

# Summary

## **1 Remit, delimitations and supporting data**

The Climate Committee was commissioned to undertake a broad review of Swedish climate policy as a basis for the 2008 Climate Strategy CheckPoint. In accordance with its terms of reference, the Committee has focused on drawing up proposals primarily in the following three areas:

- Climate policy targets for the short, medium and long term
- An action plan for achieving the 2020 emission target
- Swedish action in international climate negotiations

The Committee has not specifically addressed issues arising in connection with adaptation and vulnerability as this fell within the remit of the Climate and Vulnerability Inquiry. Although the Committee regards energy efficiency enhancement as a vital action area, its energy efficiency enhancement proposals are based on the action plan by the Energy Efficiency Inquiry. A long-term energy policy is crucial to Sweden's prospects of achieving its climate policy goals. The Committee, which has accordingly addressed climate-related energy issues to a limited extent, considers that the Government should initiate a parliamentary discussion on long-term energy policy.

As the Committee's remit was broad and the time frame limited, its findings were based on background data and material that had either been compiled earlier and were not yet complete, or already existed. A key source for the Committee's climate policy proposals was the report *A Scientific Basis for Climate Policy*, presented by the Scientific Council on Climate Issues in September 2007. The Council's conclusions were in turn based largely on scientific data compiled by the UN Intergovernmental Panel on Climate Change (IPCC). In the final stages of its inquiry, the

Committee also had access to the European Commission's climate action and renewable energy package, presented in January 2008. Most of the proposals included in the action plan for achieving the 2020 emission target were based on the background report *Developments in Swedish Climate Strategy*. This was drawn up in June 2007 by the Swedish Environmental Protection Agency (EPA) and the Swedish Energy Agency, ahead of the 2008 Climate Strategy CheckPoint.

The report is accompanied by a number of reservations and special opinions.

## **2 The challenge facing the world, the EU and Sweden**

The scientific data produced by the Scientific Council on Climate Issues is endorsed by the Committee. The earth's surface has become warmer, and it is very likely that this has been caused by human activity. Global mean temperature has risen by just over 0.7°C in the last 150 years, and is currently increasing by almost 0.2°C every decade. Unless vigorous measures are taken now the global mean temperature will continue to rise, with serious consequences for ecosystems and human society. Climate change must be viewed in the broader context of the danger of approaching crisis in many ecosystems around the world. Climate change measures must be part of a larger transition to a society capable of safeguarding ecosystems and biological diversity and of achieving and sustaining a reduction in greenhouse gas (GHG) emissions. The challenge facing the world is twofold: we must limit GHG emissions and implement measures to deal with climate changes already taking place.

The Committee takes the view that stringent, far-reaching restrictions on GHG emissions will be needed if the risk of harmful climate impact is to be reduced. It therefore recommends that the EU and Sweden take early action on the basis of the long-term aim, namely halving GHG emissions by 2050 and reducing them to zero by 2100.

The countries of the world differ widely in their ability to deal with climate change. Climate work must continue to be guided by a fundamental principle enshrined in the UN Climate Convention, namely common but differentiated responsibility. This means that

the world's industrialised countries must take the lead in efforts to reduce GHG emissions, particularly as they have historically accounted for the great bulk of these emissions. These countries must also contribute positively by transferring technology and financial resources to the developing world. It is important that climate-related measures introduced in developing countries are integrated into national strategies for combating poverty and promoting economic and social development.

The EU must continue to maintain a proactive role in international climate cooperation. The Committee considers that Sweden should vigorously support the joint proactive role in global climate negotiations played by the EU member countries. Sweden should also seek to ensure that the EU, as a part of the rich world, assume its share of the responsibility. While the Committee welcomes the EU negotiating plan aimed at securing mutual undertakings by the EU and other industrialised countries, it regrets that the EU's conditional target of a 30 per cent reduction in GHG emissions has not been a governing consideration in the European Commission's climate action and renewable energy package of January 2008. In the Committee's opinion Sweden should press for an EU target aimed at a 30 per cent reduction by 2020.

Sweden, along with other countries, has a responsibility to meet this common global challenge. We can do so through active participation in international cooperation, by taking proactive positions in the EU and by adopting and implementing a long-term, sustainable national climate policy. Sweden must take the lead in climate work by setting ambitious targets, adopting vigorous measures and implementing effective policy instruments. We must also take steps to strengthen research and development in key strategic areas.

Conditions in Sweden are favourable. We live in a sparsely populated country with abundant natural resources. Combating climate change is compatible with economic growth that can tap into new markets and create job opportunities. Sweden has already demonstrated this. Our prospects of pushing through and exporting effective climate solutions are very good. Sweden has numerous leading enterprises in key industry sectors, from power transmission to construction and transport. Many of these companies have considerable expertise in developing low-input, energy-efficient system solutions. Sweden also has considerable

potential for continued development of renewable energy sources, such as bio-energy production, bio-based combined heat and power production, and wind power.

### 3 Proposed climate policy targets

(The proposal, presented in full in Chapter 10, is based on the proposals set out in Chapters 7, 8 and 9).

Climate change poses one of the greatest challenges of our time. The problem is global; the world's climate is impacted regardless of where on the planet emissions take place. The international community must act to reduce global GHG emissions by more than 50 per cent by 2050 if levels are to be close to zero by the end of the century. We can then gradually stabilise atmospheric GHG concentrations so that the global mean temperature does not rise more than 2°C above pre-industrial levels. This will enable us to substantially reduce the risk of harmful climate impact and fulfil our responsibility to future generations, which is to ensure that they do not suffer the consequences of our own lifestyles and actions. Sweden must assume its share of this global responsibility by setting ambitious climate policy goals.

In the Committee's view, the environmental quality objective should be based, as previously, on the need to limit climate changes and their impacts as defined in the UN Climate Convention. The Committee further considers that the objective should include a global temperature target, a global GHG concentration target and short-, medium- and long-term emission targets for Sweden. The temperature target, which must be the overriding objective, is based on an assessment by the Scientific Council on Climate Issues of the EU temperature target (see Chapter 8). The Committee considers that the overriding objective must be to limit the rise in global mean temperature to a maximum of 2°C above pre-industrial levels, and that Sweden must bear its share of the global responsibility for ensuring that the increase does not exceed that figure.

The concentration target is derived from the temperature target on the basis of current knowledge about the highest level at which the concentration of atmospheric greenhouse gases should be stabilised over the long term, to meet the 2-degree target (see

Chapter 8). If we are to establish concrete climate policy aims and specify real emission reduction needs, it is essential in the Committee's opinion that we adopt a concentration target that the 2-degree target. Based on current knowledge, the concentration target should, in the Committee's view, be set at 400 ppmv CO<sub>2</sub>e.

With regard to the present Swedish short-term emission target for 2008–2012, the Committee has determined that the target will be met and that no change is therefore needed. (see Chapter 7).

As regards the 2020 target, Sweden must continue to push for large-scale reductions in global GHG emissions and for an EU target of 30 per cent reduction on 1990 emission levels by 2020. This target has been set by heads of state and government on the condition that other industrialised countries make comparable reductions and that the more economically advanced developing countries contribute in reasonable proportion.

Sweden must set a national target that corresponds to our contribution to a global, comprehensive climate agreement. The target must reflect Sweden's commitment within the framework of a 30 per cent emission reduction within the EU. According to the Committee's calculations, this corresponds to an emission reduction of around 35 per cent and implementation of the Committee's entire actionplan would reduce emissions by approximately a further 3 percentage points. However, the assumptions underlying this calculation are still uncertain and should be reviewed in the course of preparatory work ahead of the Government's climate bill later in the year. When the EU's internal decisions have been made and the global climate negotiations are completed, the national target should be set definitively at a climate strategy checkpoint. Regular checkpoints should be established thereafter.

The Committee considers that the 2020 target can be met on the basis of the measures and policy instruments it proposes in the action plan, which is described in Section 4 below (see also Chapters 11–19).

Sweden's long-term reduction targets – for 2050 and beyond – are based on the overarching, long-term global challenge, Sweden's share of the global responsibility for reducing GHG emissions, and an assessment that the ensuing costs are acceptable (see Chapter 8). By 2050, GHG emission levels for Sweden should be 75–90 per cent lower than levels for 1990. By the end of the century, GHG emissions in Sweden should be close to zero.

In the Committee's view, it is essential that the environmental quality objective make clear that climate change is a global phenomenon and that Sweden is responsible, along with other countries, for ensuring that the global target is met. International cooperation and measures and initiatives adopted and implemented in all countries are crucial to achieving the national environmental quality objective in its entirety.

The Committee further considers that the 2020 target will need to be reviewed in the light of ongoing changes in the surrounding world affecting target formulation, estimates and future outcomes.

#### **The Committee's proposals regarding the national environmental quality objective *Reduced Climate Impact***

According to the UN Framework Convention on Climate Change (UNFCCC), atmospheric GHG concentrations must be stabilised at a level where human impacts on the climate system are no longer dangerous. This objective must be achieved in such a way and at such a rate that biological diversity is preserved, food production is assured and other objectives of sustainable development are not jeopardised.

Sweden, along with other countries, has a responsibility to ensure that the global target is met.

#### **Overall objectives**

##### *Temperature target (new)*

Sweden should assume its share of the global responsibility for ensuring that the global mean temperature does not increase by more than 2°C on pre-industrial levels.

##### *Concentration target derived from the temperature target (changed)*

Swedish climate policy should contribute to the long-term stabilisation of GHG concentrations at a maximum level of 400 parts per million carbon dioxide equivalents (ppmv CO<sub>2</sub>e).

## Interim targets

### *Emission target for 2008–2012 (unchanged)*

Mean Swedish GHG emission levels for the period 2008–2012 must be 4 per cent lower than levels in 1990. Emissions are measured in carbon dioxide equivalents (CO<sub>2</sub>e) and include six greenhouse gases, in accordance with Kyoto Protocol and IPCC definitions. The interim target is to be met without compensation for carbon sink sequestration or flexible mechanisms.

### *Emission target for 2020 (new)*

Sweden must continue to push for large-scale reductions in global GHG emissions and for a 2020 EU reduction target of 30 per cent on 1990 emission levels. This target has been set by heads of state and government on the condition that other industrialised countries make comparable reductions and that the more economically advanced developing countries contribute in reasonable proportion.

Sweden must set a national target that corresponds to our contribution to a global, comprehensive climate agreement. The target must reflect Sweden's commitment within the framework of a 30 per cent emission reduction in the EU. According to the Committee's calculations, this corresponds to an emission reduction of around 35 per cent and implementation of the Committee's entire actionplan would reduce emissions by approximately a further 3 percentage points. However, the assumptions underlying this calculation are still uncertain and should be reviewed in the course of preparatory work ahead of the Government's climate bill later in the year. When the EU's internal decisions have been made and the global climate negotiations are completed, the national target should be set definitively at a climate strategy checkpoint.

The target should include the use of mechanisms similar to the current project-based mechanisms provided for under the Kyoto Protocol. Sweden should actively seek to expand the scope for using flexible mechanisms of this kind in achieving the 30 per cent reduction, via measures within the EU and measures financed by EU countries outside the EU. For its part, Sweden should make

use of the tools provided for within the EU and in international agreements.

Compensation for Swedish carbon sinks is not included. Compensation for the purchase of Assigned Amount Units (AAUs) provided for under the Kyoto Protocol is not included at the present time.

Assessment of target achievement is to be based on the amount of emission allowances assigned and auctioned, for activities covered by the European Union Greenhouse Gas Emission Trading Scheme (EU ETS) rather than on the actual volume of emissions in Sweden. The share of Swedish emission reductions achieved within the EU ETS is entirely governed by negotiations and decisions at EU level. Reports on achievement of Sweden's national target must therefore distinguish between those activities which are covered by the EU ETS and those which are not.

The Government should be required to report on Swedish GHG emissions in an annual written communication to the Riksdag (the Swedish Parliament). This should include a statement of total and sector-by-sector emissions, an assessment of the prospects of achieving the target by 2020 and, where necessary, proposed measures. An in-depth review should be undertaken every fourth year.

#### **Indicative targets**

##### *Emission target for 2050 (changed)*

By 2050, Swedish GHG emission levels should be at least 75–90 percent lower than those in 1990.

##### *Emission target for the end of the 21st century (changed)*

By the end of this century, emissions of GHG in Sweden should be close to zero.

*Review*

The 2020 target will need to be reviewed in the light of ongoing changes in the surrounding world affecting target formulation, estimates and future outcomes.

#### **4 Proposals for an action plan to meet the 2020 target**

The Committee has drawn up a number of proposals for inclusion in the action plan. These are presented below in summary form. The Committee's deliberations and assessments underlying the proposals are discussed in Chapters 11–19.

Sweden, along with other countries, is responsible for ensuring that the global target is achieved, i.e. that atmospheric GHG concentrations are stabilised at a level which will prevent dangerous anthropogenic interference with the climate system. Achievement of this objective is crucially dependent on international cooperation and action taken by other countries. At the same time, Sweden must make significant efforts inside the country if it is to bear its share of responsibility.

By the end of this century, Swedish GHG emissions should be close to zero. This will presuppose a radical transformation of its energy systems and other parts of the economy. The future direction of Swedish energy policy, community planning and infrastructural investment will to a great extent determine how successfully Sweden manages to reduce emissions.

The transformation should be implemented gradually and continuously. Policy instruments should be tightened and developed by degrees. It will be necessary to implement measures that are not only beneficial in terms of emission reduction in the short run but also lay the groundwork for far-reaching emission reductions in the long term. Sweden began introducing measures against climate change at an early stage. We have already succeeded in reducing GHG emissions to relatively low levels in several sectors of society. However, growing import volumes and increased international shipping and aviation are having a countervailing effect, at least in part, on emission reductions. Although the transport sector and industry offer the largest scope

for continued reductions, there is also considerable potential in other areas.

The action plan for 2020 which the Committee is now presenting is a step towards the long-term objective. The action plan comprises the following action areas:

- Strengthening cross-sectoral measures and instruments
- An EU-wide reduction of the EU ETS emission ceiling
- Emission reductions in sectors not covered by the EU ETS
- Action at international level

The action plan also addresses the importance of carbon sinks. In addition, the Committee is submitting proposals concerning certain public revenues generated by Sweden's climate policy.

The action plan proceeds from the recognition that Sweden already has many general and specific climate policy instruments in place. It contains proposals aimed at developing and tightening certain existing instruments and provides for various supplementary measures in a number of areas.

The proposals in the plan have been subjected to consequence analyses to the extent that access to relevant data has been available and the Committee has been able to undertake analyses of this kind given the short time scale allowed. The Committee has concluded that the consequence analyses of proposed measures and instruments which were conducted indicate that the economic outcome of most of its proposals are reasonable in relation to their benefits in terms of reduced GHG emissions (Chapter 19).

Sweden's participation in international climate negotiations is dealt with separately (see Section 5 below).

The Committee considers that its proposed target for 2020 can be met on the basis of the measures and policy instruments set out in the action plan. It is estimated that these measures and policy instruments will result in emission reductions of just over 6 million tons. The action plan also contains proposed measures and policy instruments which the Committee has been unable to quantify due to lack of data, but which could result in further emission reductions. Already existing measures and instruments for activities not covered by the EU ETS will, according to forecasts in the background reports drawn up by the agencies for the 2008 Climate Strategy CheckPoint, contribute to a substantial reduction in emissions and are a significant factor in the Committee's

assessment that the target can be met. International initiatives will yield further reductions through Sweden's participation in climate projects in other countries. The Committee also assumes an EU-wide lowering of the emission ceiling for activities covered by the EU ETS.

Measures and instruments will need to be reviewed on an ongoing basis. In its proposal for a national environmental quality objective, the Committee accordingly recommends that the Government, in a special written communication to the Riksdag include an assessment of the likelihood of achieving the 2020 target and propose measures where necessary. It is also proposed that an in-depth review be undertaken every four years (see Chapter 10).

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## Committee proposals in the 2020 action plan

(Headings A-F)

The proposed action plan, which proceeds from the recognition that Sweden already has many general and specific climate policy instruments in place, seeks to develop and tighten existing instruments. It also provides for a number of supplementary measures in various areas.

### A Cross-sectoral measures and policy instruments (Chapter 12)

The Committee has submitted proposals on research and technological development, energy efficiency enhancement and investment programmes. Chapter 12 also deals with carbon dioxide and energy taxes from a general perspective. Specific proposals on carbon dioxide and energy taxes, which are powerful and economically effective instruments, have been raised elsewhere.

This chapter also addresses the issue of climate information.

#### Research and technical development

New technology is particularly important to achieving the far-reaching emission reductions needed in the longer term. The imperatives in this respect are research and development, and policies that help create markets for the commercialisation of these technologies. The Committee proposes:

- A new research programme  
A new research programme should be established with a view to finding ways of ending our dependence on fossil fuels and developing new, efficient, low climate impact technologies, thus laying the groundwork for far-reaching, long-term GHG emission reductions.
- Technology procurement and public procurement  
Technology procurement should be systematically and consistently aimed at bringing new technology into the market. Public procurement should contribute more effectively and on a wider scale than at present to energy efficiency enhancement and the attainment of climate goals.
- Investment support for breakthrough technologies  
A special, new investment support programme should be set up with a view to promoting breakthrough technologies that could significantly reduce GHG emissions.
- Study of climate-related technological development  
A study should be made of current needs in terms of support for and the appropriate overall volume, direction, and organisation of climate-related technological development in the long term.

### **Energi efficiency measures**

Energy efficiency is vital to the attainment of far-reaching climate goals and there is considerable potential in various sectors for energy efficiency measures. The Committee proposes:

- That policy instruments aimed at enhancing energy efficiency be further developed  
The forthcoming proposals by the Energy Efficiency Inquiry should form a key point of departure for this undertaking.

- Other energy efficiency measures  
The following energy efficiency measures should be considered: an inquiry into ways of implementing a white certificate system, internationally harmonised technical standards (for electrical appliances, etc.), and better coordination of efforts to improve energy efficiency.

In Chapters 14 and 15, the Committee also proposes measures in several of the areas identified by the Energy Efficiency Inquiry.

### **Investment programmes**

Continued investment support for especially selected measures is significant when it helps bridge obstacles that prevent effective climate measures from being implemented.

Investment support can also support climate work at local and regional level. The Committee proposes:

- Development of investment programmes  
Climate-related investment support should in accordance with the agencies' proposal be transformed from broad-based programmes to investment support for specific, selected measures and sectors where other policy instruments are weak and where such measures will have a significant impact on GHG emissions.

## **B Activities covered by the EU Greenhouse Gas Emission Trading Scheme (Chapter 13)**

In the Committee's view, the EU ETS is a very beneficial and important instrument for reducing GHG emissions. To ensure that the scheme's considerable potential as an effective instrument is realised, a number of improvements will be examined and decided on in the impending review.

### **Improvements to the EU ETS**

The Committee proposes:

- Sweden should press for the following changes to the EU ETS
  - greater harmonisation and centralisation of the system
  - progressive lowering of the emissions ceiling
  - allocation of emission allowances by auction to the power and heating sector and industries operating in the national or EU market. Allocation of a certain number of emission allowances free to enterprises that manufacture specific products that face competition from companies outside the EU. Such allocations should be based on benchmarking of the relevant products
  - widening of the EU ETS to include the transport sector. This should be done gradually and in such a way as to ensure more effective emission reduction, which is not a given. Widening the EU ETS could, among other things, substantially affect the profitability of products subject to competition and will probably require supplementary instruments in the road transport sector. The Committee shares the agencies' recommendation to carry out an in-depth examination of whether and how the transport sector can be incorporated into the EU ETS.
  - The use of the project-based mechanisms provided for under the Kyoto Protocol, the Clean Development Mechanisms/Joint Implementation (CDM/JI) should be supplementary only. These instruments promote the transfer of technology to poor countries as well as the cost effectiveness of emission reductions stipulated in the Kyoto Protocol.

- Income from auctions should be returned to the member states, not accounted to the EU budget.

### **C Activities not covered by the EU Greenhouse Gas Emission Trading Scheme: TRANSPORT (Chapter 14)**

A series of measures will be needed to reduce GHG emissions in the transport sector. The energy efficiency of motor vehicles and marine vessels must be increased and fossil fuels need to be replaced with renewable fuels and energy carriers such as electricity and hydrogen. Energy efficiency across the entire transport sector must also be increased by ensuring that the various modes of transport are utilised and coordinated more effectively. Measures to reduce total demand for transport are also required.

The use of wide-acting instruments such as taxes on fossil fuels or emission trading schemes generates incentives for all the above-mentioned changes. However, such instruments need to be supplemented by targeted instruments such as emission standards and standards that lay the groundwork for the necessary technological changes. Long-term investment in infrastructure and community planning must be aimed at creating conditions conducive to the development of an increasingly energy-efficient transport system with lower GHG emissions.

#### **Shipping and aviation**

The Committee considers that the shipping and aviation sectors should also bear the costs of their CO<sub>2</sub> emissions. The Committee proposes:

- International and national measures  
As a first step, effective international agreements must be sought. Pending the conclusion of such agreements, national measures should be considered, provided these will have an appreciable effect on GHG emissions.
- Greater controlling effect on aviation within the EU ETS  
Aviation will be incorporated into the EU ETS from 2012. The effect of the scheme should be progressively intensified. One way of achieving this is to introduce supplementary fuel efficiency standards to enable emission trading outside the sector. In the long term, the impact of other GHG emissions should also be factored in.
- Review of airport subsidies  
Airport subsidies should be reviewed and support extended only to localities with airports than lack viable alternatives to air transport.
- Shipping should eventually be included in the EU ETS

European shipping should also eventually be included in the EU ETS. Here, too, the introduction of supplementary fuel efficiency standards should be considered.

- National policy instruments should be introduced for the shipping sector  
As shipping will not be covered by the EU ETS in the foreseeable future, national instruments should be introduced for this sector. The existing national system for the differentiation of fairway duties should be extended to include CO<sub>2</sub> emissions. The Swedish Maritime Administration should be tasked with examining ways in which this can be accomplished.

### **Investment in infrastructure**

Decisions on infrastructural investment should aim at creating conditions conducive to the development of an increasingly energy-efficient, low-carbon transport system. The Committee proposes:

- Further developed Infrastructure planning  
Infrastructure planning for all modes of transport should be further developed. The feasibility of merging Sweden's national traffic agencies should be examined.
- Expansion of the railway system  
The railway system in Sweden needs to be expanded. This will call for substantially increased investment. Goods and passenger capacity on the railways must be increased by at least 50 per cent by 2020, provided that the investments are profitable in economic terms. Priority should be given to investment that will lead to the replacement of air travel by rail travel. The possibility of running high-speed trains between metropolitan areas should be studied without delay.
- Climate-friendly infrastructural investment in the EU  
Sweden should press for targeted EU infrastructural investment designed to promote the transportation of more goods by rail and sea.

### **Spatial planning**

In the Committee's view, the effort to minimise GHG emissions should be reflected in spatial planning at all levels. The Committee proposes:

- Spatial plans must contribute to reduced GHG emissions  
The Planning and Building Act and/or the Environmental Code should be revised to include a provision requiring every newly created or revised plan to show how it contributes to the reduction of CO<sub>2</sub> emissions by minimising the need for transport and energy use.

- County administrative boards should be empowered to amend a spatial plan on climate-related grounds  
In matters concerning CO<sub>2</sub> emissions, a county administrative board should be empowered to amend a spatial plan that does not meet legislative criteria, as it is in matters relating to health and security
- The coordinating functions of county administrative boards should be strengthened  
County administrative boards should be given a wider role in coordinating trans-municipal spatial and transport planning. They should have a clear mandate to initiate and pursue coordinating activities.

### **Fuel, kilometre and congestion taxes/charges**

Petrol and diesel prices will need to be higher if the Swedish 2020 climate target is to be met. The Committee proposes:

- Higher fuel tax  
The Committee finds that a significant reduction in CO<sub>2</sub> emissions in Sweden will necessitate higher petrol and diesel prices in the coming years. It therefore concludes that taxes on petrol and diesel fuel need to be raised to a level equivalent to an increase on current prices of approximately SEK 0.70 per litre. The adverse distributional effects that may result from higher taxes will have to be taken into account.
- Further incremental rises  
This should be followed by further incremental rises, which should stay in line with changes in purchasing power (GDP) and inflation (CPI).
- Determining tax increase levels  
Tax increase levels should also be weighed against GHG emission trends in relation to the set target. World market prices of oil and their impact on prices charged to Swedish consumers should also be taken into account.
- Travel deduction  
The income tax deduction for travel should be linked to travel distance only, i.e. unrelated to the mode of transport. Its specific form should be the subject of a separate inquiry.
- Kilometre tax on heavy goods vehicles  
A kilometre tax on heavy goods vehicles in Sweden should be introduced not later than 2011, provided that a reasonably low-cost administrative system is sufficiently well developed by then. Special consideration should be given to vehicles used in the forestry sector, which lacks alternatives to road transport, provided this is in line with EU competition rules.

- Congestion charges  
The municipalities and/or regions should have the authority to introduce congestions charges if they so wish and to decide how the revenues should be used.

### **Biofuels and other alternative technologies**

Sweden has among the highest ambitions and biggest potential of any country with regard to increasing the share of biofuels in the transport sector. The Committee is of the opinion that Sweden has a responsibility to help promote global conditions conducive to the production and use of biofuels which are climate-friendly, i.e. resource and energy-efficient, have a low impact on biodiversity and land use, and can help to alleviate other conflicts of objectives. The Committee proposes:

- Increased use of non-fossil energy carriers  
When sufficient data becomes available, the feasibility of introducing a more far-reaching target for the share of non-fossil energy carriers used in the transport sector than the EU target of 10 per cent should be examined.
- Abolition of ethanol tariffs  
Sweden should continue to push for the abolition in the EU of tariffs on imported ethanol.
- Certification system for sustainable biofuel production  
Sweden should actively contribute to the development of a coherent and ambitious certification system for the sustainable production of biofuels.
- The Swedish Road Administration's green car definition  
The Swedish Road Administration's definition of a green car should be applied in connection with all government green car incentives. The energy efficiency standards for biofuel-driven cars laid down in the definition should be tightened.
- Development of second-generation biofuels and investment in vehicle research  
Investment in pilot plants, demoplants and full-scale facilities for the development of second-generation biofuels should be supported. Vehicle research focusing on propulsion systems with very low emission CO<sub>2</sub> characteristics, such as electricity or hybrid drive trains, is essential and should also be supported.
- Support for development of biogas propulsion  
Special funds should be earmarked for the continued development of biogas propulsion.
- Inquiry on policy instruments to encourage biofuel use  
A committee of inquiry should be appointed to propose measures designed to encourage the continued introduction of biofuels in Sweden in the long-term.

### More efficient vehicles and machinery

More efficient vehicles and machinery can make a key contribution to the reduction of CO<sub>2</sub> emissions. The committee proposes:

- EU regulations on CO<sub>2</sub> emissions from vehicles  
Sweden should seek to ensure that the highest permissible average emissions of CO<sub>2</sub> per kilometre for passenger cars, to be specified in forthcoming EU standards, are set at 120g/km in 2012 and reduced thereafter in successive stages to below 95g/km by 2020. The standards should be designed to encourage technological development for cars of all size classes and provide a flexible platform. Corresponding requirements for light-duty trucks and vans, lorries and buses should also be introduced and successively tightened.
- CO<sub>2</sub> differentiated vehicle tax  
CO<sub>2</sub> differentiation of vehicle tax should be strengthened.
- Inquiry into tax benefits for company cars  
A committee of inquiry should be appointed to examine the totality of effects on emissions of CO<sub>2</sub> and other greenhouse gases of the tax system for company cars. Taxation of free company cars should be designed to include incentives to reduce emissions and steer development towards modes of transport with very low CO<sub>2</sub> and other GHG emissions.

### Change to taxation of company car fuel

The factor for calculating the value of free company car fuel should be raised from 1,2 to 2.

- Inquiry on tax exemption for company paid journeys on public transport  
A committee of inquiry should be tasked to draw up a detailed proposal on the feasibility of introducing a tax exemption on company-paid journeys on public transport.

## D Activities not covered by the EU Greenhouse Gas Emission Trading Scheme: OTHER AREAS (Chapter 15)

The Chapter deals with climate measures in sectors not covered by the EU ETS, such as residential and commercial buildings, waste management and agriculture.

### Industries outsider the EU ETS

There is scope for additional measures in industries not covered by the EU ETS. The Committee proposes:

- Lower CO<sub>2</sub> tax reductions  
CO<sub>2</sub> tax reductions in industries not covered by the EU ETS should be lowered so the tax rate reaches SEK 0.30/kg CO<sub>2</sub>.
- Environmental tax on fluorinated greenhouse gases  
An environmental tax on fluorinated greenhouse gases should be introduced.
- Intensified energy efficiency measures  
Efforts should be made to further develop energy efficiency instruments and measures for industries outside the EU ETS. These should be based on proposals by the Energy Efficiency Inquiry.

### **Residential and commercial buildings**

Policy instruments that encourage the building of energy-saving houses in new residential housing projects and the implementation of energy efficiency measures when renovating older houses are particularly important. The Committee proposes:

- Intensified energy efficiency measures  
Instruments designed to promote greater energy efficiency need to be tightened. Efforts to this effect should be based on proposals by the Energy Efficiency Inquiry. The Committee wishes to emphasise the importance of incorporating energy saving requirements into the Swedish Building Code without delay, as well as the need to successively tighten regulations governing energy saving in new residential and commercial building projects.

### **Waste**

Policy instruments in the waste management sector should be designed to further encourage GHG emission reductions through measures to diminish waste and increase recycling. The Committee proposes:

- Special support for biogas extraction from organic waste  
In view of the considerable potential in many areas for larger scale fermentation of organic waste, the Committee proposes that special funding should be allocated to facilities for the extraction and upgrading of biogas from organic waste (Section 12.5 and 14.6).

### **Agriculture**

Agriculture is likely to play an increasingly important role as a producer of bioenergy. Some measures can and should at this stage be taken in the agricultural sector to reduce GHG emissions. This applies to both crop cultivation and livestock farming. More

knowledge about emissions in this sector and possible measures is also needed. The Committee proposes:

- Investment grants for biogas production  
The Commission of Inquiry on Swedish Agriculture as a Bioenergy Producer proposed extending a limited investment grant to develop biogas production from farmyard manure and co-fermentation with up to 50 per cent of other substrates. This proposal should be implemented.
- Lower CO<sub>2</sub> tax reductions for diesel and fuel oil and diesel for machinery used in agriculture and forestry  
CO<sub>2</sub> tax reductions for fossil fuels and gasoil used in agriculture and other agriculture-related industries should be lowered until the tax rate reaches SEK 0.30/kg CO<sub>2</sub>, as in the case of industries outside the EU ETS. In view of the competitive position of the agricultural and forestry sectors, and of the overspill effect, the introduction of a higher tax on diesel proposed by the Committee should not apply to machinery used in agriculture and forestry until a three-year period has elapsed.
- Study of the climate impact of agriculture  
The Swedish Board of Agriculture should be instructed to assess – in cooperation with other relevant authorities – the current state of knowledge on the impact of agriculture on climate and to draw up an action plan for measures to reduce GHG emissions.

## **E Action at international level (Chapter 16)**

The industrialised countries must actively contribute to limiting emissions in developing countries by transferring technology and financial resources to the developing world.

### **The Kyoto Protocol's project-based mechanisms**

The Kyoto Protocol's project-based mechanisms – the Clean Development Mechanism (CDM) and Joint Implementation (JI) – are expected to promote technology transfer and capacity building in countries where the projects are implemented. The mechanisms allow Swedish climate policy to be more cost-effective and thereby increase acceptance of larger overall reductions in CO<sub>2</sub> emissions than would otherwise be possible.

- Continued investment in the project-based mechanisms CDM and JI  
Continued government investment in CDM and JI is needed as these mechanisms are still in the build-up stage and because they allow projects to be strategically targeted at key technologies and geographical areas.

## Development assistance

Climate change will have adverse effects on development in poor countries and there will be a growing need for climate-related development assistance.

- Assistance for climate-friendly development  
Swedish development assistance should be explicitly aimed at helping recipient countries adapt their national development priorities to accommodate climate change considerations.

## F Carbon sinks (Chapter 17)

In addition to measures aimed at reducing greenhouse gas emissions, measures aimed at reducing tropical deforestation and protecting and enhancing carbon sinks in our country will be important in combating climate change globally.

The Committee proposes:

- Carbon sink study  
Possible measures and incentives to protect high-carbon stock land and enhance carbon sinks should be examined.

## G Climate policy-generated public revenue (Chapter 18)

Sweden's climate policies will generate substantial public revenue over the coming years. These will include surplus Kyoto units, revenues from the auction of emission units in the EU ETS and revenues accruing from the tax changes proposed by the Committee. The Committee proposes:

- The 'polluter pays' principle  
Climate policy should adhere to the principle that households, companies, etc. which through their actions emit greenhouse gases should pay for their emissions (the 'polluter pays' principle, PPP). However, the instruments proposed here are intended to reduce climate impacts, not strengthen the public treasury.
  - Surplus Kyoto units  
Sweden's surplus Kyoto units should be sold or cancelled. Income from sold units should be used to finance climate-related measures in Sweden or in other countries. The emission reductions resulting from these measures must be greater than the corresponding emissions resulting from the sale of emission allowances.
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## 5 Swedish action in international climate negotiations (Chapter 20)

In the Committee's view, the UN Climate Convention and the Kyoto Climate Protocol are central to any future international climate agreement. Both long and short-term global emission reduction levels should be set, and per-capita emissions should converge in the long term. Binding quantitative commitments should apply to as many countries as possible. Industrialised countries should reduce their emissions by at least 30 per cent by 2020 on 1990 levels. Financial resources and investment should be mobilised and targeted to support emission reduction measures, adaptation measures and technological cooperation. Efforts must be made to develop new, innovative mechanisms capable of attracting large flows of private capital for investment in new technology. A future climate regime must protect tropical forests. It is also important to develop and disseminate knowledge about administrative systems for pricing CO<sub>2</sub> emissions and trading in emission allowances. New forms of financing to support efforts by developing countries to adapt to climate change. Swedish action in international negotiations should be focused particularly on the following issues:

- initiatives to finance measures to stimulate technological development and the development of global instruments for technological transfer
- the need to take the lead in offering rapidly growing economies targeted cooperation in areas such as housing construction, transport and electricity production
- A continued leading role for the EU in international negotiations

In the period leading up to its EU presidency and beyond, Sweden has a key role to play in international negotiations on a new climate regime for the post-2012 era. The Committee considers that it will be necessary to strengthen Sweden's negotiating resources in the climate sphere and its ability to support proactive measures in rapidly growing developing countries.