

The Swedish Climate Act

Fact sheet

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and Nuclear Safety



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The information and views set out in this study are those of the author(s) and do not necessarily reflect the official opinion of the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety.

This study is based on a policy paper with an overview of greenhouse gas emission reductions and policy instruments in non-ETS sectors across Europe (hereafter referred to as 'Policy Paper'). The Policy Paper can be downloaded from the EUKI website <https://www.euki.de/beacon/>.

ABBREVIATIONS

COP 21	21st Conference of the Parties of the United Nations Framework Convention on Climate Change
ESD	Effort Sharing Decision
ESR	Effort Sharing Regulation
ETS	Emissions Trading System of the European Union
EUR	Euro(s)
GDP	Gross domestic product
GHG	Greenhouse gas(es)
GNP	Gross national product
gCO ₂ e/kWh	Grams of carbon dioxide equivalent per kilowatt hour
gCO ₂	Grams of carbon dioxide
IPCC	Intergovernmental Panel on Climate Change
LULUCF	Land use, land use change and forestry
MtCO ₂ e	Megatons of carbon dioxide equivalent
NGO	Non-governmental organisation
OECD	Organisation for Economic Co-operation and Development
PPP	Purchasing power parity
RNE	<i>Rat für Nachhaltige Entwicklung</i> , Council for Sustainable Development
SEK	Swedish krona (national currency)
SRU	<i>Sachverständigenrat für Umweltfragen</i> , Advisory Council on the Environment
tCO ₂ e	Tons of carbon dioxide equivalent
UK	United Kingdom
UNFCCC	United Nations Framework on Framework Convention on Climate Change
USD	United States Dollar
WBGU	<i>Wissenschaftlicher Beirat der Bundesregierung Globale Umweltveränderungen</i> , Advisory Council on Global Change

TABLE OF CONTENTS

1. Summary	1
2. Introduction to Sweden’s climate policy framework	2
3. National context	3
3.1 Legislative and political context.....	3
3.2 Sectoral overview and national climate policy.....	3
4. General description of the Law	6
4.1 History	6
4.2 Functioning	6
4.3 Interlinkages with other policy instruments	7
5. Impacts of the Law	9
5.1 Effectiveness	9
5.2 Cost efficiency	9
5.3 Co-benefits and side-effects	10
5.4 Success factors and challenges.....	11
6. Transferability	13
6.1 General comparability of the context.....	13
6.2 Properties of the instrument	14
6.3 Potential impacts	15
6.4 Conclusion.....	15
7. References	17

1. SUMMARY

The new Swedish climate policy framework was adopted by a broad political majority in 2017 and rests on three pillars: 1) upgraded national climate targets and milestones up until 2045, 2) a Climate Act establishing an enhanced climate governance framework; and 3) the creation of an independent Climate Policy Council with a mandate to assess government policy against climate targets.

More specifically, the Climate Act stipulates a set of climate reporting obligations for the government, including a climate report to be presented with the yearly budget bill, a requirement to align climate policies and budgetary decisions as well as a climate action plan to be developed every four years. The act also requires government climate policy to be in line with Sweden's long-term climate targets and with climate science.

When designing the climate policy framework, Swedish lawmakers were inspired by similar schemes existing in the EU such as the UK's Climate Change Act. Regarding the Climate Policy Council, they also drew on Sweden's budgetary policy framework which was introduced to prevent legislative bodies from exceeding certain limits to achieve a budget surplus over the long run.

The key elements of the Climate Act and the Swedish climate policy framework are well suited to be transferred and adapted to the German context. In fact, the German government is already drafting a proposal to introduce a climate change law, to be presented in 2019.

While it is still early to appreciate the full impact of Sweden's climate policy framework, the available evidence shows that Germany would benefit from introducing a climate change law. Institutionalising climate targets and governance procedures in a legal act would strengthen the credibility of national commitments and increase regulatory stability and predictability, particularly if such a framework can be agreed across party lines and enjoys broad support in society.

A climate change law should also help mainstream climate considerations across all relevant policy domains. This is particularly the case if it includes sectoral emission reduction targets such as those already formulated in the Climate Action Plan 2050. Including climate reporting in the budgetary process like in Sweden could be an additional way of ensuring that policies in various sectors are consistent with climate targets and backed with respective budgets.

Moreover, the reporting and review processes that climate change laws typically stipulate can be expected to increase government accountability for pursuing policies in line with long-term climate planning. Combined with an institutionalised expert commission, these should make sure that climate action is a constant topic on the political agenda as well as in the public debate.

In the end, a climate change law will however only institutionalise the framework in which implementing policies will need to deliver the actual emission reductions. The overall effectiveness of such a framework will thus very much depend on the specific policy instruments to be enacted or reformed. Yet, a climate change law should facilitate the adoption of those measures that have a comparatively higher emission reduction potential by providing a clear, transparent and widely accepted framework of targets, procedures and institutions.

2. INTRODUCTION TO SWEDEN'S CLIMATE POLICY FRAMEWORK

Adopted in 2017, the Swedish climate policy framework rests on three pillars:

1. upgraded national climate targets and milestones up until 2045,
2. a Climate Act establishing an enhanced climate governance framework,
3. the creation of an independent Climate Policy Council with a mandate to evaluate how the policy of the Swedish government is compatible with the long-term climate goals.

The climate policy framework is a key component of Sweden's efforts to implement the Paris Agreement. Its central target is to achieve zero-net greenhouse gas (GHG) emissions by 2045, five years early than planned in Sweden's Integrated Climate and Energy Policy, which was adopted in 2009. By 2045, domestic emissions are to be reduced by at least 85% compared to 1990 levels, the remaining share can be saved by increasing absorption from carbon sinks or through investments in climate projects abroad. After 2045, Sweden is to achieve negative emissions, meaning that its GHG output should be less than the amount of greenhouse gases absorbed by the natural ecocycle or saved by climate projects abroad. Based on current population forecasts, this means that emissions would need to drop below one tonne per person by 2045, compared to 5.6 tCO_{2e}/capita and an EU average of 8.7 tCO_{2e}/capita in 2016 (Eurostat, 2018).

The framework also sets out the following intermediary targets:

- lower GHG emissions in the sectors covered by the EU Effort Sharing Regulation (ESR) by at least 63% by 2030, compared to 1990 (with at least 55% less domestic emissions); while Sweden's EU commitment under the ESR is to reduce non-ETS emissions by 40% compared to 2005 levels,
- reduce the carbon output from domestic transport (excluding aviation) by at least 70% by 2030 compared to 2010,
- decrease GHG emissions in the sectors covered by the EU ESR by at least 75% by 2040 compared to 1990 (with at least 73% less domestic emissions) (Government Offices of Sweden, 2017a).

As a major component of the framework, the Climate Act entered into force on 1 January 2018. Its key provisions include:

- the government's climate policy must be in line with Sweden's long-term climate targets and with climate science,
- the government is required to present a climate report in its yearly budget bill,
- climate policy goals and budget policy goals need to be aligned,
- every fourth year, the government is required to draw up a climate policy action plan, detailing how the climate goals are to be achieved (Government Offices of Sweden, 2017a).

The third pillar of the framework is the Climate Policy Council, a board of independent academic experts from multiple backgrounds with a mandate to assess government policies against Sweden's long-term climate targets. Its yearly report is to serve as a compliance check and to inform the public debate on climate action.

3. NATIONAL CONTEXT

3.1 Legislative and political context

Sweden has a parliamentary form of government, meaning that all laws are passed by the *Riksdag*. After each election, the speaker of the *Riksdag* proposes a new prime minister who is subsequently appointed by the Parliament and tasked with forming a government. According to the Swedish constitution, Parliament can appoint the new government if there is no opposing majority. Combined with Sweden's multi-party system, this has led to minority governments being formed on several occasions (Government Offices of Sweden, 2014). This was also the case for the 2014-2018 governing coalition which was formed by the Social Democrats and the Greens.

The state budget is adopted every year in September when the government submits its proposal for its budget bill for the next year to the *Riksdag*. Leading up to this proposal is a long process that starts with the finance ministry's economic forecast in December, followed by the fiscal policy bill for the coming years presented in April, which subsequently guides the more detailed budgeting work of the ministries feeding into the final budget bill (Government Offices of Sweden, 2014).

On the regional level, Sweden is divided into 21 counties, each of which has a regional government authority; the county councils are the regional assemblies elected by the people. Their competencies are governed by the Local Government Act and consist primarily of health care. Since 2008, they have also been charged with county-level coordination of the implementation of climate change mitigation and renewable energy policies (Government Offices of Sweden, 2014). County authorities also develop and implement regional action plans in collaboration with stakeholders (Swedish Environmental Protection Agency, 2017a).

In recent history, Swedish party politics were characterised by an opposition of two blocs competing for office: on the one hand, the *Alliance*, formed by the conservative and liberal parties that governed the country from 2006 to 2014, and the Social Democrat, left and green camp on the other, led by the Social Democrats. Neither of the two blocs obtained the majority in the 2018 elections however, so forming a coalition government has become significantly more complicated.

In the face of the heatwave and the wildfires in the summer of 2018, the climate issue attracted increased attention again in the run-up to the recent elections. The public debate had previously centred around themes of immigration, integration, and crime. The impact of the 2018 elections on Sweden's climate policy remains yet to be seen. As the only party that voted against the ratification of the Paris Agreement and that has denied man-made climate change in the past, the Sweden Democrats achieved their best electoral result in history in the 2018 elections. Yet they still only rank third in number of votes received – less than expected by some forecasts – and it seems unlikely that they will directly participate in a coalition government considering the reluctance of all other parties to cooperate with them. Consequently, observers agree that the key features of Sweden's climate policy framework are likely to remain in place for the foreseeable future (Climate Policy Council, 2018).

3.2 Sectoral overview and national climate policy

Sweden has been a pioneer in international climate and environmental policy and was one of the first signatories to ratify the Kyoto Protocol at the turn of the millennium. The country has the lowest ratio of GHG emissions per GDP and the second lowest ratio of GHG emissions per capita of all EU Member States (European Environment Agency, 2018). From 1990 to 2015, its greenhouse gas output, excluding emissions and removals from land use, land use change and forestry (LULUCF), fell by 25%. In 2020, aggregated emissions are projected to be 30% below the 1990 baseline, with a

further reduction to 36% expected by 2030 (Swedish Environmental Protection Agency, 2017a). With 63% of Sweden under (productive and unproductive) forest cover, forests (trees and soil) account for a significant uptake of CO₂ emissions. The size of the carbon sink fluctuates over time but has nevertheless increased by approximately 20% between 1990 and 2015.

The energy sector is still the largest emitter in Sweden with 73% of total emissions in 2015 if energy-related emissions from transport and from manufacturing industries and construction are included. Agriculture and industrial processes (and product use) accounted for 13% and 12% of Sweden's total GHG emissions in 2015 respectively (Swedish Environmental Protection Agency, 2017a).

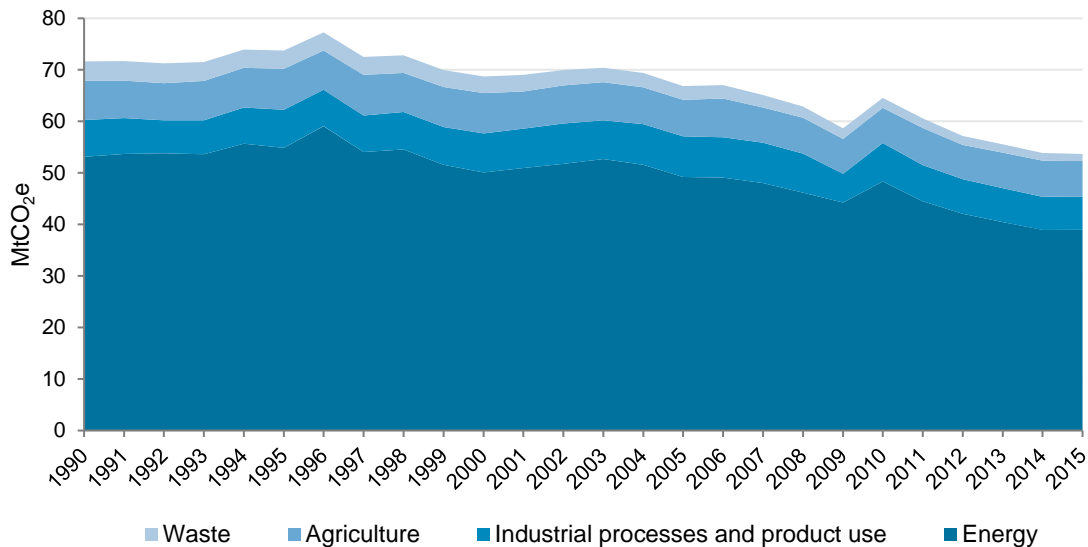


Figure 1: Development of GHG emissions in Sweden (1990 - 2015)
(Swedish Environmental Protection Agency, 2017a)

Sweden's electricity mix has a comparatively low carbon intensity. In 2016, 57% of Sweden's electricity came from renewable energy sources, especially hydropower (40%), although wind power has achieved significant growth in the last ten years (SCB, 2017). Nuclear power plants contributed another 41% to electricity generation (International Energy Agency, 2017). On the other hand, transport, agriculture and energy intensive industries are considered to be the most challenging sectors for reducing carbon emissions (Cross-Party Committee on Environmental Objectives, 2016).

In 2009, Sweden adopted its Integrated Climate and Energy Policy, aiming for a 40% reduction of GHG emissions by 2020 compared to 1990 for the sectors not governed by the EU ETS, excluding LULUCF. While the country is on track to meet its 2020 objective, this domestic target in fact already exceeded the Sweden's commitment under the Effort Sharing Decision – one of the most ambitious in the EU – which stipulated a 17% emission reduction target for 2020 against a 2005 baseline (Government Offices of Sweden, 2017b). The graph below shows how Sweden is overachieving its annual ESD targets with its non-ETS emissions already below the 2020 target.

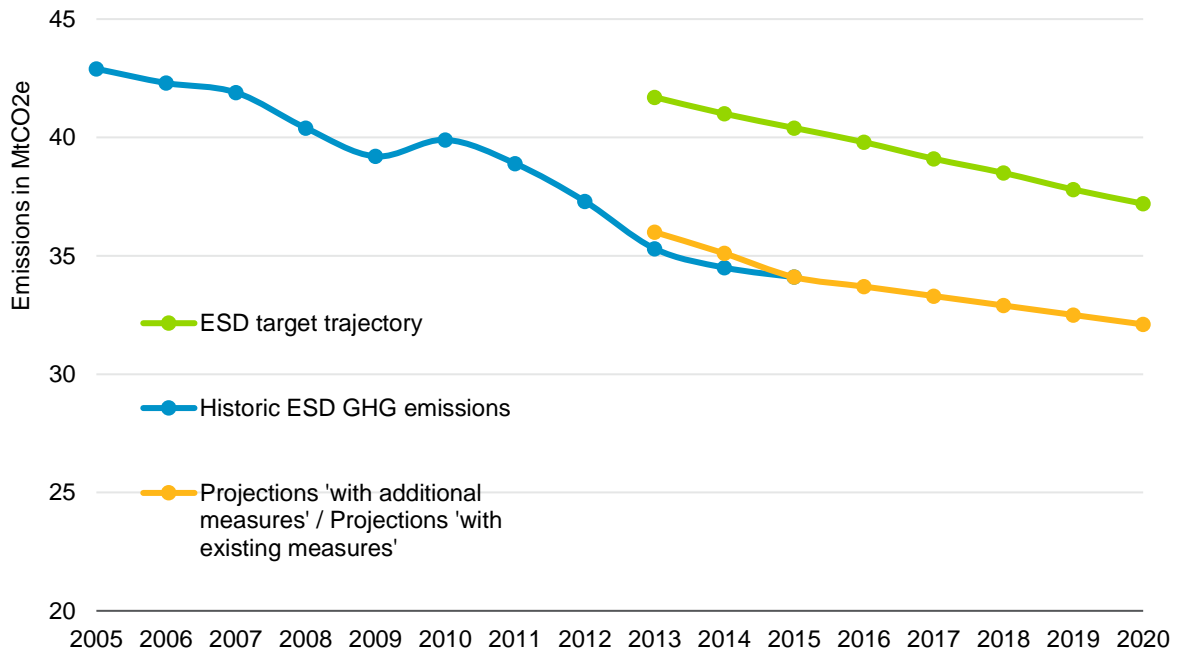


Figure 2: Trends, projections and targets of Sweden's greenhouse gas emissions in the ESD sectors (2010 - 2020), adapted from (European Environment Agency, 2016) and (European Environment Agency, 2018)

This is particularly impressive given the already low emission intensity in Sweden and an economy that grew by 20% between 2005 and 2015, pointing to significant reduction in carbon intensity. According to the new ESR, Sweden, Luxembourg and Norway will have the most ambitious GHG reduction target in Europe for 2030. By then, emissions in the non-ETS sectors are to be reduced by 40% compared to 2005.

The two key instruments of Swedish climate policy to reduce emissions have been the energy and carbon dioxide taxes (Government Offices of Sweden, 2017b). The national CO₂ tax was introduced as early as 1991 and is by far the strongest CO₂ price signal in the world (World Bank, 2017). The Swedish carbon tax currently covers all energy-related carbon emissions that do not fall under the EU ETS. In addition, Sweden introduced a CO₂ tax on aviation in April 2018, which increases ticket prices by SEK 80 to 430 (EUR 8 to 42), depending on the distance covered, and is supported by more than half of the population (The Local, 2018). Moreover, a cross-party framework agreement setting a target for achieving 100% renewable electricity generation by 2040 was decided in June 2016 (Government Offices of Sweden, 2017d).

Additional measures were introduced to supplement the tax instruments, such as an electricity certificates system, technology procurement, a differentiated annual vehicle tax, investment grants as well as legislation related to bans, standards and urban planning (Government Offices of Sweden, 2017b). For the 2018 budget, SEK 5 billion (EUR 485 million) was earmarked for environmental and climate protection measures, more than twice as much compared to 2014 (Government Offices of Sweden, 2017c).

Sweden's ambitious climate policy is supported across party lines and by a large majority of the population. About three quarters of the population regard climate change as one of the biggest challenges in the future, compared to slightly over 50% in Germany (Eurobarometer, 2017).

4. GENERAL DESCRIPTION OF THE LAW

4.1 History

Introducing a climate policy framework in Sweden was first proposed by the Green Party in 2012 but since then the idea has been taken forward also by other parties in several motions in Parliament. In 2014, the newly elected minority government formed by the Social Democrats and the Greens, announced its plans to introduce a climate policy framework and tasked the Cross-Party Committee on Environmental Objectives with drafting a proposal for a climate framework and a long-term climate strategy for Sweden. This standing committee is constituted by Members of Parliament from all parties represented in the *Riksdag*, except for the far-right Sweden Democrats (who did not express any interest in joining it), and also involved experts from the business community, civil society and other government bodies (Romson, 2017).¹ At the end of over one year of work, the committee agreed on most elements of the climate policy framework unanimously. Based on the agreement in the committee, the government submitted its proposal for the new framework to the *Riksdag*.

The broad political backing for the reform expressed in the cross-partisan committee carried through to the parliamentary debate and vote. In June 2017, *the Riksdag* adopted the climate policy framework, comprising the Climate Act, the new climate targets, and provisions to establish an independent Climate Policy Council, with a large majority of 254 against 41 votes (UNFCCC, 2017). With the objective of achieving net-zero greenhouse gas emission by 2045, the framework sets out the implementation of the Paris Agreement and is considered the most important reform of Sweden's climate policy in history. The Climate Act subsequently entered into force on 1 January 2018 (Government Offices of Sweden, 2017a).

With the new climate framework, Sweden endeavours to continue its long history of climate leadership. Sweden was one of the first countries to enact a carbon tax and has the lowest carbon intensity of any economy in the EU.

4.2 Functioning

The key function of the Climate Act (Govt. Bill 2016/17:146) is to establish a governance framework that ensures Sweden's long-term climate objectives are met. As such, the Climate Act does not prescribe any specific measures nor quantified emission reduction targets itself. As part of the climate framework, the targets were adopted with the same majority by a *Riksdag* decision together with the Climate Act. Not including the targets directly in the Climate Act was due to formal reasons since Swedish parliamentary tradition goes against cementing such targets in dedicated legislation. Yet, the *Riksdag* decision on the climate targets is expected to guide government action in the same way as could be expected from a dedicated legal act (Swedish Environmental Protection Agency, 2018).

The Climate Act stipulates in general terms that the government's climate policy must pursue the aim of preventing hazardous interference in the climate system by curbing greenhouse gas emissions, in addition to protecting the ecosystem and the living. If needed to attain the long-term objectives, the government would also have to adopt additional reduction targets to meet the long-term objectives. Moreover, the government's climate policy has to be in line with climate science and should reflect the "relevant technical, social, economic and environmental considerations", according to the provisions of the Climate Act.

¹ The committee was established to advise the government on how to achieve environmental objectives and, in cooperation with affiliated agencies, to develop proposals for strategies to achieve them, including milestone targets and policy instruments.

In terms of governance, a major innovation of the act lies in its aim to align climate policy with budgetary objectives and the budgetary cycle. In this view, the Climate Act requires the government to present a climate report every year together with its budget bill. This report must include: 1) a description of emission trends, 2) an account of the key climate policy decisions made during the year, 3) an assessment of whether additional measures are needed and, if so, when and how decisions on these measures may be taken. The underlying objective of including this reporting obligation in the budgetary process was to create visibility and political momentum to adopt a state budget that is in line with national climate commitments. Yet, there is no formal requirement that prescribes how the different expenditure areas are budgeted based on the climate targets. What impact this reporting obligation can have in practice remains to be seen as no such report has been submitted at the time of writing.

In addition to the yearly climate report, the government has now also an obligation to draw up a climate policy action plan every four years in the year following ordinary elections of the *Riksdag*. This action plan must address the following aspects:

1. Sweden's EU and international climate commitments
2. Historical data on greenhouse gas emissions, including the most recent emissions inventory
3. Emission reduction projections
4. The outcome of any emission reduction measures adopted
5. Planned emission reduction measures, including an approximate indication of when these measures may come into force
6. An assessment of adopted and planned emission reduction measures regarding the extent to which they can be expected to contribute to the achievement of national and global climate targets
7. An assessment of adopted and planned measures in different expenditure areas regarding their effect on Sweden's ability to achieve its national and global climate commitments
8. An account of any further measures or decisions that may be needed to achieve the national and global climate targets.

By stipulating long-term target trajectories and governance procedures in the climate policy framework, lawmakers took inspiration from Sweden's fiscal policy framework which was introduced to ensure sustainability of public finances by preventing legislators from exceeding budgetary limits such as a surplus target and an expenditure ceiling (Romson, 2017). In the same way, the fiscal policy framework was also referred to as a model for strengthening oversight and external monitoring of government climate policy. For instance, the Climate Policy Council emulates the Fiscal Policy Council as an independent expert body to review government action against enshrined long-term goals (Swedish Ministry of the Environment and Energy, 2018). The obligation to present a climate report also resembles similar provisions in the fiscal policy framework, notably the requirement to issue a communication to Parliament to explain how deviations from debt targets will be managed if they occur.

4.3 Interlinkages with other policy instruments

Looking at interlinkages with domestic policy instruments, it is clear that the Climate Act cannot be viewed in isolation from the broader climate policy framework. Apart from setting the general goal of reducing anthropogenic interference in the climate system, the Climate Act only spells out the governance procedures within which the government must pursue its climate policy. Therefore, in both its adoption and implementation, the Climate Act is closely linked to the long-term targets and

milestones adopted by the *Riksdag*, namely to achieve zero-net carbon emissions by 2045 and net negative emissions afterwards. The same goes for the newly established Climate Policy Council, which is a key actor to ensure compliance and hold the government accountable with regards to the climate targets.

Which specific policy measures will need to be adopted or reformed to implement the framework's objectives is however still to be defined by the legislative bodies. In 2019, the government will need to outline which instruments it intends to put in place or adapt and should also assess their emission reduction potential when submitting its first climate action plan. Generally, the Climate Act can be expected to have strong interplays with all policies targeting the GHG emitting sectors of the economy, notably renewable energy and energy efficiency policies as well as transport, distributed heating, agriculture and waste when it comes to the non-ETS sectors. The transport sector is addressed specifically with the framework's target to reduce Sweden's emissions from domestic transport by at least 70% by 2030 compared to 2010 (excluding domestic aviation). In line with this, the cross-party committee already recommended raising the carbon tax for the sectors outside the ETS in the future (Cross-Party Committee on Environmental Objectives, 2016).

Interestingly, the climate policy framework was also advocated to influence the review of the EU's climate and energy framework for 2030, as set out in the *Clean Energy for All Europeans Package* proposed by the European Commission in 2016. As stated in the cross-party committee's proposal for the Swedish climate framework, the aim was to raise the level of ambition not only of the Swedish but also of the EU's climate policy to better align the latter with the Paris Agreement. Correspondingly, the committee also called for a faster reduction of the cap for the total emission in the ETS (Cross-Party Committee on Environmental Objectives, 2016). Under the EU's ESR adopted in May 2018, Sweden has committed to reducing its greenhouse gas output in the sectors not covered by the ETS by 40% by 2030 against a 2005 baseline; compared to 1990, Sweden will need to achieve a 63% reduction of non-ETS emissions by 2030 under its new climate framework. The emissions relevant to this objective are mainly from transport, distributed heating, machinery, small industrial and energy plants, housing and agriculture (Government Offices of Sweden, 2017a).

5. IMPACTS OF THE LAW

Since the climate policy framework entered into force in early 2018, it is still very early to draw any robust conclusions with regards to its impact. How effective the framework will be in reducing Sweden's carbon emissions will largely depend on the specific policy instruments that will be reformed or adopted to achieve its climate targets, even if the framework should facilitate the implementation of those measures that have a significant emission reduction potential. This is even more important if we take into account that Sweden has already addressed many of the low-hanging fruits for reducing emissions, given its track record of ambitious climate action. The realisation of the need to engage in a deep and all-encompassing transition was in fact a key driver in establishing the new climate governance framework in the first place (Climate Policy Council, 2018). Given all the above, it is only possibly at this point to sketch out the anticipated effects of the Climate Act.

5.1 Effectiveness

One of the major impacts the Climate Act is expected to have is to send out a firm signal about the direction of Sweden's climate and general government policy, thereby fostering long-term predictability, transparency and trust in its ability to meet the ambitious objectives. Of course, future political majorities are legally not prevented from reversing the current framework. Yet, it is expected to be politically more difficult to do so given the broad societal agreement on which it is based (Romson, 2017).

Part of the Climate Act's rationale is also to mainstream climate objectives across all policy and societal domains to facilitate the collective efforts needed to decarbonise the economy before mid-century. Bringing budgetary decisions as well as economic policies in line with long-term climate planning is expected to make a significant contribution to this. By combining the new targets with an enhanced governance framework, proponents of the bill aimed at pushing the business committee in particular to "recalculate and move more quickly towards sustainable solutions". The idea was to prevent businesses from waiting too long for the adoption of specific measures to change their economic model, thereby potentially allowing them to exploit the possibility of benefiting from fossil fuel technologies over time spans than would be compatible with the IPCC's 2 degrees target (Romson, 2017).

With the creation of the Climate Policy Council, Sweden's climate policy framework also provides for a compliance mechanism and an independent review of government policies. While the Council cannot initiate legal reviews, it is expected to increase public accountability of government policies (Romson, 2017). Indeed, the Council was given a broad mandate, allowing it to review not just the dedicated climate policy measures but the whole range of government action across all sectors it finds relevant. Accordingly, the Council's yearly report will feature a theme, e.g. transport, in addition to the general stock taking. In its current set-up, the Climate Policy Council is also seeking to actively engage with the *Riksdag* and to disseminate its assessment beyond government circles to the broader public (Climate Policy Council, 2018).

5.2 Cost efficiency

Ex-ante impact assessments of the climate policy framework were carried out by the Swedish Environmental Protection Agency and by the secretariat of the Cross-Party Committee on Environmental Objectives. However, their analysis of the economic efficiency of the framework concentrated on the long-term targets rather than on the Climate Act itself.

Even if such effects are difficult to quantify, the key benefit of the Climate Act should be to facilitate the implementation of climate policies and measures that have a greater cost efficiency over the long run compared to those that a government might otherwise adopt in during a four-year term of office. Expected administrative costs incurred from establishing the enhanced governance framework should be limited overall.

Regarding the 2045 target, the cross-party committee's impact assessment concluded that near-zero emissions could be achieved at the cost of a few percentage points of GDP per year, not including the incidental gains expected from improved health conditions. Yet, the committee also underlined that economic assessments of developments reaching 30 years into the future need to be "read with caution" and "results should primarily be seen as indications and qualified reasoning". For instance, the committee's assumptions built on the expectation that Sweden and the EU "are not alone in transitioning to low emissions and that similar governance exists in all economically important markets". Consequently, the committee's modelling concluded that the impact of the targets would not put Sweden at a disadvantage compared to the other OECD economies, considering that the latter would also take firm action to comply with the 2 degrees target (Cross-Party Committee on Environmental Objectives, 2016).

Regarding the intermediate target for 2030, the cross-party committee referred to analysis carried out by the National Institute of Economic Research which indicated that achieving the 2030 target of reducing non-ETS emissions by 63% compared to 1990 would come at a cost of 0.2% to 1.5% of GNP compared to the reference scenario. A yearly breakdown of the costs was not included in the assessment since this would largely be determined by the shape of the implementing policies. The committee's assessment also called for further analysis of the framework's economic impact, inter alia to gauge its redistributive effects and to identify options to mitigate these (Cross-Party Committee on Environmental Objectives, 2016). Importantly, the impact assessment also highlighted that the cost of inaction would exceed the investments required to mitigate climate impact (Swedish Environmental Protection Agency, 2018).

5.3 Co-benefits and side-effects

In terms of institutional practice, the climate framework's co-benefits should become much clearer once the government's reporting obligations really kick in, e.g. with the adoption of the 2019 budget as well as with the climate action plan and the Climate Policy Council's assessment due in 2019. Given the broad political majority that endorsed the new framework and its support in society, it seems likely that its long-term climate planning will indeed inform government decisions, potentially also in areas that go beyond the traditional realm of climate policy. The government's reporting obligations combined with the Climate Policy Council's review work should also foster a continuous public conversation on the appropriate instruments and measures to be adopted or reformed. Comparable legal frameworks such as the United Kingdom's Climate Change Act demonstrated that this is indeed a likely prospect.

In terms of environmental impacts, synergies can particularly be expected with regards to health and clean air policies. The exception with regards to specific decarbonisation policies is Sweden's strong reliance on biomass which can entail negative side-effects on air quality (cf. study on the Swedish carbon tax). Interestingly, the Cross-Party Committee on Environmental Objectives proposed the climate policy framework together with a clean air strategy, calling among other things, for intermediate targets to reduce air pollutants (Cross-Party Committee on Environmental Objectives, 2016).

Economically, the climate policy framework is intended to "create the conditions for business sector participation and a favourable investment climate for green jobs" (Government Offices of Sweden,

2015). Yet the framework's specific impacts on investments and job creation were not quantified as part of the impact assessment, the reason being that such effects would fundamentally depend on the policy measures to be implemented for achieving the targets (Swedish Environmental Protection Agency, 2018). Even in the absence of quantified estimations, however, the climate framework can indeed be expected to steer and foster investments by providing a credible and stable regulatory environment.

In addition, the cross-party committee also suggested to steer existing state support towards companies with a significant potential for reducing GHG emissions and spend a greater proportion of innovation funding on climate-relevant innovations (Cross-Party Committee on Environmental Objectives, 2016).

5.4 Success factors and challenges

The climate policy framework provides clear pathways for emission reductions and establishes governance procedures to ensure legislation is in line with long-term emission targets, in addition to providing for a compliance mechanism based on independent review. While the framework was agreed by a very broad political and societal majority, it does not imply that there is a political consensus on which specific policy instruments should be deployed to implement it. For instance, the 2014-2018 government advocated for introducing taxes on heavy-duty vehicles and aviation while the opposition favoured increasing the subsidies for electric vehicles instead. As argued by proponents of the framework, this only shows that the Climate Act does not limit the democratic powers of the legislative body but rather empowers sensitive debate on the best ways to achieve the overarching climate objectives (Romson, 2017). Eventually, the success of the framework would need to be evaluated against the effectiveness of the specific policies to deliver on the long-targets and milestones (and, crucially, their replacement and addition when existing policies are insufficient), against the extent to which climate considerations are taken up across all policy areas and the ability of the Climate Policy Council to ensure compliance.

Tasking the Cross-Party Committee on Environmental Objectives with developing the climate framework proved to be instrumental for achieving this broad agreement, which extends beyond institutionalised politics to society at large, notably by involving a broad range of actors including local communities, businesses, civil society organisations and researchers (Climate Policy Council, 2018). In its monthly meetings, the committee started with knowledge-building sessions to have a common understanding of the challenge at hand. The committee's agenda also included seminars on sector-specific challenges for emission reductions as well as study trips to the United Kingdom and to the UNFCCC's COP 21 in Paris. More success factors for the committee's work on the climate framework can be summarised as follows (Swedish Ministry of the Environment and Energy, 2018):

- The involvement of NGOs and experts gave politicians the courage to endorse ambitious objectives while industry recognised the political will for stronger commitments and increasingly embraced the opportunities that they would bring.
- Target setting was preceded by a thorough review of all possible measures for each sector while agreement on the ambitious targets was facilitated by the conservative scenario work carried out by respected government agencies, which showed that target achievement is realistic, with potentials for swift emission reductions at low costs.
- Exchanges and lessons learnt from similar schemes in other countries inspired the drafting process, particularly with regards to the UK's Climate Change Act. Seeing that the Conservative Party and the British business community hailed the Climate Change Act for its effects on long-term investment certainty was crucial and led to a Swedish business initiative, *Haga Initiativet*, to argue for a similar law in Sweden already in 2012 (Romson, 2017).

- Witnessing the adoption of the Paris Agreement provided the committee with a global outlook and gave it an additional boost by showing that Sweden would not be alone in transitioning towards a low-/ zero-carbon economy, reducing concerns about adverse effects on competitiveness.
- General acceptance for upgrading national targets was also bolstered by Sweden overachieving its existing climate targets (Climate Policy Council, 2018).

6. TRANSFERABILITY

6.1 General comparability of the context

Both Sweden and Germany are highly-developed industrialised economies, with similarly ambitious objectives for reducing GHG emissions. Importantly, they are also similar in their economic structure and both feature export-oriented industrial sectors. However, they have different starting points for the decarbonisation of their economies, with Germany emitting almost twice as much GHG per unit of GDP as Sweden.

Table 1: Key climate policy and economic indicators to assess comparability of the Swedish and German context (Sweden.se, 2018b), (UNFCCC, 2017), (Bundesministerium für Wirtschaft und Energie, 2017), (Statista, 2018a), (Statista, 2018b), (Central Intelligence Agency, 2018a), (Central Intelligence Agency, 2018b), (World Bank, 2018), adapted from the study on the Swedish carbon tax.

	Germany	Sweden	Comparability
General information			
GDP per capita (in USD, 2017)	44,549.69	53,248.14	Comparable
Exports (in billion USD, 2016)	1,322 (32.5% of GDP)	151.4 (33.9% of GDP)	Comparable
Climate policy ambition			
2020 GHG emission reduction goal (compared to 1990 in %)	As close as possible to -40	-40	Comparable
2030 GHG emission reduction goal (compared to 1990 in %)	-55	-63	Roughly similar
Long-term GHG emissions reduction goal (compared to 1990)	-80% to -95% by 2050	GHG neutrality by 2045	Roughly similar, Sweden with a steeper trajectory
Carbon intensity			
CO ₂ emissions per GDP (gCO ₂ per USD PPP of GDP), 2014	189	96	Not comparable
GHG intensity of electricity supply (gCO ₂ e/kWh), 2013	485	16	Not comparable

Institutionally, both countries compare well regarding their system of proportional representation and the central role played by Parliament in decision-making and government oversight, with the significant difference being that Sweden has only one chamber and the regions have fewer competencies. Political cultures are also similar in that they are characterised by the need to form coalitions and to find solutions via compromise. Moreover, both jurisdictions have a strong environmentalist tradition with an active role played by civil society, even though ambitious climate action enjoys overall greater support from society and business stakeholders in Sweden. More than in Germany, Swedish industry already adapted to the country's early and vigorous climate action and the country was also able to exploit its abundant hydro- and bio-energy potential.

Of all EU Member States, Sweden has the least carbon intensive economy, with the second lowest output of GHG emissions per capita in 2015 (European Environment Agency, 2018). By contrast,

Germany emits almost twice as much GHGs per unit of GDP than Sweden. This is notably because Germany's energy sector uses a higher share of fossil fuels and thus has a much larger carbon footprint. In addition, Sweden also benefits from large carbon sinks (i.e. forests) whose absorption capacity increased by about 20% between 1990 and 2015 and which accounted for an uptake of 46.6 MtCO_{2e} in 2015 (Swedish Environmental Protection Agency, 2017a).

Differences also emerge when looking at the current state of climate policy in the two countries. Sweden has already overachieved its ESD target for 2020 and is expected to come close to fulfilling its national target for reducing non-ETS emissions as well, which is to achieve a 40% reduction by 2020 compared to 1990, equating to a 33% reduction compared to 2005 levels. Correspondingly, Sweden's non-ETS emissions would need to drop to about 28.8 Mt in 2020. Against this domestic target, the Swedish Environmental Protection Agency expects an 0.8 Mt gap (Swedish Environmental Protection Agency, 2017b). At the same, Sweden is going to overachieve the EU ESD target of 17 % compared to 2005 (36.1 Mt in 2020) (EEA, Trends and Projections, 2018).

On the other hand, the German government recently had to acknowledge that the national target for 2020, i.e. to curb GHG emissions by 40% compared to 1990, will likely not be met. The EU ESD target of 14 % compared to 2005 will also be missed according to latest projections (EEA, Trends and Projections, 2018).

Consequently, much of the government's efforts now focus on making sure the climate objectives for 2030 and subsequently for 2040 and 2050 are met. In this view, the government adopted its Climate Action Plan 2050 ('Klimaschutzplan 2050') which sets out a comprehensive climate strategy to make Germany virtually greenhouse gas neutral by 2050. The action plan also includes an intermediate target for 2030 which is to bring down GHG emission by 55% compared to 1990 levels. For 2030, it furthermore translates the overall aims into sectoral targets such as reducing transport emissions by 40 to 42% compared to 1990.

6.2 Properties of the instrument

In light of the recent challenges encountered to fulfil the 2020 target in Germany, clear benefits in terms of regulatory certainty and confidence in target achievement can be expected from institutionalising climate commitments and governance². Since this is precisely what a climate change law aims for, the government is currently drafting a Climate Act for Germany, to be proposed in 2019. While the specifics of the proposal are yet to be seen, it appears likely that the act would comprise a set of quantified climate targets; potentially those already presented in the Climate Action Plan 2050. For 2030, these may even be broken down by sector (Müller, 2018). If so, the climate change law would go beyond the Swedish Climate Act regarding the way in which quantified targets are established – government policies would thus benefit from even clearer direction, thereby making it easier to monitor progress.

In addition, the future *Klimaschutzgesetz* could also be expected to include a set of governance and compliance provisions similar to those enshrined in Sweden's Climate Act. The Social Democrat's position paper for instance called for an independent climate commission to be established with a similar mandate as the Climate Policy Council in Sweden. Along these lines, a "*Klimakommission*" could conduct a continuous review and issue yearly reports, including policy recommendations to be submitted to Parliament.

Similar to the Swedish Climate Act, the government's climate reporting duties vis-à-vis the Parliament could also be further institutionalised and extended in Germany (SPD Fraktion). Currently, the government issues a yearly climate action report to examine the implementation and fulfilment of the

² The Greens had already pushed (unsuccessfully) for a climate change law in a motion in parliament back in 2014, including a CO₂ price, and independent climate commission and a requirement for the government to devise a climate action plan every four years (BT 18/1612).

set objectives, but submission to Parliament is not formalised. This yearly reporting scheme is to be extended beyond 2020 and could be further institutionalised by a climate change law. However, combining the budget bill with a climate reporting obligation would not be possible in the same way as in Sweden since the German constitution forbids the inclusion of matters in the budget bill that are not strictly budget related (Stiftung Umweltenergierecht, 2018). Yet, a requirement for the government to report on how the budget is compatible with long-term climate targets and how the budget would need to be adapted could still be introduced as part of the government's yearly report to Parliament as long as it is not directly linked to the budget bill (ibid.).

While the effectiveness of such provisions remains to be seen in practice, it appears to be promising way of mainstreaming climate considerations across all policy areas. For implementation, an additional question in the German context will be how the provisions of the national framework interact with the regional climate acts adopted by several *Länder*, also regarding the review process.

6.3 Potential impacts

It has been argued that many elements of the climate governance architecture that a climate change law would be likely to formalise are in fact already in place: quantified objectives to reduce emissions, including sectoral targets, have been adopted by government decision while the government's yearly monitoring reports are discussed and evaluated by an expert board whose members have been quite outspoken in their warnings that Germany would not meet its national 2020 target (Müller, 2018).

However, institutionalising climate governance in a dedicated Climate Act would restore confidence in Germany's ability to fulfil its climate commitments, which is the core objective of such legislation. Laying down national climate targets and governance in a legislative act is likely to raise the profile of climate policy and should also keep the topic on the political agenda over time thanks to regular reporting and review processes. Similar to the Swedish Climate Act, it would be expected that such a framework increases government accountability, even if the compliance mechanism is ultimately limited to a naming and shaming exercise.

Even if the economic effects of such a framework law are difficult to quantify ex-ante, a climate change law can be expected to increase investment certainty and over the longer term, to steer capital towards low-carbon sectors, thereby facilitating the transition to a decarbonised economy. A climate change law should also help legislative bodies take measures that exhibit a greater cost efficiency over the long run, extending beyond their present term of office.

On the policy level, such a framework should also help to identify problematic trends in due time and trigger corrective action if needed, particularly if the bill stipulates not only general objectives but also clear sectoral emission reduction targets, such as those in the government's Climate Action Plan 2050. Of course, a German climate change law would not prevent discussions about the most suited climate policy measures and instruments, but it would rather set the framework for such debate – similar to the Swedish case. Achieving the emission reductions aimed for will thus still depend on the political will and ambition to implement the specific policy instruments required to do so.

6.4 Conclusion

While it is still early to appreciate the full impact of Sweden's climate policy framework, the available evidence – including from other examples such as the UK's Climate Change Act – shows that Germany would benefit from introducing a climate change law. Institutionalising climate targets and governance procedures in a legal act would first and foremost strengthen the credibility of national commitments and spur confidence in its ability to achieve them. The expected long-term stability and

predictability of such a framework would be even higher if it is based on such a broad political and societal agreement as in the Swedish case.

Secondly, a climate change law should also be instrumental in mainstreaming climate considerations across all relevant policy domains, particularly if reference is made to the sectoral emission reduction targets such as those already formulated in the Climate Action Plan 2050. Including climate reporting obligations in the budgetary process as in Sweden could be an effective way to ensure that policies are consistent with climate objectives on a continuous basis and that climate action is backed by an adequate budget. In general terms, a climate change law also reflects the political recognition of the need for a broad societal transition towards a low-carbon economy.

Third, the regular reporting and review processes typically laid down in a climate change law can be expected to increase government accountability regarding the performance of its climate policy. Combined with an institutionalised expert commission, these should make sure that climate action is a constant topic on the political agenda as well as in the public debate.

Fourth, a German Climate Act should also strengthen investment certainty for the business community by setting out a clear long-term perspective. Together with implementing policies, it should also help to steer investments towards low-carbon sectors in a cost-efficient way.

In the end, a climate change law alone is not a panacea for addressing the climate challenge. Key to delivering the actual emission reductions will be the more specific implementation of policies and measures. Yet, a climate change law could facilitate their adoption and bolster climate ambition of individual policy instruments by providing a clear, transparent and widely accepted framework of targets, procedures and institutions.

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