

# Evaluation of climate policies and measures in EU member states – examples and experiences from four sectors

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# 1 Background

European Union member states have, under the mechanism for monitoring European Community greenhouse gas emissions and for implementing the Kyoto Protocol (Decision 280/2004/EC of the European Parliament and the Council), an obligation to prepare every second year a report including information on national policies and measures implemented during the reporting period with the aim of reducing greenhouse gas emissions. Article 3(2) of the Decision 280/2004/EC sets general requirements for the reporting of policies and measures to the EU (EC 2004). The biennial reports provide a source of information on what kind of climate policies and measures have been implemented in EU countries. To be able to design more effective and cost-efficient policies and measures to tackle climate change, it is essential to know whether the existing measures have achieved their objectives in a cost-efficient way. Policy evaluations have a key role in this and they can provide valuable information for policy-makers.

Huitema et al. (2011) have provided an overview of climate policy evaluations in EU countries, analysing e.g. the methods and criteria used in evaluations, whether they have included elements of participation and what kind of bodies have produced evaluations. According to Huitema et al. (2011), the number of climate policy evaluations increased eight fold during 2000–2005. However, there are considerable differences between countries with respect to the number of evaluations they have produced.

The need for improving the reporting on and evaluation of climate policies has been recognised both at member state and EU level. From the point of view of policy development, it is essential to identify good practices and get information on which policies and measures are effective and could be applied also in other countries. The European Commission has commissioned such studies to support the development of the reporting on policies and measures. For example Forster et al. (2009) focused on developing in particular quantitative approaches and methods for ex-post evaluations.

The European Commission presented 23 November 2011 its proposal for a Regulation of the European Parliament and of the Council on a mechanism for monitoring and reporting greenhouse gas emissions and for reporting other information at national and Union level relevant to climate change (EC 2011a). The proposal aims at addressing problems that have been identified during the implementation of the current reporting mechanisms. This study examines these issues in the light of evaluations that have been carried out with specific focus on the policies and measures related to buildings, waste and F-gases. Although the analysed evaluations do not generally refer explicitly to the current EU reporting requirements of policies and measures they do give an overview of the kind of evaluations that have been carried out in different Member States. The material therefore gives a view of what is generally feasible in terms of evaluations.

## 2 Objectives of the study

The overall objective of this study is to support the development of the reporting and evaluation of policies and measures. By examining evaluations of climate policies and measures it is possible to identify common features and consider ways of improving current practices. The work has been carried out by analysing available evaluations of climate policies in EU member states. The study examines both evaluations that have been undertaken before the implementation of policies and measures (ex-ante evaluations) and those that have been undertaken after the implementation of policies and measures (ex-post evaluations). The study focuses especially on evaluations in sectors that in Finland are administrated by the Ministry of the Environment: buildings, community structure, waste and F-gases.

This study seeks to answer the following two questions:

- To what extent have the reported policies and measures related to buildings, waste and F-gases been evaluated in the EU countries?
- What kinds of methods and criteria have been used to evaluate them?

The responses to these questions are used to reflect on the key issues that have been identified by the Commission as being relevant for the development of a regulation for a monitoring and reporting mechanism. According to the proposal (EC 2011a) the following specific issues have been identified:

- (1) The existing monitoring and reporting system for GHG emissions and mitigation actions is not adequate to implement new requirements resulting from new legislation and new international developments under the UNFCCC;
- (2) There is insufficient data available at EU level to support future policy development and implementation;
- (3) The current monitoring and reporting system addresses GHG emissions and mitigation actions and does not take into consideration nor does it ensure compliance with new commitments under the UNFCCC related to the provision of financial and technological support to developing countries;
- (4) Additional data and information are needed to monitor progress towards emissions limitation targets, in particular under the Europe 2020 strategy;
- (5) There is an observed lack of transparency, timeliness, consistency, completeness and comparability of the information currently reported under the Monitoring Mechanism Decision;
- (6) Experience has shown that there is an urgent need for simplifying and streamlining the current reporting requirements.

### 3 Material and methods of the study

The study material consists of evaluation reports of policies and measures prepared in EU countries. An initial source for existing climate policies and measures were the member states' reports to the Commission according to the article 3.2 under Council Decision No 280/2004/EC on a Mechanism for Monitoring Community Greenhouse Gas Emissions and for Implementing the Kyoto Protocol. However, the reports do not generally refer to evaluations. Thus, evaluations of reported policies and measures in the relevant sectors were searched for separately in the Internet and published sources.

Evaluations were also searched by utilising existing contacts of the group and approaching key people in some of the countries. Of EU member states, the UK leads with highest number of climate policy evaluations (Huitema et al. 2011), which is also seen in this study. Eighteen of all evaluations analysed here are made of British policies. The UK has also actively developed comprehensive guidance for evaluations. For example, HM Treasury has published "The Green Book" (HM Treasury 2003) and "The Magenta Book" (HM Treasury 2011) that together provide detailed guidelines for policy makers and analysts on how to undertake policy evaluations. The Green Book puts emphasis on the economic principles that should be applied to both appraisal and evaluation, and the Magenta Book provides in-depth guidance on how to design and undertake evaluations. The Magenta Book is the recommended central government guidance on evaluation that sets out best practice for departments to follow. It presents standards of good practice in conducting evaluations, and seeks to provide an understanding of the issues faced when undertaking evaluations of policies and programmes (HM Treasury 2011).

HM Treasury and Department of Energy and Climate Change (DECC) have also published guidance on the methodology used to value changes in emissions and energy use, rebound effects and air quality impacts for policy appraisal and evaluation. The guidance sets out the methodology that all departments use to value these changes. It covers proposals that have a direct impact on energy use and supply and those with an indirect impact through planning, construction, land use change or the introduction of new products that use energy. It also provides guidance on conducting sensitivity analysis around key variables, such as fossil fuel price assumptions, and reporting on the cost effectiveness of the policy (HM Treasury & DECC 2011).

A majority of the evaluations studied were commissioned by national governmental bodies, though often the evaluation itself had been undertaken by a consultancy specialised on evaluations. Also two scientific evaluations of national climate policy instruments related to the sectors analysed were found. They differed from the other evaluations in terms of focus and approach, by concentrating on a narrower set of impacts but providing a deeper analysis of these and a critical look on the evaluated instruments.

Due to the fact that some countries have been more active in commissioning evaluations than others and to some extent due to language barriers, the geographical distribution of the study material is largely focused on Western Europe.

## 4 Evaluations of policies and measures

### 4.1

#### **Overview of evaluation criteria used in all evaluations**

Evaluation criteria that have been used in the analysed evaluations have been summarised in Table 1. Criteria were counted per topic and a distinction was made between quantitative and qualitative assessment of each criteria. Economic costs or cost efficiency of measures as well as their climate impacts were the most commonly evaluated criteria. A wide range of other criteria were also represented, ranging from various societal and human impacts such as employment, competitiveness or health to environmental impacts such as air pollution, eutrophication, smell or noise.

Many of these criteria used in the evaluations are not explicitly included in the obligatory reporting requirements included in the European Commission's decision 280/2004/EC. According to the decision, the member states shall report:

- information on national policies and measures which limit and/or reduce greenhouse gas emissions by sources or enhance removals by sinks, presented on a sectoral basis for each greenhouse gas, including:
  - (i) the objective of policies and measure;
  - (ii) the type of policy instrument;
  - (iii) the status of implementation of the policy or measure;
  - (iv) indicators to monitor and evaluate progress with policies and measures over time;
  - (v) quantitative estimates of the effect of policies and measures on emissions by sources and removals by sinks of greenhouse gases between the base year and subsequent years, including 2005, 2010 and 2015, including their economic impacts to the extent feasible; and
  - (vi) the extent to which domestic action actually constitutes a significant element of the efforts undertaken at national level as well as the extent to which the use of joint implementation and the clean development mechanism and international emissions trading, pursuant to Articles 6, 12 and 17 of the Kyoto Protocol, is actually supplemental to domestic actions, in accordance with the relevant provisions of the Kyoto Protocol and the Marrakech Accords;

Table I. Evaluation criteria that have been used in the analysed evaluations and the number of evaluations that have used each criterion. A distinction is made between quantitative and qualitative assessment of each criterion. The most commonly evaluated criteria are presented first while the most rarely used criteria are in the bottom of the table.

Evaluation criteria used	Quantitative assessment	Qualitative assessment
Costs/cost efficiency of the measure	27	1
Greenhouse gas emissions	25	1
Distributional impacts (e.g. costs for different groups or sectors)	9	3
Energy consumption/energy efficiency	12	
Interaction/synergy with other policies*	2	8
Air quality	6	3
Stakeholders' views/behaviour	2	6
Competitiveness, competition		6
Overall delivery & management of the measure, organisational issues		5
SMEs		5
Successes/limiting factors, strengths/weaknesses		5
Acidification	2	2
Amount of waste, share of recycling/incineration	3	1
Equality issues (age, gender, ethnicity, disability...)		4
Health impacts	1	3
Innovation, research and development		4
Rural considerations		4
Awareness-raising	1	2
Disamenity of built environment	1	2
Eutrophication	1	2
Fuel poverty	1	2
Fly-tipping	2	1
Employment	1	1
Energy security		2
Legal aid		2
Smell		2
Societal impacts in general		2
Sustainable development		2
Biodiversity		1
Congestion	1	
Damage to materials, crops and forests	1	
Human rights		1
Noise		1
Toxicity to water/soil	1	

\* Interaction with other policies addressed typically synergies or overlaps with other climate- or environmental policies. Examples of evaluating whether there are potential conflicts between analysed measures and other policies were not as common. An ex-post evaluation on the cost-effectiveness of Dutch climate policy evaluation (de Bruyn et al. 2005) assessed qualitatively the potential conflict between climate policy and acidification policy, while another Dutch report, a scientific evaluation on the interaction effects between energy efficiency policies, assessed quantitatively to what extent the evaluated policies had reinforced or mitigated each other's impacts (Boonekamp 2006).

## 4.2

### Evaluations of general/overarching policies or policies with measures from various sectors

Several evaluations analysed in this study addressed overarching policies that are not focused on a certain sector, such as the Climate Change Act in the UK, the Swedish Climate investment programme KLIMP or local climate strategy work in Sweden. In some evaluations, the impact of the whole climate policy of a country was studied, and in these cases the evaluations could include measures within several sectors.

The study material consisted of 14 evaluations of overarching policies. Five of them were ex-ante evaluations, four ex-post evaluations and five included both an ex-ante and ex-post evaluation. Geographically the evaluations were produced in western and northern European countries: seven evaluations were from Sweden, three from the UK, two from Finland, one from Denmark and one from the Netherlands.

#### 4.2.1

##### Focus of evaluations and criteria used

The evaluations focused on climate impacts and economic costs of the measures, and these were addressed in nearly all evaluations. These criteria were evaluated quantitatively, except in one Swedish ex-post evaluation (Nordisk Kommunikation 2007), where climate impacts were evaluated only qualitatively.

Some of the criteria were evaluated both quantitatively and qualitatively, such as impacts on air quality (five quantitative and two qualitative evaluations), distributional impacts (three quantitative and one qualitative), interaction with other policies (one quantitative and three qualitative), acidification (two quantitative and one qualitative) and eutrophication (one quantitative and one qualitative). Criteria that were evaluated only qualitatively and each of which was addressed in just one or two evaluations included impacts on fuel poverty, energy security, successes and limitations, competitiveness, organisational issues, innovation and research, stakeholders' views and behaviour, small and medium-sized enterprises, awareness-raising, biodiversity, smell and disamenity of built environment.

The criteria were rather equally distributed between ex-ante and ex-post evaluations and there were no clear patterns that would indicate that quantitative or qualitative criteria would have been used more in a certain type of evaluations.

#### 4.2.2

##### Evaluation methods used

Most evaluations used a combination of quantitative and qualitative methods. The MARKAL model, a general equilibrium model for modelling energy use and energy costs, was used in one British (DECC 2009) and two Swedish (Energimyndigheten & Naturvårdsverket 2004 and Profu 2008) evaluations. The British evaluation used the UK MARKAL model, to which the Department for Environment, Food and Rural Affairs (Defra) had commissioned an extension that quantified air quality –related benefits achieved by changes in energy systems due to climate policies. Since 2003 the model has also been updated with more detailed information and assumptions on technology costs and processes. The UK MARKAL is a dynamic energy optimisation model that provides insights into the technological options and costs of carbon reduction until 2050. Scenarios with various carbon constraints were compared with a baseline case where the energy system and carbon emissions have been calibrated to the current situation in the UK.

In Sweden, MARKAL-NORDIC was used, which includes not only the energy system in Sweden but also in neighbouring countries Denmark, Finland and Norway. The model was run for two main scenarios: one that included policy measures from 1990 that were extended for the whole modelling period, and one that includes the current policy measures (at the time of the evaluation). Energy demand, access to alternative energy technologies and fuel prices etc. were assumed to develop in the same way in both scenarios.

A Danish ex-ante evaluation (Klimakommissionen 2010) modelled the economic impacts of phasing out fossil fuels with the help of various models. A spreadsheet based model STREAM was used to model energy consumption for four sectors and it includes also modules to calculate the cost of running the energy system. Another model used was Balmorel, an optimization model that includes the Scandinavian and German energy markets. It was run at five-year intervals to find the most cost-efficient structure of energy system between now and 2050. The impacts of transition from fossil fuels on the Danish economy were modelled with ADAM, a macroeconomic, demand-driven Keynesian model that includes 20 different sectors. Another macroeconomic model that was specifically developed for the evaluation by DREAM-group was used to assess for example future trade balances and tax distortion effects.

Two Swedish ex-ante evaluations of the Climate Investment Programme (KLIMP) (Naturvårdsverket 2004 and 2009) did not include modelling exercises. The evaluations were based on a database of the KLIMP-projects, containing e.g. project reports. Using these data, cost cost-effectiveness calculations were made regarding how much money was to be used per each kg of CO<sub>2</sub> equivalent saved. Also qualitative methods such as questionnaires and document analysis were used to evaluate e.g. interaction with other policy instruments or impacts on employment and competition and other environmental goals.

The Finnish ex-ante evaluations addressed the Long Term Climate and Energy Strategy of Finland (Council of State 2008). One assessment was included in the strategy itself, while one was done separately, concentrating on the various environmental impacts of the strategy (Hildén et al. 2008).

The strategy presents two scenarios: the baseline in compliance with current measures and development, and the objective, in compliance with meeting the EU's and national objectives. Impacts of the strategy have then been calculated for both scenarios. Regarding the impacts on the national economy, the direct costs of the strategy were first evaluated with an economic energy model of the Technical Research Centre of Finland (VTT), and the results have been used in further calculations with the national economy model of Government Institute for Economic Research (VATT).

The evaluation of environmental impacts (Hildén et al. 2008) used life cycle assessment to estimate the various impacts of energy production and consumption, production taking place partly outside Finland. The evaluation was made with ReCiP-method, which is commonly used in life cycle assessments (Sleeswijk et al. 2007). Particle emissions were evaluated with Finnish Regional Emission Scenario Model (Karvosenoja 2008).

Two of the four ex-post evaluations analysed used only qualitative methods such as document analyses, interviews, questionnaires and stakeholder seminars. One of them evaluated the Swedish local climate strategy work (Naturvårdsverket 2010) and the other addressed information as a steering instrument within the Swedish Climate Investment Programme (KLIMP) (Nordisk Kommunikation 2007). The evaluations concentrated on organizational issues, stakeholders' experiences and promoting and hindering factors of the instruments.

Of the other two ex-post evaluations analysed, one Swedish evaluation (Samakovlis & Vredin Johansson 2007) used three different model specifications with several variables to model the KLIMP-programme's cost-efficiency in reducing CO<sub>2</sub> emis-

sions as well as its other environmental impacts. The models and equations used are described in detail in the evaluation report.

A Dutch ex-post evaluation (de Bruyn 2005) on the cost-effectiveness of Dutch domestic climate policy used previously published reviews as a basis for its cost calculations when possible. Also additional sectoral data provided by e.g. Netherlands Statistics and the National Institute for Public Health and the Environment was used. When calculating cost-effectiveness, five categories of cost were distinguished: investment costs, operation and maintenance costs, administrative costs, subsidy payments and revenues (i.e. negative costs) from energy savings. Cost effectiveness was analysed from three different perspectives: government costs, end-user costs and costs to the national economy.

One scientific ex-ante evaluation (Pielke 2009) differed methodologically clearly from the other evaluations. Pielke evaluated the UK Climate Change Act in relation to its decarbonisation targets for the UK economy in the short- and long-term to assess whether it was likely that the targets could be achieved. The method used was "Kaya identity" that draws upon Waggoner and Ausubel (2002) who argue that to understand the ability to affect environmental outcomes through policy one needs to quantify and integrate the components of environmental impacts. The Kaya identity can be used to decompose factors that lead to carbon dioxide emissions from the production and use of energy in the global economy. It consists of two primary factors: economic growth (or contraction), typically GDP, and changes in technology, typically CO<sub>2</sub> emissions per GDP unit. Each factor is broken down into two sub-factors: GDP growth into changes in population and GDP per capita and CO<sub>2</sub> emissions per GDP unit into energy intensity and carbon intensity. Observation data and trends of each of these factors were used in an equation to calculate future emissions and they were compared with the target levels set in the Climate Change Act.

#### 4.3

### Evaluations related to energy efficiency of buildings

Of the sectors analysed, policies and measures aiming at improving the energy efficiency of buildings were most commonly evaluated. Thirteen evaluations related to these were produced, all of them in the UK, except for one Dutch and one Finnish evaluation. Six of these were ex-ante evaluations, six ex-post evaluations and one included both an ex-ante and ex-post assessment. Also according to the findings of Forster et al. (2009), the sector with most experience in ex-post evaluation was the energy demand sector, including policies targeting emissions from buildings.

#### 4.3.1

### Focus of evaluations and criteria used

A majority (10) of the evaluations regarding buildings and their energy efficiency focused on evaluating the costs of implementing the measure compared with building according to minimum standards. Six of the evaluations also provided quantitative assessments of the emissions reductions that can be or have been achieved with the measures, and some of them produced also assessments of how much energy was (to be) saved. Other quantitatively used criteria included the impact on fuel poverty of households and impact on air quality.

A broad range of criteria used in the evaluations were mainly qualitative and they varied according to the characteristics of the evaluated measures. Ex-ante evaluations had used a broader selection of criteria, including several criteria related to well-being and equity, such as health, equality between various social groups, rural

proofing, human rights and privacy. Many of the qualitative assessments were very brief, sometimes only stating that the measure does not have any significant impact on a certain issue.

Stakeholders' views and behaviour regarding evaluated policies and measures were assessed qualitatively in several evaluations. Also criteria regarding the interaction with other, similar or related policies and programmes were relatively common. In a Dutch scientific ex-post evaluation (Boonekamp 2006), the interaction between household energy efficiency measures and other, related policy measures was quantified, while in other evaluations it was addressed only qualitatively. Three ex-post evaluations addressed the successes and limiting factors of the measure and two assessed the distributional impacts of the measures on various stakeholders, e.g. consumers, house-owners, companies and the state. Individual evaluations used also such qualitative criteria as fuel poverty, security of energy supply, innovation and competition.

#### 4.3.2

#### Evaluation methods used

Measures related to the energy efficiency of buildings have been evaluated using very different methods. Ex-ante evaluations used mainly ad hoc, purpose built econometric models and some of them had also utilised guidance and a spreadsheet tool developed by the inter-departmental analyst group (IAG) (IAG 2011), to monetise the energy and emission savings achieved and improved air quality and comfort as a result of the policy. Also previous work on estimating the social cost of carbon (Clarkson & Deyes 2002) was utilised in one evaluation (SEERAD 2007).

One ex-ante evaluation (Oxera 2006) employed variations on the standard McFadden choice model, which is used to predict the probability that households will implement energy-saving measures. The take-up of insulation measures was simulated for two groups: owner-occupiers and landlords/tenants of houses. The model is based on a large database of households and data on the costs and benefits of insulation measures from Energy Saving Trust. The characteristics of households are used together with the results of econometric modelling. The main determinants of the model in predicting the take-up of measures include various data regarding households, e.g. their perceived cost of measures and their awareness. The impact of different policies has been modelled by making adjustments to the levels of these factors. The total take-up of measures as well as emission savings achieved were extrapolated to the whole UK, as each household in the model represents approximately 3500 actual households in the UK. In addition, a large survey for households was made, and its responses were analysed statistically with econometric models.

One ex-ante evaluation (Heljo & Vihola 2012) used EKOREM calculation model to estimate the feasible energy-saving potential of various energy-saving measures in buildings (Heljo et al. 2005), and calculations were made for four different developments regarding the energy efficiency of buildings.

Three of the five ex-post evaluations that related to energy efficiency of buildings relied mainly on qualitative methods such as in depth –interviews, surveys and workshops with stakeholders and qualitative analysis of various documents. However, one of them, an ex-post evaluation of the Warm Zones –programme for reducing fuel poverty and improving energy efficiency (Warm Zones External Evaluation 2005), used a non-linear regression model to assess the programme's impacts on fuel poverty. The model was developed based on a dataset containing complete before and after data from one location. The model predicted how improvements in energy efficiency (better SAP rating) would affect the fuel cost and thus fuel poverty.

Also a scientific evaluation of the interaction effects between Dutch policy measures for energy efficiency in households used a simulation model to quantify the most important interaction effects that were found in a qualitative analysis. Models used in policy scenario studies are often designed to handle interaction between different policy measures. Thus, an adapted version of such a model that has been used earlier in Dutch national scenario studies was chosen to quantify the interaction effects between three major policy measures related to energy efficiency. With the model, household energy use in the period 1990-2000 was simulated with and without the measures.

#### 4.4

### Evaluations related to community structure

Greenhouse gas emissions from community structure can be roughly divided into two sources: buildings and transport. Evaluations related to policy measures that would clearly address community structure issues were not found for this study. However, there are examples of models that can be used for evaluating changes in community structure and land use. The LUCIA-model (Land Use Change Impact Analysis) (Sten Hansen 2007) has been used to develop future scenarios for community structure in the future and the impacts of these have then been evaluated with LUCIA tools. The model has been used in several research projects, some of which are related to coastal management and flooding as a result of climate change. Currently, an extension related to transport is being developed.

#### 4.5

### Evaluations related to waste

The study material included six evaluations related to waste. Of these, three were ex-ante evaluations and two ex-post evaluations. One evaluation included both an ex-ante and ex-post assessment. The evaluations were produced in the UK (three evaluations), the Netherlands, Spain and Sweden.

The Swedish and the Spanish evaluation related to biogas, the former evaluating biogas-related measures of the Swedish climate investment programme Klimp, some of which concerned producing biogas from household waste. The latter evaluation addressed a whole policy programme on renewable energy, one part of which included measures on biogas produced from waste and waste water.

An example of an input-output –model that has been developed in Finland to analyse the relationship between material flows and environmental and economic impacts is the ENVIMAT-model (Seppälä et al. 2011). The model has not yet been used in waste-related policy evaluations but could be used in the future. ENVIMAT is based on monetary and physical input-output tables and an environmental life cycle impact assessment.

#### 4.5.1

### Focus of evaluations and criteria used

Evaluations related to waste policy measures had various focuses. Five of the evaluations addressed climate impacts of the measure, while economic costs of measures were almost as common with four evaluations. Impacts on waste amounts and on the share of recycling were addressed in three evaluations. All of these criteria were assessed quantitatively. Other, individual examples of quantified criteria included

various external costs such as monetised damage caused by various emissions to human health, disamenity (value reduction of property situated in the neighbourhood of a waste incineration plant), congestion (costs of time delays), damage to crops and materials caused by air pollution from incineration and the costs of fly-tipping. Values for these variables were taken from literature and then calculated for the case in question.

Qualitative criteria that were used in waste-policy evaluations included distributional impacts (how different groups of people would be affected by the measure, e.g. how the tax burden would change as a result of the measure), which were assessed in two evaluations. Other, individual examples of qualitative criteria included interaction with other policies, overall management of the measure, stakeholders' behaviour, impacts on small and medium-sized enterprises, competition, research and development and various environmental criteria such as acidification, eutrophication, smell and noise. Also rural aspects and equality issues between various social groups were assessed in one of the evaluations.

Of the quantitative criteria that were used in the evaluations of waste policy measures, nearly all were included in ex-ante evaluations, while only few quantitative criteria were included in ex-post evaluations. Qualitative evaluation criteria were, in turn, slightly more represented in ex-post evaluations.

#### 4.5.2

#### Evaluation methods used

Two British ex-ante impact assessments related to waste policies and measures drew on previous evaluations and their quantitative results and did not use own modelling. Main source that had been used was a comprehensive ex-ante evaluation (Hogg et al. 2006) that modelled the economic impacts of different household waste charging schemes in England. It utilised a sector-based waste collection cost model, "Hermes", owned by Eunomia Research & Consulting and adapted for the study. The model is a spreadsheet based tool which allows a wide range of variables to be accounted for and which enables the optimisation of scenarios to accurately reflect local circumstances. The recycling performance of each collection system scenario is built up by specifying a range of performance parameters for each component of the system. Costs are built up automatically by the model from cost data extracted from a database, which includes base data for example for vehicles and containers.

When valuing the climate change-related benefits of waste charging systems, Hogg et al. (2006) used high and low estimates produced by ERM (Environmental Resources Management) and Eunomia on the tonnes of CO<sub>2</sub> equivalent saved as a result of increased recycling and composting associated with the changes in the modelled central scenario. The saved CO<sub>2</sub> emissions were converted to monetary values using the social cost of carbon figure for 2010 (Watkiss et al. 2005).

A Dutch evaluation of the effectiveness of landfill taxation (Bartelings et al. 2005) included both ex-ante and ex-post assessments, and the ex-ante part of the evaluation utilised a general equilibrium model in Negishi format. The format is especially suited for implementation of externalities, such as environmental pollution and waste generation, as well as price rigidities like a zero marginal price for waste collection. The model and its assumptions are described in large detail in the evaluation report.

The ex-post part of the Dutch evaluation used statistical regression analysis based on statistical data sets. In order to estimate the impact of waste disposal costs on total waste generation, the main determinants of waste generation were identified. Total waste supply was regressed on economic growth, population growth and the costs of waste disposal options. Similar analyses were carried out for household waste and service sector waste. For both of these, some additional explanatory variables were

included in the model. Also the choice between incineration and landfilling was modelled to find out the impact of the landfill tax on the choice of waste disposal option.

An ex-post evaluation of biogas-related measures within the Swedish climate investment programme (KLIMP) (Tamm & Fransson 2011), did not use modelling but calculated quantitative climate impacts based on a database of the programme and investments made within it, as well as final reports of already implemented measures. In addition, qualitative methods such as questionnaires and interviews were used. Also the Spanish ex-post evaluation on renewable energy plan, including biogas measures (AEVAL 2011), used qualitative methods such as document analysis and in-depth interviews with various stakeholders.

#### 4.6

### Evaluations related to F-gases

There are still few national evaluations related to policies on F-gases and on the relatively recent implementation of EU regulation on F-gases (Regulation (EC) No 842/2006). Two national ex-ante impact assessments of the EU-regulation were found, one in the UK and one in Sweden. In addition, an ex-ante evaluation of a tax on F-gases has been made in Sweden, an ex-ante evaluation regarding emission abatement options and cost effects for F-gases in Finland and one ex-post evaluation on the cost-effectiveness of non-CO<sub>2</sub>-greenhouse gas emission reductions in the Netherlands, including F-gases.

#### 4.6.1

### Criteria and methods used

The Swedish evaluation concentrates only on greenhouse gas emissions of the two scenarios, while the British and Finnish evaluations take into account also the economic costs and benefits of implementing the F-gas regulations. They also estimate the costs for various sectors and industries.

In a Swedish evaluation (Kindbom & Danielsson 2006), two scenarios were compared with each other, a reference scenario that assumed only 2005 regulation to be in place and another scenario that included the EU regulation on F-gases. Future CO<sub>2</sub>-emissions were calculated for both scenarios. Calculations are based on latest emission statistics that include revisions of historic emissions as well as new knowledge on future development. The model used in the calculations is the same that has been used in yearly emission inventories and reporting of Swedish emissions to the UNFCCC. The model contains data on emissions and accumulation of F-gases in various products in the society since 1990. The same model has been used in a more recent Swedish evaluation regarding a tax on F-gases (Kindbom 2009), where emission calculations were made for various product groups using F-gases up to 2020, taking into account the proposed tax.

The British evaluation applied a standard cost model approach in estimating the costs of F-gas regulations. The Government guidance on social cost of carbon and shadow price of carbon (Defra 2007) was used to value the reductions in F-gas emissions.

In the Finnish evaluation (Alaja 2009), emission abatement costs were calculated separately for each year of equipment lifetime, for each type of equipment. The emission reductions of a given year were compared with the costs of the same year. Investment costs were allocated to annual costs for the entire lifetime of the abatement option in question. The allocation of investment costs was performed by multiplying total investment costs with the annuity factor. Calculation models are explained more

in detail in the report. In addition, statistical data were obtained from different institutions as a basis for subsectoral scenario calculations. Information was also collected from various experts and main industry actors with the help of questionnaires and personal contacts. The questionnaire responses were analysed qualitatively.

The Dutch evaluation on the cost-effectiveness of non-CO<sub>2</sub>-greenhouse gas emission reductions (Harmelink et al. 2005) looked at the costs of various measures as well as emission reductions achieved and differentiated the costs between the government and certain industries using F-gases. No modelling was used, but the national level cost-effectiveness calculations were made by taking additional investments of a reduction measure compared to the reference situation and depreciating these costs over 10 years (installations and appliances) and over 25 years (measures related to buildings). The government's cost-effectiveness calculations were made equally by taking the total government expenditure and depreciating it over 10 or 25 years in the same way depending on the type of costs.

## 5 Evaluating costs and their distribution

A broad variety of economic models was represented in the analysed evaluations, ranging from purpose-built sectoral cost models to general macro-economic equilibrium models, such as MARKAL, which was used in three evaluations. An interesting issue to address in economic evaluations is the distribution of costs: how are they distributed for example between the public and private sector and consumers.

In this sample of policy evaluations, it was not very common to calculate the costs for various actors. Most evaluations that addressed costs modelled only the total costs of the measure and did not differentiate between actors. It was also very common to address only the cost-efficiency of the measure in relation to the greenhouse gas emissions saved. However, there were six examples of evaluations that did quantitatively assess the costs (and/or benefits) for various actors (see Table 1). Costs were typically differentiated between the exchequer (government administration costs), businesses, and consumers, or one of these three as opposed to the total costs for national economy. In addition, one evaluation assessed the costs between different types of dwelling (CLG 2010) and in a Dutch ex-post evaluation (de Bruyn et al. 2005) five specific cost categories had been created: investment costs, operation and maintenance costs, subsidy payments, government administrative costs and revenues from energy savings (negative costs). The evaluation utilised data from previous sectoral evaluations together with additional statistical data gathered from different institutes. In a Dutch evaluation of the effectiveness of landfill taxation (Bartelings et al. 2005), a distinction was made between external costs, private costs and social costs. Also a few evaluations addressed distributional costs qualitatively on a general level, mainly based on stakeholder interviews.

According to Haug et al. (2010), the issue of distributive equity in climate policy was not widely covered in the 262 evaluation studies that were reviewed in their study. Only a small number of them used fairness as an evaluation criterion. Fairness was assumed to mean equity in sharing costs and benefits between different actors. Weidner (2005) argues that the lack of attention to distributive equity can reflect a degree of political expediency, indicating that governments do not want to highlight the regressive nature of many policies. In the study undertaken by Haug et al. (2010), evaluations commissioned by the UK government were most active in recording the distribution of costs and benefits and how they affected three different actors: the Exchequer, businesses and consumers. According to the synthesis of UK climate policy evaluations, there is uncertainty over the extent to which additional costs incurred by businesses are passed on to consumers. Economic models suggest that between 50 and 100 per cent of any increases in costs would be passed on to consumers, depending on the competitiveness constraints (Defra 2006).

There are also some local and regional initiatives to monetise the economic costs of climate policy measures for different sectors at a local level. As an example, Gouldson et al. (2012) have reviewed the costs of a wide range of low carbon measures for the Leeds City Region that could be applied at the local level. The analysis includes measures for households, industry, commerce and transport, and costs were calculated for each of these, based on a national-level data set maintained by the UK Committee on Climate Change (CCC). The national data was downscaled to make it relevant for the local level, in close collaboration with the secretariat of the CCC. Results for each measure and sector included various types of costs: capital costs, running costs and any hidden or missing costs such as the costs of searching for or adopting the measure.

## 6 Addressing uncertainties and limitations related to the evaluations

Most evaluations analysed in this study dealt with uncertainties related to data used and results achieved. Limitations of the models used and their impact on the results were often addressed. As an example, it was mentioned that as the UK MARKAL model describes the economy in equilibrium, and it is unable to capture transition costs that might occur as the economy adjusts to changes in energy policy. One evaluation (Defra 2006) pointed out that opportunity costs may often be underestimated in evaluations, which, in turn, can have a consequence that the net benefits of policies are overestimated.

The assumptions made in the model can also affect the interpretation and reliability of the results. Assumptions included in the waste collection cost model 'Hermes' (Hogg et al. 2006) were based on literature and discussions with experts, and an effort has been made to use assumptions that are deemed reasonable. However, the evaluation report states that the model outcomes can thus underestimate the performance of well-designed schemes, while the negative consequences of poor schemes could also be underestimated.

Some evaluations that relied on qualitative methods addressed the limitations related to these. For example, when stakeholder interviews were used, it was sometimes emphasised that far-reaching conclusions should not be made based on a limited number of stakeholders' views. A few evaluations also recognised the fact that evaluation was not from the beginning included in the development of the evaluated policy programme, which had implications on the results of the evaluation and their reliability.

Insufficient availability of relevant data was also rather frequently mentioned as a factor that increased the uncertainty of the results. Data that would be needed might not be available at all or at least not in the most desirable form. This links also to another problem that was mentioned in several evaluation reports: evaluations were not always built in from the beginning in the development of the policy measure, but were planned only retrospectively when the measure was already in place or implemented. Thus, the data needs of monitoring and evaluating the measure were not considered already in the beginning and no clear indicators of progress were established to measure against. This was a limiting factor to some of the evaluations. Lack of systematic monitoring and evaluation during the policy measure's life was recognised as a problem. As an example, the ex-post evaluation report of the British Low Carbon Buildings Programme mentioned that an evaluation after the first two phases of the programme would have provided with valuable information for the extension of the programme, but as this had not been done, reliable information on how the programme had succeeded was not available.

Also the evaluation of the British Carbon Emissions Reduction Target (CERT) was designed afterwards, which meant that there was no baseline against which to compare current attitudes, behaviour and levels of uptake of energy efficiency measures. Thus, attributing certain attitudes and behaviours reliably to CERT as a policy measure becomes difficult. Retrospective interviews with stakeholders were also considered susceptible to hindsight because the respondents' views might indicate something that would have happened also without the measure (Ipsos MORI et al. 2011).

## 7 The utilisation of evaluation results

The evaluations were studied also from the point of view of whether they explicitly refer to the purpose that the evaluation serves and how the results are going to be or could be used. However, explicit mentioning of how the evaluation can or will be used does not necessarily mean that its results will be utilised in practice, or, on the other hand, if the issue of utilising evaluation results is not addressed, it does not necessarily mean that the results will not be utilised in practice. It only tells something about the transparency of the evaluation process.

In this study, it was not possible to go as far as to try to find out whether the evaluations had actually had an influence on the policies that they addressed and whether the possible recommendations that were made based on the evaluation had been taken into account when designing future policies. However, the evaluation reports can to a certain extent tell something about whether the utilisation of evaluation results has been given some thought during the evaluation process of a policy measure.

For the analysis, three categories were developed, according to how much the issue of utilising evaluation results had been considered. The evaluations are presented in these categories in Table 2. In the first category, evaluation is clearly part of a certain policy process. It serves directly the future development of the policy measure and it is explicitly mentioned in the evaluation report who will use the evaluation results and how. Sometimes detailed recommendations are given on how the evaluated policy could be improved. In the second category, to which a great majority of the evaluations belonged, some reference is made to how the evaluation can be used, but it is not clearly specified who could be the potential users. The evaluation can be linked to a policy process and is usually commissioned by a government body. Also some recommendations on how the policy can be improved based on the evaluation results can be given. However, describing the utilisation of the evaluation results remains on a general level, e.g. stating that the evaluation can contribute to the societal discussion on the topic. Only four of the analysed evaluations did not explicitly address the utilisation of evaluation results.

In general, there seemed not to be a clear link between ex-ante and ex-post evaluations. Only few ex-ante evaluations referred to forthcoming ex-post evaluations and only few ex-post evaluations made reference to previously made ex-ante assessments of the evaluated policy measure.

Table 2. Description of how explicitly the utilisation of evaluation results has been addressed in the evaluations.

	<b>1. Clear description of how the evaluation results will be used and by whom</b>	<b>2. Utilisation of evaluation results addressed to some extent, on a rather general level</b>	<b>3. Utilisation of evaluation results not explicitly addressed</b>
Ex-ante evaluations	2	14	3
Ex-post evaluations	3	8	1
Evaluations including both an ex-ante and ex-post assessment	2	4	

## 8 Relationship between monitoring and evaluation

Various monitoring data can play a key part in policy evaluation by providing useful data to policy makers and analysts during the whole life cycle of a policy. This can support both the monitoring of the policy as part of its routine management and also its evaluation. Monitoring data are regularly collected and can relate to, for example, people accessing a certain service, inputs, processes and activities, outputs and outcomes of the measure (HM Treasury 2011).

Monitoring data are often administrative and quantitative, and they are usually not produced primarily for evaluation purposes. However, they can still be a very useful resource for evaluators. Thus, the availability of this type of data and if it can be adapted or collected in a way that best supports the evaluation process should be taken into account already at the planning stage of an evaluation. If the quality of the monitoring data is good enough and allows the estimation of a counterfactual, it can act as a basis for an impact evaluation. Monitoring data also provides information to monitor the progress and performance of a policy from its beginning and can contribute to a process evaluation (HM Treasury 2011).

One issue to address in this study was to what extent the evaluations utilised data that is regularly collected regardless of the implemented policy measure and to what extent the data has been collected especially for the purposes of the evaluation in question. The material was divided into the following three categories according to the type of data that had been used:

1. Evaluation relies on monitoring-type data that is collected on a regular basis, in a routine-like manner, by e.g. a national statistics office or a sectoral authority. This kind of data is collected independently of the policy measure, often for a longer period of time, and it is relatively easily accessible for evaluation purposes. This category includes also evaluations that have used general equilibrium models such as MARKAL and evaluations that have used data and values from previous evaluations or from standard evaluation guidance produced by government bodies.
2. In this category of evaluations, new monitoring systems have been created for the monitoring purposes of the evaluated policy measure or programme and these are then utilised when undertaking an evaluation. The monitoring systems can include for example a database of information on various stakeholder groups that the measure affects, e.g. households or companies, or on investments made. The database can also include funding applications and end reports of implemented projects, like in the case of the Swedish climate investment programme KLIMP. This type of data is typically used in combination with either statistical data or data that has been generated through special analyses.

3. Evaluation is based on data that has been gathered specifically for the evaluation and on analyses that have been planned specifically for the evaluation in question. Data gathering can include also interviews and questionnaires that have been specifically designed for a certain evaluation. It also includes using purpose-built models that use data that is not readily available in the right form. Repeating this type of evaluations requires more resources than repeating ones that are based on e.g. existing statistical data that is easily accessible.

Twenty of the analysed evaluations had used data that was collected specifically for the evaluation in question. Almost as many evaluations (18) were based on data from statistical offices or various sectoral government bodies that are being gathered regularly regardless of the implemented policy measure. Only five evaluations had used data from monitoring systems that had been specially created for the policy measure or programme. Of these, four had used also other types of data. Of all evaluations analysed, ten had used a combination of two or three types of data.

As a whole, statistical data sets were more commonly used in evaluations that addressed whole climate and energy policies of a country or overarching policy measures that did not target a certain sector. On the other hand, evaluations of measures related to buildings and their energy efficiency were more likely to use data that was generated through individual analyses that had been designed specifically for the evaluation in question.

## 9 Discussion and conclusions

### 9.1

#### Evaluations face common challenges

There are no unified methods for evaluating climate-related policies in Europe, which has been concluded also in previous studies (e.g. Forster et al. 2009; Huitema et al. 2011). Nor has any country developed a "perfect evaluation scheme" that could be copied to all countries. Of European countries, the UK has developed most guidance for evaluating policies and has the most established process for policy evaluation.

A culture of climate policy evaluation is emerging, and the number of evaluations produced has grown fast during the last few years. However, Huitema et al. (2011) argue that the majority of climate policy evaluations are framed rather narrowly, focusing mainly on the environmental effectiveness and/or cost effectiveness of policies. In addition, over 80 per cent of the policies are uncritical, by which is meant that they take existing policy goals as given.

Most of the evaluations analysed in this study combined both quantitative and qualitative methods. Quantitative evaluations apply typically also some qualitative assessments regarding criteria that are difficult to quantify, while there are more examples of evaluations that have used qualitative methods only.

Ex-ante evaluations seem to use a somewhat broader range of evaluation criteria than ex-post evaluations, which may reflect the fact that before a measure has been implemented, something can with a relatively low input be said about its potential impacts, while after its implementation evaluation of realised impacts may take more resources. Also the range of qualitative evaluation criteria is broader than that of quantitative criteria used, which can be explained by the fact that many of the qualitative criteria are difficult to quantify.

Insufficient availability of relevant data, which sets limitations to the evaluation and increases the uncertainty of its results, is a commonly acknowledged factor in the evaluations. Another limiting factor is that the evaluations are not always included in the development of the policy measure from the beginning, but are planned only retrospectively. As a consequence data needs of monitoring and evaluating the measure are not considered from the start and indicators of progress are difficult to identify as baseline information is often lacking.

Based on this study, it seems that evaluations of whole climate policies and overarching policy measures were more likely to utilise statistical databases that are regularly gathered and maintained regardless of the policy measure, while evaluations of individual, sectoral policy measures and programmes, especially those related to buildings and their energy efficiency, were more likely to undertake special analyses and gather data that would not be available through public, statistical databases. In the terminology of Forster et al. (2009) the general evaluations are oriented to "Tier 2", whereas the analysis of specific instruments use "Tier 3" approaches. Forster et al. (2009) have defined "Tier 2 approach" as providing an intermediate level of analysis that relies largely on existing established aggregate statistics. The availability and

resolution of the data have a significant impact on how well the Tier 2 approach is able to isolate the impacts of a policy. In turn, the "Tier 3 approach" involves a far more detailed assessment of the policy impacts than "Tier 2" and it uses data with a much higher resolution. This kind of data is likely to require additional collection. The approach makes it possible to analyse policy effectiveness more comprehensively but may also require using tailored models and detailed bottom-up data that is not always currently collected by statistical agencies (Forster et al. 2009).

Nearly all evaluations analysed in this study addressed to some extent the issue of how the results could or would be utilised in formulating future policies. However, this was done mainly on a rather general level and in most cases it was not clearly specified who were the potential users of the evaluation results.

Most evaluations analysed in this study were produced either by government bodies or various consultancies. Only two scientific evaluations were found that addressed national-level climate policy measures. Scientific evaluations can, however, have a role in developing new evaluation methods and providing with deeper assessments that may, compared with more common government –commissioned evaluations, concentrate on a more narrow set of issues but address these more thoroughly. Scientific evaluations can also provide a more critical view on the policies in question. An important question is, however, whether there is a link between scientific evaluations and those undertaken by a government body or a consultancy. Do they benefit from each other? The Dutch scientific evaluation (Boonekamp 2006) had utilised yearly survey data provided by EnergieNed (2000) on the energy consumption of Dutch households and the British scientific evaluation (Pielke 2009) has used data from the UK Office for National Statistics.

Haug et al. (2009) conclude that climate policy evaluations made in EU countries have common findings, one of which is that lack of monitoring and weak enforcement are major hindrances to effective policy implementation. The evidence base that the evaluations represent is, according to Haug et al. (2009), surprisingly weak for such a high profile policy area. Systematic climate policy evaluation is too scarce in the EU countries to support systematic evidence-based policy making. In the short term, this reduces the scope for sound policy making and is an obstacle to long-term policy learning.

9.2

## **The findings in relation to the proposed regulation on monitoring**

In November 2011 the European Commission proposed replacing Decision No 280/2004/EC by a Regulation "on account of the broader scope of the legislation, the increased number of addressees, the highly technical and harmonised nature of the monitoring mechanism, and to facilitate its implementation." (EC 2011a). The proposed regulation aims to cover all essential reporting obligations. This study has focused on reporting and evaluation of policies and measures, which in the proposal are mainly dealt with in Chapter 5 "Reporting on policies and measures and on projections of anthropogenic greenhouse gas emissions by sources and removals by sinks" (Articles 13-15).

In relation to current requirements, the main new elements in the proposal are the following:

- A national system for reporting on projections, policies and measures should be established

- The reporting on policies and measures should be annual and cover
  - Description of the national system
  - Projected and realised costs of PAMs
  - Updates to Low Carbon Development Strategies
  - Ex-ante assessment of effects of PAMs and, to the extent possible, also ex-post
  - Demand on increasing transparency through publicly available references on methodological issues. At the same time reporting can be made more concise.
  
- For projections an annual frequency is demanded with
  - split projections for the ETS and non-ETS sectors,
  - reduced need for long methodological reports, when publicly available references exist, and
  - right for Commission to gapfill if no projections are submitted.

In addition to these specific requirements concerning reporting on policies and measures Chapter 6 "Reporting on other information relevant for climate change" of the proposal includes policy reporting in the field of adaptation and support to developing countries. The provisions for Delegation empowers the Commission to specify detailed reporting rules, including rules on the content, structure, format and submission processes for Member States' reporting on policies and measures and on the establishment, operation and functioning of the Member States' national system for policies and measures (Articles 26 and 27).

In the light of the findings of this review the Commission's proposal to strive for greater transparency in evaluations and projections is justified. Increased publicly available analyses of policies and measures and more systematic follow up of policies and measures in national systems is likely to support the development and implementation of climate policies both at a national and a European level. This review has shown that the availability of evaluations varies, which is a finding that is consistent with the observations of Huitema et al. (2011) and also the Commission's impact evaluation of the proposed regulation (EC 2011b).

This review supports the need for more systematic evaluations especially of the economic aspects of climate policies and measures. The idea of a yearly reporting of projected and realised costs of policies and measures cannot, however, be justified in the light of the findings of this study. Section 5 shows that the economic costs are very different across policies and measures and their monitoring is difficult to standardise. Since the objective should be to gain a deeper understanding of how and why economic consequences emerge there is a need for research based evaluations, i.e. "Tier 3" approaches (Forster et al. 2009). Conclusions on the costs or economic success or failure of policies and measures cannot be made based on easily reportable statistics such as state budget allocations or tax levels. Therefore it would make more sense to demand that Member States carry out economic and other evaluations that explore in depth the full range of economic consequences instead of creating a yearly reporting routine that cannot be standardised. The impact assessment of the proposed regulation (EC 2011b) systematically fails to distinguish between regular routine reporting needs and the need for in depth analysis, i.e. the implications of a tiered approach to evaluation and reporting. As a consequence the proposed regulation (EC 2011a) contains detailed requirements on annual reporting where it would be more appropriate to demand specific research based evaluations of policies and measures. As concluded by Forster et al. (2009) all cases where a Tier 3 approach was

used required the use of specialised sector-specific models due to the complexity of the issues to be handled.

Careful evaluations demand significant resources and data that is specifically collected for the purpose. Therefore they cannot be carried out routinely on a yearly basis (see Section 4). The rate of change in policies is also generally much slower than one year. A yearly reporting would thus mainly repeat material from one year to another. This would not be such a great problem, if the reporting routines and systems could be fully integrated with the general national reporting routines of the Member States, for example with annual reporting to the national parliaments. The proposed regulation, however, gives the Commission the right to specify the details of the reporting system (Article 27). Although this can help in standardising some information that Member States submit it makes integration into national systems more difficult.

This review has shown that there is a great diversity of policies and measures in the examined sectors. Standardising detailed reporting of policies and measures across all sectors is more difficult than standardising reporting on, for example, green house gas emissions, which follow internationally agreed calculation procedures. The findings of this review suggest that the regular annual (or biannual as in the current requirements) EU-level reporting of policies and measures should be kept on a fairly general level, using easily available and routinely collected information. At the same time Member States should be required to put more effort into specific evaluations of major policies and measures at longer time intervals. These evaluations and the data that they use should be made publicly available, thus enabling also the European Commission to carry out meta-evaluations to support climate policy development.

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## DOCUMENTATION PAGE

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<i>Abstract</i>	<p>Improving the effectiveness of climate policy requires monitoring and evaluation of the implementation of policy measures. Also the EU requires that the member states should every two years report their implemented measures to the European Commission according to the Decision 280/2004/EC. This report studies the ex-ante and ex-post evaluations of climate policies implemented in the EU countries. The focus is especially on policies related to buildings, waste and F-gases. The objective of the study is to encourage sharing experiences of evaluations between countries and thus increase the transparency and cost-efficiency of the evaluations. The study addresses e.g. what kind of criteria and methods have been used in the evaluations, what kind of data has been utilised and what kind of limitations have been brought up in the evaluations.</p> <p>The need to renew the evaluation and reporting of climate policy measures has been recognised both at the EU – and member state level. The European Commission has proposed replacing the current Decision 280/2004/EC with a decree that would oblige member states to report about their policy measures yearly in more detail than currently. The results of this report are reflected against the Commission's proposal. Based on this report, a clearer distinction should be made between regular, routine-like reporting and research-based evaluations. The report concludes that regular reporting should be restricted to standardised data that is relatively easily available. At the same time, the need to undertake periodic, more in-depth and research-based evaluations, can be emphasised.</p>			
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Tiivistelmä	<p>Ilmastopoliitiikan vaikuttavuuden parantaminen edellyttää politiikkatoimien seuranta ja arviointia. Myös EU edellyttää jäsenmailta politiikkatoimien säännöllistä seuranta ja ne raportoivat joka toinen vuosi toteutetuista toimistaan Euroopan Komissiolle päätöksen 280/2004/EY mukaisesti. Tässä raportissa tarkastellaan EU-maissa tehtyjä ilmastopoliittisten ohjauskeinojen etukäteis- ja jälkikäteisarviointeja, keskittyen erityisesti rakennuksiin, jätteisiin ja F-kaasuihin liittyviin ohjauskeinoihin. Työn tarkoituksena on edesauttaa kokemusten jakamista arvioinneista maiden välillä ja siten lisätä arviointien läpinäkyvyyttä ja kustannustehokkuutta. Työssä tarkastellaan muun muassa sitä, millaisia kriteereitä ja menetelmiä arvioinneissa on käytetty, millaisia tietoja arvioinnit hyödyntävät ja millaisia rajoituksia arvioinneissa on tuotu esille.</p> <p>Tarve uudistaa ilmastopoliittisten toimenpiteiden arviointia ja raportointia on tunnistettu sekä EU:n että jäsenmaiden tasolla. Euroopan Komissio on ehdottanut päätöksen 280/2004/EY korvaamista asetuksella, joka mm. velvoittaisi jäsenmaat raportoimaan vuosittain nykyistä yksityiskohtaisemmin politiikkatoimista. Tämän raportin tuloksia peilataan EU:n Komission ehdotukseen politiikkatoimia koskevien raportointivaatimusten kehittämiseksi. Tarkastelun perusteella todetaan, että tulisi tehdä selvempi ero säännöllisesti tapahtuvien rutiiniraportointien ja tutkimuksiin perustuvien arviointien välillä. Johtopäätöksenä todetaan, että säännöllinen raportointi tulee rajata verrattain helposti ja yleisesti saataviin ja standardoituihin tietoihin. Samalla tulee korostaa tarvetta laatia ajoittain erillisiä syvällisempiä tutkimuksiin perustuvia arviointeja.</p>			
Asiasanat	Ilmastopoliitika, ohjauskeinot, arviointi, raportointi, EU, rakennukset, jätteet, F-kaasut.			
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Sammandrag	<p>Klimatpolitiska åtgärder måste följas upp och utvärderas för att man ska kunna förbättra deras effektivitet. Även EU förutsätter att medlemsländerna regelbundet följer upp sina politikåtgärder och de rapporterar vartannat år om dessa till Europeiska Kommissionen i enlighet med beslutet 280/2004/EG. I denna rapport ges en översikt av förhandsbedömningar och utvärderingar som gjort av klimatpolitiska styrmedel i olika EU-länder. Analysen koncentrerats på de utvärderingar som gjorts om styrmedel som gäller byggnader, avfall och F-gaser. Rapportens avsikt är att främja utbytet av erfarenheter om utvärderingar och på så sätt även öka utvärderingarnas transparens och kostnadseffektivitet. I rapporten granskas bl.a. vilka kriterier och metoder som använts, vilken slags information utvärderingarna använder samt vilka begränsningar utvärderingarna har identifierat.</p> <p>Både inom EU och medlemsländerna har man konstaterat att det finns ett behov att utveckla utvärderingen och rapporteringen av klimatpolitiska åtgärder. Europeiska kommissionen har föreslagit att beslutet 280/2004/EG bör ersättas med en förordning, som bl.a. skulle kräva att medlemsländerna rapporterar årligen och noggrannare än förr om politikåtgärder. Resultaten av denna studie jämförs med EU Kommissionens förslag till utveckling av rapporteringskraven. Analysen visar att man bör göra en klarare skillnad mellan rutinmässig rapportering och forskningsbaserade utvärderingar. Den regelbundna rapporteringen bör bygga på lättillgänglig och standardiserad information. Samtidigt bör man betona behovet av särskilda forskningsbaserade utvärderingar som kan genomföras med längre intervall.</p>			
Nyckelord	Klimatpolitik, styrmedel, utvärdering, rapportering, EU, byggnader, avfall, F-gaser			
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Monitoring and evaluation of climate policy measures is necessary in order to understand their impacts and improve their effectiveness. The EU requires that the member states regularly monitor their climate policies. Every two years the member states report about their implemented measures to the European Commission according to the Decision 280/2004/EC. Various policy evaluations create a basis for reporting, as they provide new knowledge on the impacts and effectiveness of the measures. This report examines the ex-ante and ex-post evaluations that have been undertaken in the EU countries. The focus is especially on policies related to buildings, waste and F-gases. The objective of the study is to promote sharing experiences from evaluations between countries and thus improve their transparency and cost-efficiency.

The need to renew the evaluation and reporting of climate policy measures has been recognised both at the EU and the member state level. The European Commission has proposed replacing the current Decision 280/2004/EC with a decree that aims at a more systematic and somewhat broader reporting by increasing the reporting requirements and making them more detailed. For example, the decree would oblige member states to increasingly report about the economic impacts of the policy measures. Based on the study, it can be concluded that a clearer distinction should be made between regular, routine-like reporting and research-based evaluations. At the same time, the need to undertake periodic, more in-depth and research-based evaluations, should be emphasised.

