most of the period since 2021 than in bidding area 4. The spot prices in Germany and France follow each other even more clearly, illustrating the effect of the interconnected European electricity market.

[b] The average total electricity production during the period 2011–2020 was 156 TWh/year. In 2022, total electricity production in Sweden was 170 TWh.

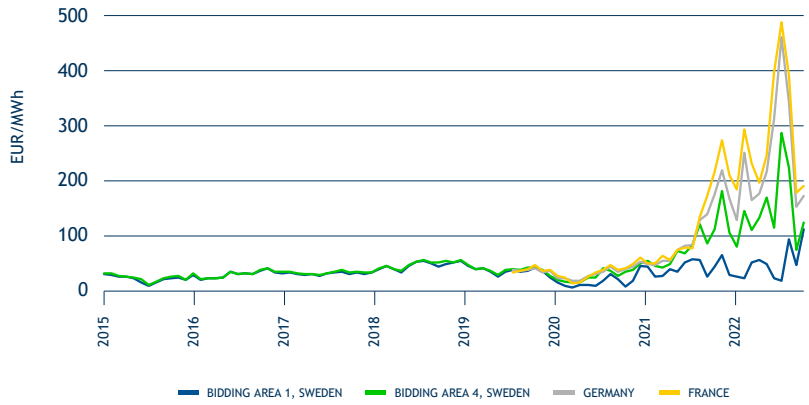


Figure 9. The spot price of electricity in bidding areas 1 (northernmost Sweden) and 4 (southernmost Sweden) during the period 2015-2022, and for Germany and France for the period 2019-2022. The time period for the latter is shorter due to lack of data. Electricity prices are reported as monthly averages.

Source: Nord Pool

In the electricity system, there must be a constant balance between supply and demand. Pricing is central to securing the necessary balance in the system. Both supply and demand vary over time, and as a result prices vary too. All other things being equal, an increased share of weather-dependent electricity such as solar and wind produces greater short-term fluctuations in electricity prices because production varies.[140] When there is an abundance of wind, prices can be very low and when the opposite prevails, prices can rise. However, in terms of an individual consumer's finances, it is not the price of a single hour that matters the most but rather the average price.

Price fluctuations are an important signal indicating when production is low relative to demand or shortages in the transmission system. Higher prices make measures to eliminate such shortages more profitable. Efficiency measures, energy savings and various balancing services, such as electricity storage or demand response, are also incentivised by market prices.

It is not a given that electricity prices have to be high in the future. On the contrary, history has shown that technological development has driven down the production costs of electricity from several energy sources, in particular solar and wind power.[141] On the other hand, the transition of the system requires major changes and the path to future systems can, due to imbalances, bring periodically high prices, as developments in recent years have illustrated. Today, prices are generally significantly higher than the total lifetime cost of generating electricity in new plants. In other words, there are very strong incentives for efficiency improvements, energy savings, expansion of new production and balancing solutions.

The fuel market

Unlike the electricity market, the oil market is predominantly global and prices are largely determined by a global balance between supply and demand. Geopolitical factors have traditionally been significant for crude oil prices, with perceived supply threats contributing to higher prices. Expectations of economic development can also affect prices both upwards and downwards. The market is also impacted by the dominant position of OPEC (Organization of

the Petroleum Exporting Countries) in the market and its ability to adjust oil supply to the market to influence price levels.

In addition to crude oil prices, fuel prices for consumers are determined by the costs of refining and distribution, as well as taxes and VAT. The proportion of cost items varies over time and among different types of fuels. At the beginning of February 2023, the market price in Sweden accounted for about half of the petrol price, while the rest consisted of energy tax, carbon tax and VAT. The corresponding proportions for diesel were around 60 percent for the price of diesel and 40 percent for taxes and VAT.[142,143]

The product price is affected by the renewable fuel blended in petrol and diesel as a result of the reduction obligation. Exactly how much this can be expected to affect fuel costs is uncertain and is affected by several parameters. However, it has been previously estimated to lead to an increase of 8-12 öre per litre, excluding VAT, for each percentage point of blended fuel.[58]

The biofuels market is global, too, and the majority of biofuels used in Sweden were imported or based on imported raw materials. The production capacity for liquid biofuels in Sweden corresponded to just under one-third of use in 2021.[57] For biofuels, the cost of raw materials, such as rapeseed, is a key parameter that affects the global market price.

Just like in the electricity market, price is an important signal of potential system imbalances. Rising crude oil prices, for example, mean that it will be more profitable to extract oil from more expensive sources. On the user side, higher prices provide incentives to reduce use, for example, through improved logistics, investments in more efficient vehicles, the choice of alternative means of transport, housing site selection and housing patterns. Some of these measures can come about relatively quickly, while others only take place in the longer term.

10.2. Price developments in the fuel and electricity markets

The prices of both fuel and electricity increased sharply in 2021 and 2022 (see figures 9 and 10). On both markets, the spikes in prices were caused by a range of different factors. Russia's invasion of Ukraine drove up the price of fossil fuels. There were several reasons for increased prices of biofuels including increased commodity prices, logistical hurdles, high demand and the impact of other energy markets.[144]

Between 15 January 2021 and 15 June 2022, the nominal price of petrol grew 62 percent and the price of diesel 76 percent, before falling back[c]. In part, these price increases were an effect of higher crude oil prices[d]. At the same time, we saw an increase in the price of biofuels (ethanol, FAME and HVO)[e], which are also used to meet the reduction obligation, affecting the price of petrol and diesel at the pump. For example, the price of HVO doubled during the period. The increase in FAME prices is explained by increased rapeseed oil prices as a result of poor harvests in Europe and the outbreak of war in Ukraine. The price of HVO was affected by increased

[c] In the figure, prices are presented in constant prices. The increase between 15 January 2021 and 15 June 2022 corresponded in constant prices to 47% and 60%, respectively.

[d] Crude oil prices rose from around USD 75/barrel to USD 120/barrel in early June and then fell back to just under USD 90/barrel in mid-September (www.dailyfx.com/crude-oil).

[e] FAME=Fatty acid methyl ester, HVO=Hydrotreated vegetable oil.

demand for the fuel and the high price of gas, which is part of the production process.[145] Biofuel prices have fallen back since their peak levels in summer 2022.

Up until 2020, the cost of fuel for driving a car over a specific distance had been decreasing for many years as a result of increased vehicle energy efficiency. The percentage of income that has to be spent on driving a car 100 kilometres has fallen even more quickly over time. For an average household, the cost of fuel to drive 100 km in 1991 was equivalent to the income from two-thirds of an hour's work. By 2020, this cost had halved to one-third of an hour of work.[146] Since fuel prices increased faster than wage levels in 2021 and 2022, this has meant at least a temporary break in the trend. It is also worth noting that between 2000 and 2021, public transport prices increased considerably faster than petrol prices.[147]

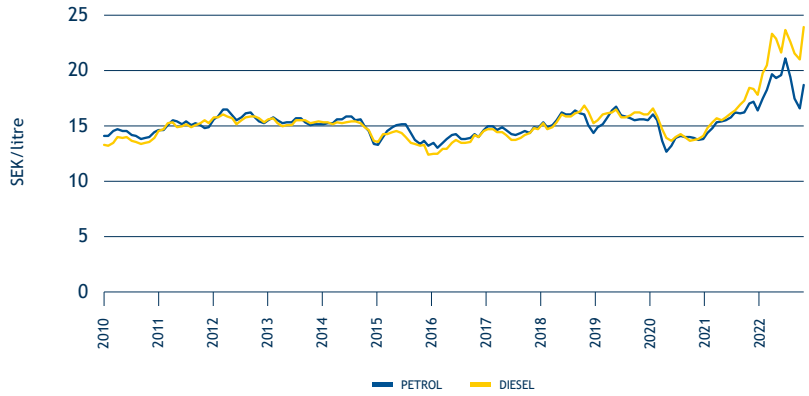


Figure 10. Price development of petrol (BF95) and diesel at the pump in 2020 prices.

Source: Data from Drivkraft Sverige, converted to constant prices.

The price of electricity has risen sharply since 2021 due to a combination of different factors. Since the electrical power systems in the northern European countries are connected both with each other and the rest of Europe (see section 10.1), electricity prices are mostly determined by the cost of generating electricity using fossil fuel sources outside Sweden's borders, and thus by the price of fossil fuels and emission allowances. The International Energy Agency (IEA) has estimated that 70 percent of the increase in electricity prices in Europe is caused by higher fossil fuel prices and 20 percent by an increase in the price of emission allowances, while the remainder is due to the limited availability of sources like nuclear power and hydropower.[148] High electricity prices in the rest of Europe spilled over to Sweden, but a lack of transmission capacity helped to limit the price increase in northern Sweden (see Figure 9).

Although electricity prices are spilling over from Germany to some extent, energy prices in southern Sweden have been lower than in Germany and France (see Figure 9). In 2022, the average price of electricity in Germany corresponded to SEK 2,51 per kilowatt hour, which was 55 percent higher than the price in southern Sweden.[139]

10.3. Managing skyrocketing energy costs

It goes without saying that some households and businesses are affected by surging energy costs in a way that they struggle to manage. This can then require the implementation of various measures. From a climate policy perspective, such measures should, as far as possible, not hinder the climate transition and the long-term ability to achieve the climate targets.

Price is an important signal to households and industry about the importance of energy efficiency both for climate reasons and for a more secure supply. Measures for tackling high energy prices should avoid weakening this signal as much as possible. Interventions that create incentives for increased use should be avoided.

There are many other ways to compensate vulnerable groups than with lower energy prices. One alternative could involve a one-off compensation payment or an amount based on flat rate consumption. Targeted support for those most in need can offer a way to compensate people and avoid compensating those who do not need it more accurately.[f] General financial support unrelated to energy consumption, such as income aid and child and housing allowances, has been Sweden's traditional way of addressing financial vulnerability. However, it is difficult to identify policy instruments that are appropriately targeted and feasible at short notice in the event of a price shock. The choice of intervention also has an impact on the distribution of benefits between genders, income groups and geographical areas.

In the long term, there can therefore be reasons to primarily design policy instruments that reduce the risk of similar events occurring. In addition to reducing conflicting goals around energy extraction (see Chapter 8), lower levels of energy consumption reduce the vulnerability to price shocks. Policy instruments that drive energy efficiency, such as energy taxes, are therefore strategically important.[g]

Other measures, such as funding for public transport, local services and local labour markets, can also help to reduce our energy dependence. Support for the transition to emissions-free vehicles can also reduce our dependence on energy from fossil fuel sources.

In the event of sudden disruptions in energy markets, it is less appropriate to make substantial changes to long-term instruments and frameworks that are intended to create stability in the transition. Such adjustments risk threatening long-term confidence in climate policy. For example, the stability demonstrated by the energy taxation system in recent decades has served as an important framework for achieving a more energy-efficient society. In addition, taxes reduce the relative importance of price fluctuations caused by market prices. In the same way, the reduction obligation has been viewed as a clear signal for investing in renewable fuel production. As far as possible, temporary adjustments to systems that could weaken confidence in them should be avoided.

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[f] In other countries, such as the UK, systems that affect vulnerable consumers' energy costs are more common for addressing energy poverty. Johansson, et al. (2015). Energy poverty, security of supply and public action, FOI-R–4020—SE, Swedish Defence Research Agency.

[g] The IEA's latest World Energy Outlook lists ten findings that are particularly vital for reducing potential problems during the transition to a future emissions-free society. Energy efficiency is one of these key findings. IEA. 2022. World Energy Outlook 2022, Paris.

10.4. Political response to electricity and fuel price increases

The year 2022 saw numerous initiatives from both the former and the current government, as well as from opposition parties, for coping with the price increases. These included direct financial compensation and tax reductions, as well as changes in the reduction obligation (see Table 8). Some of the previous government's proposals were adopted while others were voted down. The compensatory measures concerned both fuel and electricity.

Table 8. Proposals during 2022 on compensatory measures due to price increases for fuel and electricity.

Date	Proposal	Proposal status
27 January	Reduction in energy tax for petrol and diesel by 0.5 SEK per litre as of 1 May 2022 (Bill 2021/22:84)	Decided by Parliament, 24 March
3 February	Temporary electricity price compensation for use during December 2021-February 2022 (Bill 2021/22:113)	Decided by Parliament, 24 February
13 April	Temporary energy tax reduction of 1 krona and 5 öre per litre during the period May-September 2022 (Bill 2021/22:221)	Decided by Parliament, 27 April
5 April	Committee initiative (M, KD, L, SD, V) on reduced energy tax and reduction obligation also for 2022 (2021/22 FiU47)	Decided 7 April
5 May	Suspended reduction obligation for petrol and diesel in 2023 (Bill 2021/22:243)	Decided by Parliament, 22 June
6 May	Application to the commission for an exemption from energy taxes for an initial 3-month period	Application approved by the commission in September 2022
2 June	Compensation for car owners, 1000–1500 SEK per vehicle (Bill 2021/22:252)	Proposal rejected in Parliament
31 August	Svenska Kraftnät directed to propose compensation	Completed in October
27 October	Svenska Kraftnät proposes a model for electricity price compensation.	Approved by Swedish Energy Markets Inspectorate on 16 Nov. with some additions
8 November	Proposal for commission of inquiry on lowering the reduction obligation to EU minimum level for current term of office (Bill 2022/23:1)	Bill expected in September 2023
8 November	Increased appropriation for energy efficiency in small homes, nuclear power research and more streamlined network licensing procedure (Bill 2022/23:1)	Decided by Parliament
15 November	Temporary (3-year) tax reduction on petrol and diesel by 0.8 SEK per litre starting 1 Jan. 2022. Abolished carbon tax on certain district heating fuels. (Bill 2022/23:17)	Decided by Parliament
15 November	Repeal of previously decided model for travel deductions. Raised standard deduction for motorists starting 1 Jan. 2023. (Bill 2022/23:18)	Decided by Parliament
12 December	Suspended permit review for hydropower plants	Amendment to regulation decided
23 December	Proposal for electricity price support for electricity-intensive companies	Proposal submitted to the EU Commission

Fuel

At the request of Parliament, the government at the time in January 2022 presented a bill to reduce the energy tax on petrol and diesel. On 14 March 2022, the government presented several proposals concerning compensation for the subsequent rising fuel prices caused by Russia's

invasion of Ukraine, among other reasons. First, a suspended increase in the reduction obligation for petrol and diesel was proposed for 2023. Other proposals included a further temporary reduction in petrol and diesel taxes in addition to what had already been determined based on the January bill, as well as direct compensation (1,000–1,500 Swedish kronor) to car owners. The bill on the suspended increase in reduction obligation was presented in May, the bill on tax cuts for May–September was presented in April, and the bill on compensation to car owners was presented in June 2022 (see Table 8). The proposal on direct compensation to car owners was voted down in Parliament since it was not considered to address the fundamental problem of increased fuel prices.

Different parliamentary constellations proposed even more extensive measures. In a committee initiative from 7 April, the Moderate Party, Cristian Democrats, Liberals, Sweden Democrats and the Left Party proposed that energy taxes be reduced to EU minimum levels for five months and that the government should request exemptions from the Energy Tax Directive to allow for the complete abolition of energy taxes for three months. The government submitted its application to the Commission in May, and it was approved in September. The committee initiative also requested proposals from the government on reducing the reduction obligation as early as 2022. During the spring, the Sweden Democrats and Christian Democrats presented motions to sharply reduce the reduction obligation from current levels. The current government is preparing a proposal to reduce the reduction obligation to the EU minimum level from 2024 onwards. At the time of writing, it is unclear what level this would entail (see Chapter 3).

In October, the current government proposed that the model for travel allowances decided in June, which was independent of the choice of mode of transport, not be introduced. The new model for travel allowances was supposed to take effect on 1 January 2023. In addition, the standard deductions for travel by private car and company car would be raised according to the Government's proposal. The proposal for increased flat rates does not apply to electric cars.

In addition, the new government proposed a tax reduction in the budget equivalent to SEK 0.8 per litre of petrol and diesel, corresponding to SEK 1 per litre including VAT. Since the Government decided at the same time that energy tax levels should be index-adjusted upwards, the tax reduction was ultimately (net) significantly lower. The exemption granted by the EU to go below the EU minimum tax level has never been utilised.

Electricity

An early proposal for compensation for higher electricity prices for the period December 2021-February 2022 arrived in February. In early autumn, the government at the time directed Sweden's distribution system operator, Svenska Kraftnät, to submit a compensation proposal for high electricity prices based on the payment of congestion income[h] to households and industry. Svenska Kraftnät put forward a proposal for support linked to customers' electricity use during the period October 2021-September 2022. Only consumers in bidding areas 3 and 4 were eligible for support, in the amount of SEK 0.79 per kWh in bidding area 4 and SEK 0.5 per kWh in bidding areas 3. In a new electricity subsidy package presented by the current government in January 2023 aimed to reimburse electricity costs in November and December 2022, consumers in bidding areas 1 and 2 were also eligible for support.

[h] Congestion income arises if the price of electricity in the bidding area where it is produced is lower than in the area where it is transmitted to. This difference accrues to the company that transmits the electricity between the two areas. In Sweden, Svenska Kraftnät receives the congestion income.

When the budget was presented, the current government proposed a number of additional initiatives related to the high energy prices, with both short-term and long-term effects.[149] These include support for energy efficiency in single-family houses, investment in nuclear research, streamlining of permitting processes for grid concessions, investments in electricity and fuel preparedness, and targeted electricity support for energy-intensive companies.

Measures in other countries

In Europe, many countries have introduced various forms of support to address high energy prices (see Fact Box 5). Several are of the same kind as in Sweden, but many countries provide support that is more directly targeted to vulnerable groups. Some countries also choose to provide support that is not directly linked to energy prices but rather consists of temporary reductions in property taxes or increased subsidies for public transport. In many countries, saving energy has been highlighted as an essential strategy for reducing costs, something which did not gain much attention in the political debate in Sweden, at least before the parliamentary elections.

FACT BOX 5. DIFFERENT APPROACHES TO MANAGING HIGH ENERGY PRICES IN EUROPE[150,151,152]

Sweden is not alone in Europe in implementing various measures to manage and compensate for rapidly rising energy prices. This is the rule rather than the exception. There is a wide range of measures that the countries use and that differ both in principle and in their level of detail. Examples are:

- Price caps or state subsidies for parts of the electricity price when it exceeds a set level.
- Direct aid aimed at vulnerable households.
- Opportunities to postpone energy bill payments.
- Increased travel deductions and other commuting subsidies.
- Removal of parts of the property tax in agriculture.
- Temporary reductions in VAT on electricity and transport services.
- Tax cuts and rebates on electricity and fuel.
- Increased subsidies for public transport.
- Financial support for energy efficiency improvements.
- Pricing interventions in energy markets.
- Campaigns for voluntary energy savings.
- Temporary regulation of energy use in different areas.

10.5. Overall assessment of the policy proposals

The purpose of all the proposals has been to protect households and businesses from the recent price spikes. In parallel, the measures involve interventions in several of the most powerful policy instruments that have created direction and a long-term perspective in climate policy. This is especially true for decisions on fuel prices.

Transportation fuels

Lowering energy taxes weakens the incentives for several adaptation measures in the energy system, in particular efficiency and resource conservation.

The link between fuel price and fuel use is firmly established in research.[153] Tax cuts can thus be expected to lead to increased greenhouse gas emissions compared to tax retention, all other factors being equal. At the same time, general energy price levels have increased, and overall emission trends are governed by the total price rather than the specific level of fuel taxes. It is worth noting that the increase in fuel prices in 2022 occurred after a long period of falling fuel costs, as a percentage of household income.

As shown in Chapter 3, the proposed changes in the reduction obligation are expected to significantly drive up emissions. Since the reduction obligation has been assessed as responsible for much of the emission reduction needed to reach the 2030 targets, a sharp tightening of other instruments is needed in order to achieve these intermediate targets (see Chapter 3). In addition, the reduced fuel prices that the proposals aim to achieve reduce incentives for electrification and transport efficiency, further tightening the requirement for supplementary instruments.

Even if the reduction obligation primarily aims to directly reduce emissions by increasing the share of renewable fuels, increased biofuel blending also indirectly leads to incentives for efficiency and resource management, provided that the biofuel mix leads to higher prices for petrol and diesel at the pump.[i]

Temporary tax cuts and reductions in the reduction obligation that are already in place risk creating long-term uncertainty around future policy, even if they were not originally intended to be permanent. Indefinite tax cuts or changes in the reduction obligation further weaken political governance.

The proposal to change the right to business travel deductions will, compared with previous proposals that were independent of the choice of mode of transport, benefit car travel with associated increased emissions. The impact assessments contained in the proposal[154] point to certain redistribution policy effects where all income groups are considered to benefit, though some more than others[j]. Men are estimated to benefit more than women from the changes.

Electricity

The announced electricity price compensation will consist of reimbursement tied to historical electricity use. It is an advantage that the subsidies are based on historical use, since this reduces the risk of undermining the incentives for efficiency improvements. For the incentive structure, it is important that compensation is not based on various caps since this would reduce the economic value of efficiencies and behavioural adjustments. Although the agreed method of compensation avoids this trap, the current proposal also carries the risk that it will build up an expectation of compensation even in the future.

High electricity prices can in themselves affect the potential for electrification expected by many, including the Climate Policy Council, to play a major role in the climate transition. On the one hand, high electricity prices can deter users from moving forward on the electrification strategy,

[i] The exact effect on the final price depends on the extent to which tax levels are adjusted to the higher percentage of biofuels.

[j] Applies for income groups 2, 6 and 7.

which is why measures that help to lower prices would be justified from a strategic perspective. On the other hand, if the price signal were removed, system imbalances would be at risk of intensifying, with reduced incentives for efficiency improvements, expansion of energy storage, new grids and more electricity generation.

10.6. Conclusions and recommendations

Weak leadership on the climate targets

The Climate Policy Council's review of events in 2022 reveals that politicians did not show clear leadership on achieving the long-term climate goals, but instead put forth proposals in the opposite direction. This was done without any discussion, let alone any suggestions, about what other efforts would be required to still achieve the climate targets, and despite the fact that all parliamentary parties except one support the Climate Act and Sweden's climate targets. Proposals focusing on energy efficiency and energy savings, which could help ease a difficult situation while making a strategic impact, were few and far between.

Using the reduction obligation level as a regulator of fuel prices has been inappropriate and difficult for fuel companies to manage. There may be reasons to adapt the reduction obligation to changed external conditions, but such an adaptation should, in that case, be based on systematic evaluations during, for example, the Swedish Energy Agency's checkpoint reviews.

Developments in 2022 illustrate the importance of carrying out the climate transition in a way that is perceived as acceptable to most of society. What is perceived as acceptable, however, is affected by how the political debate is conducted. We need a more comprehensive narrative explaining society's transition away from fossil fuels in the face of a changing climate. A major part of political leadership is taking responsibility for the images conveyed and how they relate to long-term goals rather than short-term political tactics. It is also important to properly convey how energy markets function and what real opportunities the Government has to make major changes, taking into account EU regulations and their budgetary consequences in Sweden. The highly simplified debate that emerged in 2022 did not benefit from the fact that it coincided with election campaigns.

High price levels are inherently problematic. But the rapid pace of price increases in 2022 posed particular challenges for businesses and private consumers. In the longer term, consumers are better able to adapt to price increases than what is possible in the short term, and producers can increase their production capacity and develop more energy-efficient products and processes. As shown above, the cost of driving a car for households decreased over a long succession of years, despite relatively powerful economic instruments targeted at fossil fuels. In the discussion, it is important to distinguish between the long-term price trend for electricity and fuels, which in a market depends on future production costs and the balance between supply and demand, and the short-term effects due to various imbalances in existing systems that have not had time to adapt. The total lifetime costs of new renewable electricity production are significantly lower than current electricity prices. Today's high prices are rather due to high fossil gas prices and the sluggish progress of the expansion of zero-carbon electricity and sufficient transmission capacity. Production costs for biofuels are still significantly higher than for fossil fuels, but even here system imbalances play a major role in the high prices seen in 2022. Exactly what price trends for electricity and fuel will look like going forward depends on many factors, and transition policies must prepare for a range of possible price trend scenarios.

Strive for more robust policies

The impact of soaring energy prices in 2022 provides grounds for arguing that climate measures that create robustness and reduce vulnerability to external events should be given more weight. The measures can address efficiency improvements, diversification and flexibility, or can provide support for public transport, local services and local labour markets to help reduce energy dependence. In addition to reducing sensitivity to price shocks, a more efficient use of resources and energy helps to reduce the number of goal conflicts, especially in relation to other environmental objectives. General financial support schemes that reduce the vulnerability of certain groups to unforeseen events can also serve as vital tools.

The Climate Policy Council has repeatedly warned of relying too much on higher biofuel volumes to achieve the transport sector's climate target. Events from 2022 exposed the risk of building goal fulfilment around a single policy instrument.[k] There was an expectation that the reduction obligation would contribute a substantial portion of the commitments to achieve the 2030 interim targets. When the reduction obligation is questioned because it is deemed to result in excessively high fuel prices, the absence of other sufficient measures in the transport sector becomes clear. Last year's events provide further support for putting more emphasis on building a more transport-efficient society.

In this context, it is worth remembering that a comparatively high proportion of Sweden's greenhouse gas emissions come from transport and machinery. This means that strong instruments will still be needed in the area of transport and is one explanation for the fact that the reduction obligation has been at a high level compared to other countries.

Better prepare for price shocks

The events of 2022 exposed our limited preparedness to cope with price shocks. Many proposals have had to be revised more than once and have taken a long time to implement. No ready-made mechanisms were in place. The measures that have been decided with the aim of reducing the price of fuel and driving have so far little effect on fuel prices, make it more difficult to achieve the climate goals, and are obtuse in terms of redistribution policy. They have therefore not hit the mark in terms of timing or reaching the groups most in need of support. Impact assessments from the Ministry of Finance also show that they counteract gender equality by financially benefitting men more than women.

Proposals for modifying existing policy instruments to address rapidly arising problems need to be evaluated to a greater extent based on their consequences for the climate transition.

Proposals that obviously provide wrong incentives and signals should be avoided. Measures and policy changes designed to incentivise increased energy use are inappropriate. Many climate policy instruments espouse the idea that greenhouse gas emissions should become more expensive, and this signal must be maintained as far as possible. The same applies for steering towards higher resource and energy efficiency.

There are many good reasons for the state to proceed with caution when determining or promising compensation for various price increases. However, in the event that resource price

[k] There are also specific risks associated with quota-based instruments. No one knows what the costs will be to meet a given quota at any given time. This increases the risk of setbacks, such as a drop in acceptance of policies. But the events of 2022 have shown that price-based instruments like taxes have also been subject to corresponding demands for change.

shocks in the future warrant more similar policy measures as in 2022, the Government and public agencies should be better prepared to design and implement temporary support that is faster, more accurate and does not counteract long-term goals like the climate transition.

In previous reports, the Climate Policy Council has argued that the electrification of transport justifies a new way of taxing land transport through distance-based taxes that are differentiated depending on the vehicle and when and where it travels. With such a system, possible compensatory measures could be created faster and in a much more targeted way, and tax levels could more easily be made lower for motorists in remote areas that have fewer options.

RECOMMENDATIONS

- Make society less sensitive to future resource price shocks, for example through measures for a more efficient use of energy, materials and products and a diversified supply.
- Build up skills and preparedness to be able to design and effectively implement short-term crisis interventions in the future, without these counteracting the possibilities of achieving long-term climate goals.

11. The industrial transition in upper Norrland

A regional example of the climate transition's maturity and momentum is the major industrial investment currently underway in Norrbotten and Västerbotten, which will shape the development of society as a whole. Taking these developments as our point of departure, this chapter discusses how synergies and conflicts are revealed and how the role of policy is affected when the transition accelerates.

Developments in upper Norrland touch upon a particular aspect of the climate transition – the transformation of industrial production to one that uses fossil free energy and has net-zero emissions of greenhouse gases. Major new investments have already been made in the region, and both Swedish and international companies have plans for the region (see Fact Box 6). For the coming decades, these investments are estimated to total around SEK 1,100 billion.[155] This includes new processes for producing fossil-free steel and investments in hydrogen from zero-carbon electricity, both of which are interconnected. The mining industry is starting to shift from extracting single raw materials to systems that utilise a great many substances in the ore, all while developing more circular material flows. New industries, such as large-scale battery manufacturing for the automotive industry, are expanding. Advances in the forest industry aim at supplementing the traditional production of paper, pulp and sawmill products with the production of advanced new materials, products and fuels.

Not all planned investments are likely to materialise. Some will start up but fail, and new initiatives will emerge along the way. However, it is clear that the region is seeing a new wave of industrial investments that have strong ties to the climate transition. Key growth drivers include access to renewable electricity at a low cost together with other natural resources, industrial know-how and an expected increase in demand for fossil free products. Policies for achieving climate goals also play a role. Among other developments, prices in the EU ETS are starting to have an effect, bringing an expectation of higher prices in the coming decades.

FACT BOX 6. ONGOING INDUSTRIAL PROJECTS IN NORRBOTTEN AND VÄSTERBOTTEN

Industrial development in Norrbotten and Västerbotten does not simply involve individual projects, but in some cases entirely new value chains for emissions-free production. All in all, scores of companies and public-sector stakeholders are involved. But today's booming development in the region is mainly due to several new, large-scale industries that are already up and running:

Northvolt in Skellefteå is starting up Europe's first gigafactory, a giant factory for manufacturing batteries primarily for the automotive industry. Production will also include recycling of used batteries.

Hybrit is a joint venture between LKAB, Vattenfall and SSAB for developing the entire steelmaking chain, from ore mining to the production of fossil-free steel. A pilot plant has been in operation since 2021, and the next step is expected to bring major new investments in Malmfälten and Luleå to replace SSAB's current coal-fired blast furnaces with a process that uses hydrogen.

H2Green Steel has begun construction of a brand-new steel mill in Boden that will produce fossil-free steel using technology similar to Hybrit's.

LKAB is planning an industrial park in Luleå that will extract fluorine, gypsum, rare earth elements and phosphorus from mined iron ore, for agricultural fertiliser and other uses.

Svevind is building Europe's biggest onshore wind farm outside Piteå, which already has an installed capacity greater than any of Sweden's nuclear reactors and is expected to produce about 12 TWh of electricity each year.

All in all, as elsewhere in Sweden, a broader industrial development involving several players is taking place, consisting of implemented or planned investments in graphite production for batteries, industrial wood construction, biofuels and additional hydrogen investments.

11.1. Synergies and conflicts are revealed

Such a rapid transition like the one in upper Norrland poses special challenges and reveals synergies as well as conflicts.

Developments are largely market-driven. International and Swedish companies see opportunities to strengthen their competitiveness and secure long-term profitability in a world that is transitioning away from fossil fuel use. The investments are primarily contributing to the great global synergy by spearheading industry's much-needed climate transition in several areas. The developments can also help to create new jobs, growth and confidence in the future, especially in inland municipalities with declining populations. There are obvious synergies with societal goals for business, regional development, the labour market and more.

Yet conflicts of goals and interests emerge, mainly around land use. Mines, forestry, and industrial and energy facilities that are part of the transition compete for land with other interests and activities. An obvious goal conflict is with reindeer husbandry and the rights of the Sami as an Indigenous people. Vast tracts of nature in upper Norrland also have conservation values that are important both nationally and globally. There are more specific conflicts of interest, too, and difficult trade-offs between different societal goals, such as the Swedish Air Force's interests around wind power expansion.

Land use often involves trade-offs between multiple environmental objectives, including cultural heritage sites. The expansion of industries, the generation of emissions-free electricity, and infrastructure for grids and transport inevitably leads to an impact on the environment, so the climate benefit must be balanced against other environmental and societal goals. The scale of the activities matters, as mentioned in Chapter 7. The more facilities needed, the more difficult it can be to avoid sensitive areas. The development of a comprehensive bioeconomy can drive the processing of local raw materials and meaningful new jobs. Yet increased timber felling involves conflicts of interest around nature, biodiversity and carbon sequestration (see also Chapter 8).

Other conflicts also exist in terms of resource exploitation. The risk of labour shortages is already on the rise, and employment in upper Norrland will need to increase sharply in the coming years by attracting labour from the rest of Sweden and from other countries. The huge interest in establishing business operations, driven by the high availability of renewable electricity, can paradoxically lead to a shortage of electricity if permitting and planning processes do not keep pace with increased demand. If demand for both electricity and labour increases faster than supply, electricity prices and wages will rise, which could threaten the profitability of the projects being planned. Other areas of society, such as the public sector and various businesses, are also impacted when wages and prices increase.

Because the places that local communities call home will be affected, this expansion must be perceived as fair and legitimate in order for projects to gain acceptance. This applies for all three dimensions of justice discussed in Chapter 7, including opportunities for participatory development and sharing the economic benefits of the projects. Not only different social interests, but different private interests must be weighed against each other.

Effects also occur at different geographical scales, as discussed in Chapter 7. The question of where the economic benefits end up, whether locally, nationally or in other countries, is a key consideration. Another consideration is that it is not only the local population that is affected by the loss of natural values and biodiversity: these are also valuable from a national and global perspective. In its current form, reindeer husbandry will not survive unless global climate change is halted, while a Sami community's livelihood can be threatened by local establishments of new activities, such as when new mines are planned.

The pace of change brings special challenges

One key consideration is that the high pace of social change, at least in the short term, creates its own challenges and potential conflicts. The pace of development itself challenges established processes for urban and regional planning and the management of conflicting goals and interests. Competition for skilled labour, energy and other resources is intensifying. Taken together, all this can create tensions in society that policies and public institutions must be able to manage.

Public services and investments need to be developed alongside industrial projects. Important considerations for attracting residents will include access to housing, schools, healthcare, medical services and culture as well as educational opportunities that provide the right skills. The extent to which corporate profits remain in the region and are reinvested is crucial for both the regional economy and locals' perception of the industries.

At the same time, the power of the transition is becoming a positive driver for innovation and development, even for the way state agencies conduct their operations. A report from the

Government's special coordinator[155] describes several examples of new forms of collaboration and problem-solving, both within the region and between different policymaking levels.

Certain goal conflicts cannot be disregarded and need to be confronted by politicians. Difficult trade-offs are inevitable, and choices must be carefully considered taking into account a variety of interests and a justice perspective. At the same time, the big picture tells us that many of the challenges discussed are not about fundamental or long-term goal conflicts, but rather difficulties in keeping up with the pace of the transition. One example is competition for labour, which is most evident during the construction phase of a wind farm, for example, but wanes during the operational phase. For decades, the problems have been rooted in a declining and aging population in several locations. Although major challenges emerge when public services need to ramp up quickly, the regional economy can be improved in the long term through immigration and new tax revenues.

The answer to these challenges is generally not to rein in development. The climate transition needs to accelerate in order to achieve the climate targets. As the case of upper Norrland illustrates, new demands will be placed on both policymakers and state agencies for leveraging the transitions' synergies and for avoiding or managing any conflicts.

11.2. The need for new policies in the transition

As the climate transition enters a new phase, national policies are also changing. It is clear that "climate policy" cannot be isolated from other areas of policy. The transition must inform overall policy, which is also one of the purposes of the Swedish Climate Act and the climate policy framework.

In the past, a contradiction between climate policy on the one hand and jobs and industrial development on the other was often described. Climate policy is now increasingly green industrial policy, and vice versa. This development is not limited to Norrbotten and Västerbotten. Already during this administration's term of office, it will become clearer in several areas of Sweden, including Västra Götaland. The development is also global, with countries attempting to attract sustainable industries that show great potential to embrace the necessary climate transition. In the EU, discussions are underway about how to respond to the U.S. Inflation Reduction Act, which favours green businesses based in the United States, in order to safeguard European competitiveness (see Chapter 2). This will likely mean that industrial policy will enter a period of increased government support for green investments.

The state's role in climate change is broader than mere regulations and economic instruments. As the industrial transition takes off, it is becoming more important to remove obstacles to implementation, facilitate collaboration, support networks among stakeholders and recognise that the transition has winners and losers. Similarly, the state has an obvious role to play in terms of infrastructure for transport, communications and electricity grids. Research also shows that support can be needed not only for basic research and development but for scale-up and optimisation in various pilot and demonstration plants in later phases. The technology development process is complex, and the state can play a major role in supporting even the later phases of this process when technical, institutional and policy risks are often high.[156, 157]

Even if it is reasonable for the state to be involved and to share some of the risk associated with developing new carbon-free technologies and value chains that would otherwise struggle to gain a foothold, such a policy of course involves challenges and difficult trade-offs.[158,159] This risk

sharing can be accomplished, for example, through subsidies for large-scale pilot plants. The government's involvement should be based on accountability and a combination of perseverance and discipline. Unambiguous visions and goals are vital. Technological developments, not least those involving radical technological shifts, take time and involve institutional change and long-term skills building. Therefore, patience is a virtue. But state aid should also be withdrawn at some point if the set objectives cannot be realised. This trade-off between perseverance and discipline poses a challenge.

Another important prerequisite for a successful green industrial policy is that decisions on policy design and implementation should not be made independently of the business sector players who have the necessary skills and experience. Here, too, there is a tricky balance. On the one hand, the state must be autonomous and support the public interest, yet businesses often have the advantage of knowledge. Scope must therefore be available for knowledge transfer from businesses to the state, and vice versa, in a way that does not cause businesses to "kidnap" policy design and implementation. Industrial policy is not defined solely by the set of instruments introduced; it is equally about a continuous learning process, both for the state and for industry. We thus need to identify an appropriate institutional and organisational structure that supports the necessary cooperation between the state and industry. Government officials who possess both great expertise and high integrity are also needed.

Because of global competition, it is not obvious that the plans now emerging will be realised and help Sweden in particular to advance. If the central government, regions and municipalities do not collectively succeed in creating the necessary foundation, many other countries are ready to become home to these industries. This does not provide a reason to get involved in every tug-of-war. One important aspect to consider is that the investments should be sustainable from a broader perspective – economically, socially and environmentally. This means that different projects should take into account the inevitable changes in climate that are already underway and are taking place most rapidly in northern latitudes. Another consideration is for implementation to take place in a way that secures acceptance among citizens. For example, it can involve designing systems so that residents who are affected by an industrial establishment can also benefit from the values created. [a, 47,52]

Five priorities for acceleration

The policy challenge in upper Norrland is to stimulate and manage an accelerated transition to clean energy so that it actually leads to net-zero emissions while becoming sustainable economically, environmentally and socially. In its 2022 report, the Climate Policy Council stressed that the upcoming climate policy action plan needs to serve as a blueprint for acceleration. This applies in particular to investments. The choices made today in terms of investments in industries and infrastructure will, to a great extent and for a long time to come, affect the possibility to reduce greenhouse gas emissions.[160]

To make the acceleration possible, the 2022 report highlighted five priority areas for the upcoming climate policy action plan. The need to develop these areas is exemplified by the issues surrounding the development of upper Norrland. The enormous transformation and renewal of

[a] An example is the report on incentives for the expansion of wind power, terms of reference 2022:27 and supplementary terms of reference 2022:135, which will be presented no later than 31 March 2023.

communities there will not be possible unless national policies are strengthened in these five areas.

Improve governance of government agencies and coordination among different policy areas and policymaking levels.

The rapid transition in upper Norrland shines a bright light on the difficulties surrounding today's working practices and organisational structures. For example, the transition to fossil-free steel production requires completely new value chains to be developed within a country, from ore mining to a novel steel product, where all components of the value chain must be in place at the same time. In addition, housing, transport infrastructure and public services must be provided in step with industrial development. The efforts of otherwise unrelated companies, government agencies and permitting processes need to become interconnected. A regional systemic view of resource use, town planning, and transport and energy infrastructure is also necessary.

The central government, regions and municipalities need to develop their forms of cooperation, as well as collaboration with other relevant stakeholders. Similarly, different policy areas and different government agencies must interact with each other in new ways.

The high pace of large-scale industrial installations has also driven promising regional initiatives for stakeholder collaboration. For example, the county governor of Norrbotten is leading a partnership between the business community, municipalities, the region and government agencies in the county called Accelerated Green Transition in Norrbotten (AGON). Another example is how Svenska Kraftnät is testing out new planning methods for new power lines.[155,b] Experience shows that there is considerable scope for innovation and new approaches within existing laws and organisations, without the need to compromise on quality or societal goals. It is essential for the government and state agencies to learn from these experiences and share successful cases. Increasing the pace of the transition requires scope for regional innovation and experimentation in terms of planning and collaboration processes.[c]

Strengthen goals and instruments in key areas.

The Climate Policy Council has emphasised that current policies on energy and resource efficiency, among others, must be enhanced. In recent years, the political debate has had a strong supply perspective, as is also true for the transition in upper Norrland. Forecasts of soaring electricity demand, based on existing technology, need to be critically examined and weighed with possible efficiency improvements.

The large volumes of electricity and hydrogen that are expected to be used in new industrial processes also give rise to correspondingly large residual energies, often waste heat, which can be recovered. New technologies for more efficient electrolysers might strongly influence assessments of electricity demand for hydrogen production. The same applies to the use of various kinds of material, including biomass, as well as steering towards a more transport-efficient society (see Chapter 8). A systems view, efficiencies and circular thinking must be brought to the fore to a greater extent in order to ensure that the transition is sustainable and that high values and resources are not lost.

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[b] At national level, investigations are being carried out by the Swedish Energy Markets Inspectorate and others to shorten the time needed to expand the electricity grid.

[c] KOMET (Committee for Technological Innovation and Ethics), Försöksverksamhetskommittén (Committee on Experimental Activities).

Forestry regulations, of great significance for the business community in upper Norrland, are another example. National policy must be clarified in light of new knowledge, regulatory changes at EU level and the UN's work on biodiversity.[d]

Create better conditions for investments that help to achieve the climate goals.

The Climate Policy Council has highlighted several points where national policy needs to be developed to stimulate investments that support the climate targets. The most obvious regarding the acceleration in upper Norrland is the need for more streamlined and predictable permitting processes of various kinds. This applies for environmental impact assessments, concessions for electricity grids and power distribution in the electricity system. The issue has been raised by all stakeholders involved, and it risks not only delaying but actually thwarting essential investments in the climate transition.

A report from Growth Policy Analysis highlights three key factors for an appropriate environmental impact assessment: 1) flexibility, in both the choice of measures and the deadline for meeting environmental conditions, 2) greater predictability and transparency through shorter lead times, clearer instructions, and guidelines for interpreting legislation and formulating applications in individual cases, and 3) a high level of knowledge among the state agencies involved that enables balanced, consensus-oriented yet thorough and tough negotiations between businesses and regulatory authorities.[161] This in turn requires sufficient allocation of resources to the land and environmental courts and relevant authorities. The Government has recently allocated additional resources to its own Ministry of Climate and Enterprise and to the Land and Environment Court in Umeå, but not to the county administrative boards in Norrbotten and Västerbotten. Several government inquiries into the progress of permitting processes have already been conducted, and the issue is one of the new Government's priorities. However, no bill has yet been announced.

In this context, it should be pointed out that there are also positive examples of comparatively quick and efficient processes, for example tied to the establishment of Northvolt's battery factory in Skellefteå, which shows that there is room for significant improvements in current legislation.

The new government has strengthened the opportunities to support industry investments in the climate transition by increasing the scope for green credit guarantees as well as increased funds for the long-term initiative the Green Industry Leap.

The industrial expansion in northern Sweden also presents municipalities and regions with major investments in infrastructure and public services. One problem in this context is that regional and municipal expenditures for public investment come first, while greater tax revenues resulting from an increased working population come later. The Government may need to consider an equivalent to the green credit guarantees to enable the necessary municipal and regional investments in the climate transition of industry.

Carry out a broad knowledge and upskilling initiative for the climate transition.

Nowadays, the availability of labour with the right skills is a crucial factor for the transition in upper Norrland.[155] During a start-up period, this can sometimes be managed using temporary fly-in fly-out labour. But it does not create sustainable development in the long term. In the next

[d] Applies to the EU directives for LULUCF and renewable energy and the Kunming-Montreal framework within the framework of the UN Convention on Biological Diversity.

step, this need must be met by upskilling the current workforce, along with immigration and training new residents from other parts of the country and from other countries. The latter requires an openness to labour immigration and enhanced attractiveness in the region. The extensive need for skilled labour applies not only to industry but to other growing needs in society, such as schools, healthcare and fire services. The question is therefore one of meeting the total need for labour and avoiding displacement effects.

In addition to the immediate and specific skills needs, the development of higher education and research in the region is essential for long-term development. Likewise, a broad general insight into the climate transition on the part of the wider population is an asset, as is an understanding their region's role in it, in order to maintain acceptance and support for the changes taking place.

Take proactive, coordinated and decisive action in the EU.

Many framework conditions relating to the development of new industries are strongly influenced by developments in the EU. It is therefore important for Sweden to ensure that the regulations are designed to strengthen the incentives for emissions-free industry. For example, the phasing out of free allocations of allowances under the EU ETS could make the business model for fossil-free steel more competitive.

Another consideration involves using the resources offered by the EU to support the climate transition. The Government's coordinators have pointed to a lack of capacity for companies, municipalities and regions to effectively leverage various EU funds and aid, including the new Just Transition Fund.

11.3. Conclusions and recommendations

The industrial transition in upper Norrland highlights synergies as well as conflicts in the climate transition. But in many cases, the biggest challenge lies in the high pace of social change that is taking place. Established policies, government agencies and other organisations, as well as planning and decision-making processes, are not adapted for coping with the rapid transition. The Government's coordinator emphasises that Sweden has traditionally been adept at managing the regional challenges that have arisen in the face of major rapid industrial shutdowns, but we seem to be less prepared to handle new industry installations and expansion related to the climate transition.

The rapid development in northern Sweden shines a bright light on the five priorities for the acceleration of the climate transition, which the Climate Policy Council highlighted in its 2022 report. Several of these recommendations – including those for agency governance and permitting processes – are in practice about the need for policies to better address synergies and conflicts. A holistic, cross-sectoral perspective on governance is needed to identify and leverage synergies. Permitting processes need to be designed so that they are perceived as legitimate and predictable, and so that they are capable of balancing various interests without dragging on for years.

For the development to gain support from citizens, all three justice perspectives described in Chapter 7 are essential: distributive justice, procedural justice and recognitional justice. It is important whether the region and the local communities concerned perceive that they will share in the return of any major investment in some way. The permit processes are important for all interested interests to perceive that they have been listened to. Added to this are aspects of

recognising and taking into account established customs or tenure. In this context, reindeer husbandry occupies a special position.

In several ways, the case of upper Norrland also illustrates the time-scale and geographical perspectives discussed in Chapter 7. Local environmental considerations can sometimes conflict with global climate effects. Regional economic development must be balanced against high nature values of regional, national and global significance. The costs or benefits of the transition for current generations must be weighed against the effects of future changes to the climate.

The industrial transition is only part of the climate transition

Several, but not all, of the investments described above are key to achieving Sweden's climate targets. The steel industry of today, for example, accounts for more than one-tenth of Sweden's total greenhouse gas emissions. The current technology has to be replaced if the steel industry is to remain in Sweden. However, building a completely new and emissions-free steel mill does not help to reduce territorial emissions of greenhouse gases. Instead, it entails in various ways an increased resource load and, to some extent, new emissions. Nevertheless, it can make a vital contribution to the global climate transition. Similarly, a new factory for battery production does not in itself lead to reduced emissions in Sweden, but is a crucial component in the world's transition to emissions-free transport.

It is important to remember that the example of upper Norrland only illustrates part of the climate transition, namely the conversion of the manufacturing industry. But the transition consists of many other elements. Shifts in consumption patterns and a more efficient, circular use of energy and materials are also needed. This needs to be done on a national and a global scale, and is not an alternative but a necessary complement to the industrial transition.

In this context, the question has been asked as to whether more steel production is really needed. Steel is comparatively easy to reuse without any loss of quality, and it is also produced in large quantities, more than any other industrial material. But the economic equalisation underway in the world, with significant growth in previously low- and lower-middle-income countries, means that more ore-based steel will still be needed in the coming decades even if its use could be made completely circular.

All investments entail risks – for companies as well as the wider society

Of course, large-scale commercial investments also entail risks, especially when it comes to developing novel, untested industrial processes and value chains. This is true not only for the companies involved, but for the relevant municipalities and regions and, to a certain extent, the state.

As can be understood from the discussion in section 11.3, the Climate Policy Council believes that the state has a major role to play in the industrial transition. The Swedish government does not act in isolation, but in a European and global context where other governments provide significantly more generous subsidies for similar industrial investments. Within the EU and in global economic cooperation, the Government should work to ensure that there is no inflated subsidy race between countries and regions that risks making the socio-economic cost unnecessarily high and not benefitting the global climate transition.

The climate transition will not happen unless both private investors and political leaders are prepared to take investment risks. The goal trade-offs we have discussed in this report also include balancing different risks in decision-making. The major investments now taking place in upper Norrland are basically being made because commercial investors have assessed them as profitable in the long term and the conditions more favourable here than in alternative locations.

As stated above, the five recommendations presented by the Climate Policy Council ahead of the climate policy action plan in the 2022 report remain valid, and are highly relevant for the industrial transition in upper Norrland. The development itself, and the high pace of change, have already set good examples of well-developed planning processes, new forms of collaboration and cooperation among government agencies. This is true for regional stakeholders, even elsewhere in Sweden, and national agencies alike. It is essential for the Government to take advantage of this development and ensure that more regional experiments can be carried out and that best practices can be disseminated and leveraged.

RECOMMENDATIONS

- Continue to develop good examples of planning processes and forms of collaboration that can help to accelerate the transition while better leveraging synergies and making trade-offs among competing interests.

Glossary

This glossary contains general definitions that help readers to understand the present report, and should not be considered as terminology established by the Climate Policy Council.

2030 Agenda: An agenda adopted by UN member states, containing 17 sustainable development goals (SDGs).

BECCS: Technologies for capturing and storing carbon from biomass combustion.

Bidding area: Bidding areas are used to divide up the electricity market in order to manage physical limitations in the national transmission grid. When the market demands more electricity than can be transmitted, this can entail different prices in different bidding areas. Sweden is divided into four bidding areas.

Bioeconomy: An economy designed to advance society through a sustainable use of biological resources. It aims to reduce climate impact and the use of fossil fuel inputs.

Carbon dioxide equivalent (CO2e, CO2-eq.): A unit of measure reflecting the climate impact a greenhouse gas contributes converted into the amount of carbon dioxide that would have the same impact on the climate. The conversion is done so that emissions of different greenhouse gases, which have different impacts on the climate per unit of weight, can be compared with each other.

Carbon sink: A mechanism or process that absorbs more carbon dioxide from the atmosphere than it releases, increasing the amount

CBAM: Carbon border adjustment mechanism. An EU-wide mechanism that will impose border taxes on certain products entering the EU in order to protect EU businesses when requirements under the EU emissions trading system are tightened. The purpose of CBAM is to create competitive neutrality between companies inside and outside the EU.

CCS: Carbon capture and storage. Technologies for capturing and storing carbon dioxide from major point sources, such as incineration plants, power plants and process industries.

Climate neutrality: Means that there is a balance between greenhouse gas emissions and carbon dioxide removals from the atmosphere in natural or managed systems (e.g. forests) or BECCS.

Climate policy: Policies which, in whole or in part, have a stated aim to reduce society's climate impact.

Climate policy framework: A framework adopted by the Swedish parliament in 2017 consisting of three components: the Climate Act, climate targets and the Climate Policy Council.

of stored carbon. Important natural sinks are the world's oceans and forests.

COP: Conference of the Parties. Regularly scheduled conferences where representatives of the Parties to the UFCCC meet and take decisions.

Cross-Party Committee on Environmental Objectives: A parliamentary committee established by the Government in 2010 to achieve broad political consensus on various climate and environmental issues. The task of the Committee is to propose how the environmental

quality objectives should be achieved through politically anchored proposals for strategies, with interim targets, policy instruments and measures.

Electrofuels: A generic name for fuels produced using electricity as the main source of energy. The simplest electrofuel is hydrogen gas, which is produced through the electrolysis of water. Hydrogen can also be combined with carbon or nitrogen atoms for other electrofuels.

ESR: Effort Sharing Regulation. An EU regulation regarding emissions from the sectors not covered by the EU ETS (transport, agriculture, non-ETS industry, etc.), which are sometimes called non-trading sectors. This regulation includes binding targets for the member states.

EU ETS: EU Emissions Trading System. It covers emissions from energy intensive industries and large-scale electricity and heat production facilities, and from aviation.

Fit for 55: The European Commission's reform agenda enabling achievement of the target for reducing net emissions by 55% by 2030. The package contains different regulations that have been decided or are being negotiated in the EU.

Flexibilities: Mechanisms that an EU member state can use to meet the emission reductions imposed on them by the ESR. The mechanisms include borrowing and saving emission allocations, transfers between member states, the use of EU ETS allowances and the use of net LULUCF removals.

Greenhouse gas emissions: In the climate report to the UN and in Sweden's and the EU's climate goals, GHG emissions include carbon dioxide, methane, nitrous oxide and fluorinated gases.

IPCC: Intergovernmental Panel on Climate Change, the UN's Climate Panel. An intergovernmental organisation established in 1988 by two UN agencies, the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP). The purpose of IPCC is to summarise current scientific knowledge of climate change, its effect and potential solutions.

Kyoto Protocol: An international agreement from 1997 under the UNFCCC for reducing greenhouse gas emissions. The first commitment period was 2008–2012 and the second period was 2013–2020. Initiatives under the Kyoto Protocol were completed in 2022.

LULUCF: Land use, land-use change and forestry. A sector in climate reporting where carbon stock changes (emissions and removals) in vegetation and soil for different soil types and in harvested wood products are reported. Carbon stock changes are calculated for all land types that are considered to be managed, i.e. human-affected. Often called the land use sector. Regulated within the EU by the LULUCF Regulation.

Net-zero emissions: The balancing of greenhouse gas emissions and removals. See also *climate neutrality*. A strategy for net-zero emissions aims at reducing emissions as far as possible, and what is nevertheless emitted is compensated by removals in forests and land or by using BECCS.

Negative emissions: When the removal of carbon dioxide in the land use sector or via BECCS exceeds greenhouse gas emissions in society.

Net removal of greenhouse gases: In the LULUCF sector, the difference between total removals and greenhouse gas emissions.

Paris Agreement: A global climate agreement agreed at COP21 in Paris in 2015. Among other things, the agreement states that global warming should be kept well below two degrees Celsius, but preferably limited to 1.5 degrees, above pre-industrial levels.

Reduction obligation: An instrument requiring fuel suppliers to reduce greenhouse gas emissions from petrol and diesel by a specific percentage each year, through increased blending of renewable fuels or biofuels.

Renewable energy: Energy from sources replenishable energy sources, such as solar and wind power as well as sustainably used biomass.

Renewable fuels: Fuels produced from renewable raw materials. Some examples are ethanol, biogas and biodiesel.

REPowerEU: A plan presented by the European Commission in spring 2022 to reduce Europe's dependence on fossil fuels from Russia, in response to Russia's invasion of Ukraine.

Supplementary measures: Within Sweden's climate policy framework, these are additional measures that may be used to compensate for remaining emissions. Examples of supplementary measures include increased carbon removals in forests and land, BECCS, and investments in emission-reduction measures in other countries. Within this framework, interim targets may be achieved with a limited amount of supplementary measures.

Tidö Agreement: A written agreement among the Sweden Democrats, the Moderate Party, the Christian Democrats and the Liberal Party that formed the basis for appointing Ulf Kristersson to form a new government following the 2022 general election. The agreement was signed at Tidö Castle.