



European
Commission

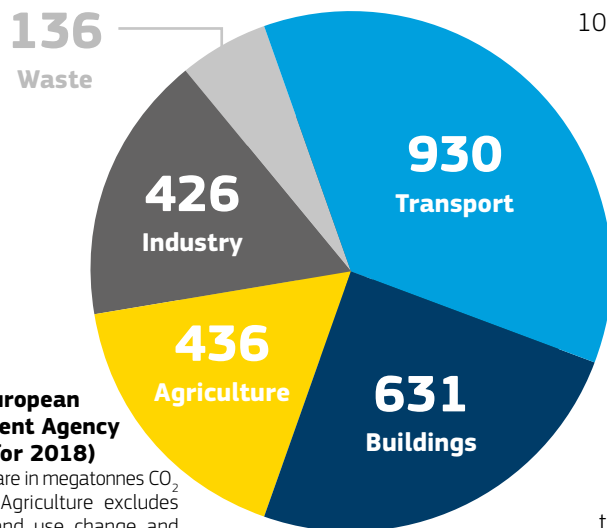
EU Effort Sharing Legislation –

Capacity building support to Member States on
climate policy implementation and ex-post evaluation



Introduction

The European Union's (EU) Effort Sharing legislation establishes binding annual greenhouse gas emission (GHG) targets for European Member States for the period 2013–2020 in the Effort Sharing Decision 406/2009/EC and for 2021–2030 in the Effort Sharing Regulation (EU) 2018/842. The chart shows total GHG emissions for 2018 in Effort Sharing sectors in the EU and the UK. These targets concern emissions from most sectors not included in the EU Emissions Trading System (EU ETS), such as transport, buildings, agriculture and waste.¹ The national targets in



Source European Environment Agency (Figures for 2018)

All numbers are in megatonnes CO₂ equivalent. Agriculture excludes land use, land use change and forestry. EU27 + UK

the current legislation will collectively deliver a reduction of around 10% in total EU emissions from the sectors covered by 2020 and 30% by 2030, compared with 2005 levels. Together with a 43% cut in emissions covered by the EU ETS by 2030, EU non-ETS sector targets will contribute to the EU achieving an overall 40% emission reduction by 2030 as set in current legislation.

In late 2019, the European Council agreed to the EU becoming climate neutral by 2050 in line with the Paris Agreement – an objective that had already been endorsed by the European Parliament. To this end, the European Commission presented the European Green Deal as a comprehensive road map towards a green and just transition. The climate neutrality target will become legally binding

through the European Climate Law that the Commission proposed

in 2020, and is expected to be adopted by the EU in 2021. The proposal

also includes an intermittent emission target of at least 55% net reductions by 2030 compared to 1990. As part of the policy package to make the EU fit for the new 2030 target (“fit for 55”), the Commission is currently reviewing the Effort Sharing Regulation alongside other climate legislation. A proposal for revision is expected to be presented in June 2021.

Following the COVID-19 pandemic, the EU decided on a recovery package (totalling EUR 1.8 trillion) under the Recovery and Resilience Facility (RRF) and adopted its 2021–2027 budget that together have been designed to help the EU rebuild from the crisis while supporting investments into green and digital transitions. Two of the largest potentials to create an economic stimulus in the area of climate and energy policy have been identified in Effort Sharing sectors, namely in building renovation and clean mobility. This implies that numerous additional activities will be needed by Member States to reach the new stricter targets ahead. Thanks to the RRF there will be ample funding available to speed up the transition through new policies and reforms within Effort Sharing sectors.

In 2019–2020, the European Commission's Directorate General for Climate Action sponsored a project to help EU Member States design and evaluate national climate policies. (“Capacity building to facilitate implementation of the Effort Sharing legislation, with a focus on ex-post evaluation and policy lessons Learned.”) The aim of this project was to strengthen Member States' capacity to implement and meet their objectives under the Effort Sharing legislation. The recent events of stepping up the climate ambition and the aftermath of the COVID-19 crisis have made the outcomes of this project even more relevant for Member States in their efforts to implement efficient policies and measures towards climate neutrality.

This brochure summarises the key outputs from the project. It is intended particularly for those in Member States who are responsible for implementing or evaluating climate policies in sectors covered by the Effort Sharing legislation. The focus is on lessons learned from the project, in particular by Member States that received capacity building support.

¹ The Effort Sharing legislation does not cover land use, land use change and forestry (LULUCF) sectors.

Overview

The focus of this brochure is on lessons learned from the capacity building support requested by Member States and from the guidance provided to them to improve their ex-post evaluation of the policies and measures that they implemented. The brochure outlines and points to key outputs and lessons from the support provided.

THE SPECIFIC OBJECTIVES OF THE DG CLIMATE ACTION PROJECT WERE TO:

Support Member States to build capacity to assist in developing and putting in place appropriate policy measures – see section on capacity building, pages 4-8.

Improve Member States' capacity for performing policy evaluations in particular ex-post evaluations – see section on ex-post evaluation, pages 9-11.

Identify and share good practices of policies and measures in the Member States which have reduced emissions in the Effort Sharing sectors – see section on case studies, pages 12-23.

The first section of the brochure outlines the capacity building support provided to Member States. This support was to facilitate implementation of their policies and measures to meet the Effort Sharing legislation targets and to improve their policy evaluations, in particular ex-post evaluations. Examples are given of the support provided to Poland in the transport sector and to Slovakia in the agriculture sector, together with lessons learned from this support. The key lessons learned from the capacity building provided to Member States are then presented.

The ex-post evaluation process, methodologies and lessons for improvement is the focus of the second section. Ex-post evaluation of climate policies and measures is necessary to understand the actual effects of climate policies, along with their overall effectiveness (i.e. emission savings) and efficiency (cost of delivering the emission savings). Ex-post evaluation shows how the outcomes compare with the initial expectations, and identifies how the design of existing policy and/or future policies can be improved. In this context, ex-post evaluations of national policies, and effective use of the results from these evaluations, can play a major role in the cost-effective delivery of Member State and EU climate targets.

In the final section, the brochure summaries six case studies of national policies and measures implemented to reduce GHG emissions in sectors under the Effort Sharing legislation, with two each on transport, agriculture and cross cutting policy measures. The case studies are:

SECTOR	TITLE	PAGES
Transport	Electric vehicle promotion in Europe	12-13
Transport	Sustainable Urban Mobility Plans	14-15
Agriculture	Agricultural biogas in France	16-17
Agriculture	Nitrogen efficiency in Ireland	18-19
Cross-cutting	CO ₂ tax in Switzerland	20-21
Cross-cutting	Energy and climate funds	22-23




Several of the case studies are based on the European Environment Agency database on national climate mitigation policies and measures. Full versions of the case studies and also the evaluation guidance and bibliography can be found on the European Commission Climate Action pages. This is currently available via: https://ec.europa.eu/clima/policies/effort_en.

Capacity building support provided to Member States and lessons learned

An initial survey, in which Member States identified priority areas for capacity building support, indicated the sectors, policy types and the level of support of interest. The survey covered potential support on policy design and implementation, and on ex-post evaluation. The survey was followed by interviews with Member States interested in capacity building support. As a result of these interviews, seven applications for support were developed in discussion with DG Climate Action. Packages generally ranged between 5-20 days of support. Poland was provided with an extended package of support (80 days of support) given the complicated nature of the problem at hand – to develop a methodology to use in an ex-post evaluation of their road transport sector.

Seven packages of support were provided, as summarised in the following table:

MEMBER STATE	SECTOR	SUMMARY	TYPE OF SUPPORT
Bulgaria 	Transport, agriculture, cross cutting	The Ministry of Environment and Water in Bulgaria was supported for a multiple sector package, focusing on the review and prioritisation of new policies in agriculture, the transport sector and cross-cutting sectors. As part of this, the consultant team supported the delivery and use of an evaluation framework in these sectors through a series of workshops.	Policy development and implementation: Review and prioritisation of new policies across three sectors
Estonia 	Agriculture	The Estonian Ministry of the Environment and the Ministry of Rural Affairs identified improving manure management through using anaerobic digestion (AD) plants as a promising option for reducing GHG in the agriculture sector. While biogas production has increased in Estonia, policy development was needed to expand anaerobic digestion and support biomethane production. The support package built capacity in the design and implementation of measures to support this technology, considering technical, environmental and economic aspects.	Policy development and implementation: Policies to support AD plant deployment
Luxembourg 	Transport	This support package aimed at enabling Luxembourg to conduct decomposition analyses of CO ₂ emissions in the road transport sector, which is responsible for two thirds of Luxembourg's non-ETS emissions. This package built knowledge on how to analyse impacts of existing road transport policy measures on GHG emissions. Decomposition analysis was identified as a more robust approach than the existing models and as a result of the work, the consultant team gained greater understanding of the impact of different road policies on CO ₂ emissions.	Ex-post evaluation: Road transport policies
Poland 	Transport	The trend in GHG emissions from the transport sector in Poland was of concern. The National Centre for Emissions Management (KOBiZE) based in the Institute of Environmental Protection received support in conducting ex-post analysis of their road transport package. This focused on building capacity in the development of a coherent methodology for ex-post evaluation of road transport policies and measures, with a focus on understanding the impact of these measures on GHG emissions.	Ex-post evaluation: GHG reduction policies in road transport

MEMBER STATE	SECTOR	SUMMARY	TYPE OF SUPPORT
Lithuania 	Agriculture	In Lithuania, GHG mitigating policies in the agriculture sector mainly focus on the more effective and precise use of mineral nitrogen fertilizers and the education of farmers. In the recent National Energy and Climate Plan (NECP) submission, four agriculture policies had been implemented and nine were under implementation. To increase understanding of the mitigation impact of both the implemented policies as well as policies under implementation, and to increase mitigation potential within the agriculture sector, this support package provided capacity building support in two key areas: review of GHG impact calculations and policy gap analysis.	Ex-post evaluation: GHG reduction policies in agriculture
Slovakia 	Transport	This package in Slovakia supported the Ministry of Environment to understand the GHG impacts of electric vehicle (EV) promotion policies. These policies had not previously been evaluated or closely monitored. Indicator analysis was identified as a suitable method to begin to understand the impact of these policies. It uses single or multiple indicators to track progress of policies towards objectives. The support package enabled Slovakia to better utilise some of the existing transport indicators and to develop new ones to better understand the impacts of existing EV policies.	Policy development, implementation and evaluation: GHG reduction policies in transport
Slovakia 	Agriculture	This package supported the Ministry of Environment in Slovakia with the review and implementation of agriculture policies. The key aims were to support the design and implementation of the National Common Agriculture Policy Strategic Plan and national commitments under the Effort Sharing Regulation. Capacity building support was provided to increase the accuracy and robustness of GHG impact calculations for the evaluation of existing policies, and to identify gaps in existing policies and proposed policies. The activities also increased awareness of best practice policies from other countries.	Ex-post evaluation: GHG reduction policies in agriculture and identify policy gaps

Summaries of the support for Poland in the transport sector and for Slovakia in the agricultural sector are given in more detail below. This is followed by a summary of the key lessons learned from the capacity building support provided to Member States to help them implement and evaluate their climate policies and measures.



Capacity building support for Poland – transport

The aim of the extended support package for Poland was to improve ex-post evaluation of existing road transport policies and measures, with a focus on how these impact GHG emissions. Support was provided to Poland's National Centre for Emissions Management (KOBiZE).

Counterfactual analysis was identified as a suitable method to use in the evaluation. This method considers what would have happened to emissions in the absence of a policy intervention. The potential impact of a policy is then estimated by comparing the counterfactual with actual emissions.

Capacity building support for Poland on transport – key lessons

- A counterfactual scenario is highly dependent on data availability and it important to identify early on if there is suitable data for all policies
- Guidance on data collection was important to enable KOBiZE to use this methodology in the future
- To maximise capacity building potential KOBiZE was involved in the development of any calculations produced through regular method-review meetings
- Changes were subsequently made to the approach as a result of these discussions.



[The capacity building support] has helped us to develop methodologies and tools to estimate the effects of defined [policies and measures] (PaMs) or group of PaMs. We will be able to use the results of the support in the future when analysing the impact of PaMs on GHG emission reductions. We will be able to adjust the Excel tools developed for us according to our future needs or apply similar approaches when trying to estimate the effects of PaMs in other sectors. In addition, we will be able to apply results of this cooperation during the preparation of our reports including the evaluation of policies and measures, such as a report under the Governance Regulation and reports under the UNFCCC and Paris Agreement. ”

Kobize, Poland



Capacity building support for Slovakia – agriculture

The package of support aimed to support Slovakia's Ministry of Environment with the evaluation and implementation of agriculture policies. Capacity building support was provided in two phases. In the first, the consulting team reviewed existing ex-post GHG calculations and advised the Ministry on how to improve their accuracy and robustness. In the second phase, the team performed policy gap analysis and provided advice on the gaps identified.

Capacity building support for Slovakia on agriculture – key lessons

- While the GHG calculations were found to be logical and accurate, labelling and referencing support would improve accessibility of the workbook for users for easier cyclical reporting
- More clarity and detail are needed - on the policy instruments, implementation plans and resources to support implementation - to assess the impact of National Energy and Climate Plan (NECP) policy instruments
- The influence of specific Member State characteristics on policy determinations provided valuable insight on the relevance of policies in a Member State context (e.g. the role of organic farming and the approach to assessment of cost benefit in the Slovakian context)
- Advice and knowledge was valuable to help support farmers with some of the more complex requirements (e.g. mitigation identification and using the relevant planning tools).



The first round of the work helped us to improve understanding of the potential policy options to address gaps in the set of current and proposed agricultural policies, and their relative strengths and weaknesses in a national context, it also helped us with identification of policy areas in agriculture that needed more research and analysis in order to develop them in more detail (anaerobic digestion of animal waste, nitrogen fertilisers use, organic farming). The support was helpful for us to push for policies to be introduced in agriculture and we will also be able to design them for preparation of the National Common Agricultural Policy strategic plan. The capacity building project was beneficial to improve our PaMs and projections reporting under the Regulation on the Governance of the Energy Union and Climate Action. ”

Ministry of Environment, Slovakia

Key lessons for capacity building support in Member States

The following lessons were learned from the capacity building support provided to Member States on implementing and evaluating their climate policies.

LESSONS FOR MEMBER STATES	<ul style="list-style-type: none"> • Capacity building support can be effective in assisting Member States in setting targets, assessing candidate policies, developing policy implementation and monitoring, and in planning ex-post policy evaluation • Support can be particularly effective when delivery can be aligned with national or EU-reporting deadlines, and a key contact in the Member State coordinates discussions and maintains momentum • An initial workshop at the start of the support helps to develop a mutual understanding of knowledge levels and to tailor the capacity building support
LESSONS FOR MEMBER STATES AND DG CLIMATE ACTION	<ul style="list-style-type: none"> • Support provided by DG Climate Action (e.g., via consultancy teams) is a conduit for forming good working relationships between EU-level and national-level organisations. Regular feedback from Member State beneficiaries to DG Climate Action helps inform the support provided.
LESSONS FOR DG CLIMATE ACTION	<ul style="list-style-type: none"> • A demand-led application process works well: in this case with a survey for Member States to express their needs, followed by interviews and an application to confirm interest • Applications became quicker towards the end of the project as examples of support already delivered helped Member States to confirm the support that would meet their needs • Delivery is effective if it is flexible and fits in with the day-to-day priorities and capacity of the Member State authority • Awareness-raising through workshops, webinars and Commission expert meetings leads to interest in capacity building support from Member States
LESSONS FROM ONLINE DELIVERY	<ul style="list-style-type: none"> • Online delivery can be cost and time effective and reduce GHG emissions as no travel is required. Sessions tend to be shorter and when spread over a period of weeks allow policy makers to reflect on and develop understanding and questions in advance of the following sessions.

Guidance for ex-post evaluation of climate policies in Effort Sharing sectors

Ex-post evaluation of climate policies and measures provide valuable learning on what the actual effects of climate policies are, along with their overall effectiveness (i.e. emission savings) and efficiency (cost of delivering the emission savings). Evaluation shows how the outcomes compare with initial expectations and identifies where improvements can be made in the design of the existing policy and/or future policies. In this context, the ex-post evaluation of national policies, and effective use of the results from these evaluations, can play a major role in the cost-effective delivery of Member State targets under the Effort Sharing legislation.

Context and rationale of the guidance

Ex-post evaluation guidance was a key part of the capacity building support provided to Member States. It was developed to provide support to Member States to enhance the systematic ex-post evaluation of climate policies in Effort Sharing sectors. The guidance covers reporting of evaluation results as well as learning from ex-post evaluation.

A survey was undertaken to gain a better understanding of the policy evaluation needs of Member States, in particular on their needs for support on ex-post evaluation. The results of this survey indicated that Member States had a strong interest in receiving support on the following topics:

Where Member States indicated strong evaluation support needs

- Collection of evidence for ex-post evaluations
- Quantitative methodologies that can be used to evaluate policies on GHG emissions and costs, including the cost effectiveness of policies and cost benefit analysis of emission reductions
- Key evaluation issues or methodological challenges, such as:
 - Interaction of policies
 - How to include quantitative emission impacts' results from ex-post evaluations in GHG emissions projections
 - Quantification of GHG impacts of policies within the scope of the Effort Sharing legislation where the impacts occur outside of the scope (i.e. within EU ETS sectors).

The results clearly indicated the need from Member States for guidelines about quantitative evaluation approaches, as well as guidance on the evaluation of (cost) efficiency and on estimating the interactions between and overlapping effects of multiple policies.

Evaluation guidance support

In a first step to support Member States with evaluation needs, identified through the survey, a bibliography was compiled of previous studies that had evaluated ex-post impacts of Member States' policies in Effort Sharing sectors. The studies were collated in a repository, capturing key details, and allowing the identification of methodologies that can serve as good examples for future evaluations.

The aim of the guidance was not to replicate what was available in other sources, but to provide additional guidance on the identified needs of Member States and to illustrate common practice among Member States based on selected case studies from the bibliography.

The compiled guidance has the following key characteristics:

The guidance on ex-post evaluation of climate policies...

1. ... focuses on priority evaluation needs expressed by Member States;
2. ... provides practical and hands-on guidelines on key topics to support policy evaluation;
3. ... is concise with links to additional material and documents;
4. ... is supported by examples and case studies;
5. ... focuses on ex-post evaluation only, but multiple evaluation criteria;
6. ... is aligned with the European Commission's Better Regulation Toolbox;
7. ... aims to improve completeness of reporting under the Energy Union Governance Regulation; and
8. ... should support transparent reporting of evaluation results.

Structure of the guidance

The guidance is organised in line with the identified needs of Member States to support ex-post evaluation:

MEMBER STATES' NEEDS	SPECIFIC METHODOLOGIES OR CHALLENGES	CHAPTER OF GUIDANCE
General frameworks for policy evaluation	1. intervention logic model, 2. counterfactual analysis,	Chapter 2
Methodologies for collecting evidence	3. surveys, 4. systematic literature review, 5. focus groups, 6. interviews, 7. monitoring performance data,	Chapter 3
Analytical, quantitative evaluation methods	8. indicator analysis, 9. cost effectiveness analysis and cost benefit analysis, 10. regression analysis, 11. decomposition analysis, 12. multi-criteria analysis,	Chapter 4
Approaches to deal with key evaluation issues or methodological challenges	13. policy interactions, 14. rebound effect, 15. free riders, 16. uncertainty, 17. emission factors, 18. co-benefits, 19. consistency between ex-post information and projections, 20. splitting the impacts between Effort Sharing and the EU ETS.	Chapter 5
Case studies or existing evaluation studies from Member States		Chapter 6

Three elements of an evaluator's toolbox are covered by the guidance: (1) frameworks for policy evaluation, (2) evidence collection methods, and, (3) analytical, quantitative methods.

Following the evaluator's toolbox, explanation or guidance is given on how typical evaluation issues or challenges can be tackled (e.g. how to deal with policy interactions or uncertainty).

The technical guidelines for most of the methodologies or challenges are illustrated in case studies from the bibliography. Attention was given to how the evaluation was performed (evaluation approach) and how the relevant evidence was collected (collection of evidence).

The "Guidance document for ex-post evaluation of climate policies in Effort Sharing sectors" and the "Bibliography of ex-post evaluations of national and EU policies in Effort Sharing sectors" are available at: https://ec.europa.eu/clima/policies/effort_en

Network of ex-post evaluation experts

Through the development and presentation of the ex-post evaluation guidance, contact was established with a range of evaluation experts in Member States. These experts reviewed the guidance and also participated in a workshop and webinars that introduced the guidance. There was a strong interest among participants to create a network of national experts and others involved in evaluation of climate policies. This could be further explored.

Lessons on ex-post evaluation guidance

- There is significant interest from Member States in the evaluation guidance that has been developed in the current project.
- The areas of interest vary with the current experience of the Member States and the individuals involved. In some cases the interest can be in seeking guidance on the range of evaluation techniques that are available. Other participants may be more interested in the detailed application of a complex technique.
- The work of the current project has created a basis for a network of evaluators of climate policies in Member States thanks to national experts being involved in designing and reviewing the evaluation guidance document as it has been developed.



Case study – Electric Vehicle (EV) promotion

The case study is available at: https://ec.europa.eu/clima/policies/effort_en

Many European countries have introduced monetary incentives for the purchase of electric vehicles (EV). The range and magnitude of incentives varies and may consist of reductions in taxes, exemptions from taxes, or grants. These are often implemented alongside complementary financial and non-financial-use incentives to increase the attractiveness of owning an EV.

A selection of the most popular policies is detailed in this case study through the examples of Norway, the Netherlands and France to highlight the different ways in which an incentive can be implemented. This case study provides an overview of the different EV promotion policies in each of the countries, including the key actors involved, primary objectives, and how they interact with other schemes. It then focuses on the implementation of the various policies, including both the successes and the limitations. Finally, the case study presents key factors to consider when replicating these policy options.

Electric Vehicle Promotion

KEY CHARACTERISTICS

DIVERSE CONTEXTS

POLICIES TARGETING

NATIONAL & LOCAL POLICY



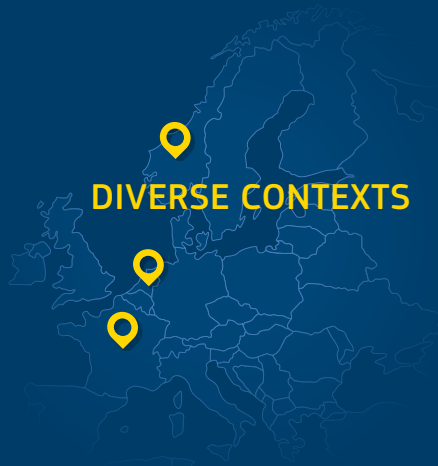
Purchase costs



Use incentives



Road infrastructure



KEY RESULTS



Countries able to meet ambitious targets



Different policy options for the same object



Early intervention by certain Member States led to highest uptake levels in EU27 - later policy intervention for other Member States is easier in the current, more mature market



Small adjustments to existing policies continued uptake increases

KEY PERFORMANCE METRICS

COUNTRY	NUMBER OF EV IN FLEET	NEW EV IN 2018	CHARGING STATIONS
EU27 + UK	450,938	1%	174,100
France	123,171	1.4%	29,538
Netherlands	44,984	5.4%	43,730
Norway	237,710	46%	12,337

Sources: Number of EV in fleet and new sales % EU 28, FR, NL from European Alternative Fuels Observatory (2019). Norway's data from Norsk Elbilforening (2019) and IEA (2019); Charging stations figures (EAF0, 2019)

SUCCESS FACTORS



Financial incentives work best in combination with softer measures (for example, aim to enhance other areas of EV ownership such as free parking or access to bus lanes)



Changes made to policies to support EVs are likely to affect clear changes to consumers purchasing patterns



EV purchases are still highly reliant on the design of supportive policies, even in countries with more established markets



Location and design of charging infrastructure is important. Stations should be in highly visible, busy locations to maximise use

IMPLEMENTATION & REPLICATION PROCESS

In design phase, consider multiple aspects of EV ownership to be targeted



Work at national and local levels, consider different potential barriers in each



Develop policy monitoring plan and collect data from implementation



Use monitoring data to optimise incentives and other schemes



Case study – Sustainable Urban Mobility Plans (SUMPs)

The case study is available at: https://ec.europa.eu/clima/policies/effort_en

Urban issues, such as traffic congestion, poor air quality, noise and CO₂ emissions, are part of the lives of 70% of the EU population that live in cities. To address these issues and develop more efficient and sustainable urban mobility systems, several European cities are developing Sustainable Urban Mobility Plans (SUMPs). These plans rely on a participatory approach from stakeholders to develop innovative measures that improve their citizens' quality of life and ease of transport.

This case study provides insights into key elements of success when it comes to the implementation of SUMPs and illustrates how to develop them in the context of other regulations and strategies. The cities under focus are Rivas (Spain), Limassol (Cyprus) and Turda (Romania).

The case study presents best practise SUMPs by introducing the three cities' SUMPs, their implementation, policy context and stakeholder engagement. Next, assessments of the various impacts on the cities are presented, focusing on greenhouse gas (GHG) impacts and modal shifts. The case study then presents SUMP limitations and discusses transferability to other cities.

Sustainable Urban Mobility Plans (SUMP)

KEY CHARACTERISTICS

DIVERSE CONTEXTS



POLICIES TARGETING



DIFFERENT CITY SIZES



KEY RESULTS



Successfully consulted stakeholders



Identified challenges and opportunities



Formed effective objectives and measures



Developed detailed strategy and action plan



Robust indicators based review process

KEY PERFORMANCE METRICS

	RIVAS, SPAIN	LIMASSOL, CYPRUS	TURDA, ROMANIA
Public transport	5% increase by 2020	20% increase by 2040 (1.8% in 2019)	30% increase by 2030 (2.1% in 2018)
Cycling	15% increase by 2020	10% increase by 2030 (5.7% in 2019)	13% increase by 2030 (6.7% in 2018)
Walking	5% increase by 2020	4% increase by 2030 (0.7% in 2019)	27% increase by 2030 (19% in 2018)
SUMP GHG objectives	50% reduction compared to 2008 levels by 2020	20% reduction compared to 2016 levels by 2050	15.9% reduction compared to 2017 levels by 2030

Note the figures in brackets are achievements. Other figures are objectives

SUCCESS FACTORS



Utilisation of SUMP experience from across Europe. Draw on other cities to exchange ideas, borrow from best practices and learn lessons from successes. However, the planning should be tailored to the city's contexts and needs. Therefore, successful planners find best practices that are adaptable to best fit their cities' needs



Case study examples show a combination of hard and soft innovative measures can often provide significant value to the SUMP at a lower cost to the city



Rigorous assessment and continuous evaluation allow policy makers to adjust and review the SUMP to dynamically reflect changing circumstances and lessons learned

IMPLEMENTATION & REPLICATION PROCESS





Case study – Agricultural biogas in France

The case study is available at: https://ec.europa.eu/clima/policies/effort_en

France has seen an increase of biogas plants of over 800% between 2010 and 2015. However, unlike other sectors, policies and measures in agriculture are complex and it is often difficult to quantify the exact results.

Biogas is generated through the anaerobic digestion of manure and other agricultural organic feedstocks. Anaerobic digestion takes these inputs and, in the absence of oxygen, creates methane (CH₄) and a digestate as a solid output. The capture and combustion of methane produces electricity and low-level heat, both of which generate greenhouse gas (GHG) savings. The digestate can be utilised as a fertiliser substitute, offering further GHG savings. Alternatively, the biogas can be processed into biomethane to replace natural gas, which is becoming increasingly popular.

This case study looks at how France implemented an integrated set of policies at the national level, to promote the biogas market, support the production of renewable energy, and improve the energy efficiency of farms. The four measures were:

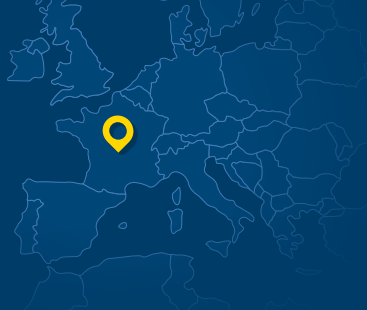
- Purchase rates for renewable electricity and high efficiency co-generation
- Purchase rates for bio methane injected into gas networks
- Farm competitiveness and adaptation plan, and
- Energy Plan Biogas from nitrogen

The case study considers the fine-tuning of the implementation of the policies at regional level to encourage the agricultural biogas market, and reviews the successes and limitations of these measures. Finally, it presents lessons for improvement.

Agricultural biogas in France

KEY CHARACTERISTICS

GEOGRAPHIC SCOPE



POLICIES TARGETING



Improve energy efficiency of farms



Support production of renewable energy



Support the market for biogas

KEY RESULTS



Between 2010 and 2015 the number of biogas plants increased from 32 to 267



By 2015, total avoided emissions from use of agricultural biogas of 534 ktCO₂eq

KEY PERFORMANCE METRICS

	NUMBER OF BIOGAS PLANTS	EMISSIONS AVOIDED (KT _{CO2} EQ)*
2010	32	64
2011	47	94
2012	90	180
2013	138	276
2014	185	370
2015	267	534

*Avoided emission by storage and treatment of agricultural livestock manure and by substitution of fossil energies (directly related to the exploitation of the installation).

SUCCESS FACTORS



Comprehensively framed within broader sustainability goals related to nutrient optimisation, rural development and agricultural reforms



Integrated policy framework with feed-in tariffs still available for small scale plants



Multiple benefits to the farmer - sale of electricity and biomethane; recovery and utilisation of heat; utilisation of the digestate as a replacement for fertiliser



Use of agricultural rest streams (e.g. reuse/recycling of by-products from production)

IMPLEMENTATION & REPLICATION PROCESS

Develop at national level an integrated set of policies to encourage agricultural biogas production



Implement at regional level, with fine tuning



Needs significant adaptation to local situation, if considering replication



Case study – Nitrogen efficiency in Ireland

The case study is available at: https://ec.europa.eu/clima/policies/effort_en

Agriculture contributes significantly to Ireland's economy, accounting for approximately 8% of gross national income. As the largest manufacturing industry in Ireland, the agricultural sector has a higher than EU average contribution (34% in 2018) to national greenhouse gas (GHG) emissions.

Agriculture in Ireland is dominated by grassland-based agricultural systems. Beef and dairy account for 68% of agricultural output. While livestock production is relatively efficient in Ireland, GHG emissions associated with livestock (in particular cattle production) are high per unit of product produced and livestock remains the most significant source of GHG emissions in Ireland. Ambitious plans for GHG reductions alongside continued development of the agricultural sector means Ireland must build on its current schemes to support efficient production.

This case study provides an overview of policies that target the reduction in fertiliser and manure use on the land to improve water quality and reduce GHG emissions, and considers a group of actions that aim to improve the efficiency of nitrogen use on farms. It focuses on the achievements to date in improving the GHG intensity of livestock production, plans for increased nitrogen use efficiency and the low emission technologies for the next phase of Ireland's plan to reduce emissions. Finally, the case study considers how these measures can be implemented and replicated for Ireland to achieve net neutrality in emissions from agriculture, land-use and forestry.

Improved nitrogen use efficiency (NUE) in Ireland

KEY CHARACTERISTICS

GEOGRAPHIC SCOPE



POLICIES TARGETING



Reduced use of fertiliser/ manure on land which improves water quality and reduces GHG emissions

SHORT CHARACTERISTIC OF THE POLICY ITSELF



This policy is a general term for a group of actions that aim to improve the efficiency of nitrogen use on farm. Examples are nutrient management plans and use of inhibitors

KEY RESULTS



Teagasc (Irish agriculture advisory board) produced a sustainability report of Irish agriculture. The 2020 report showed improved GHG intensity for both dairy and beef production with reductions of 8% and 12% respectively (2013 – 2018)



Ireland's 2018 National Nitrates Action Programme introduced measures to address problems with NUE



The NUE % (N outputs/N inputs) across all sectors has improved in Ireland between 2011 and 2018

SUCCESS FACTORS



Links with Ireland's sustainable food and drink programme (Origin Green) that has a high participation rate



A good combination of financial support and advice



A high level of engagement with the farming community

IMPLEMENTATION & REPLICATION PROCESS

Identify sources of nitrogen emissions



Strategic engagement between Government and the sector (e.g. local advisory boards) and research and development



Develop and identify schemes to deliver knowledge exchange and advice on-farm. Invest in technical guidance and decision support tools



Case study - CO₂ tax in Switzerland

The case study is available at: https://ec.europa.eu/clima/policies/effort_en

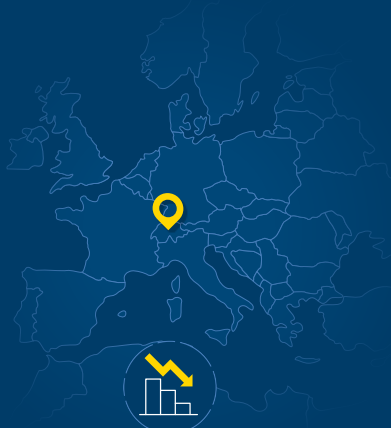
Energy and carbon taxes were introduced across Europe in the 1990s, although enthusiasm for these measures dissipated after the European Emissions Trading System (EU ETS) was established as a market instrument of EU climate policy. Subsequently carbon taxes shifted their focus to emissions and energy consumption that was not regulated by the EU ETS. Hence most CO₂ related taxes in Europe are primarily targeted at energy consumption in private households.

Switzerland introduced a CO₂ tax as a carbon pricing instrument in 2008 alongside the Swiss Emission Trading Scheme (Swiss ETS). The tax covers approximately 35% of all CO₂ emissions and applies primarily to the use of thermal fuels, such as for household heating. The tax is not levied on motor fuels, nor on companies (and their installations) participating in the Swiss ETS, and exemptions are available to other companies. There have been significant emission reductions in Switzerland attributed to the CO₂ tax and lessons from the development and implementation of the instrument can be applied to other national contexts.

This case study provides an overview of the CO₂ tax in Switzerland, including the key actors involved, primary objectives, and how this policy interacts with other schemes. It then focuses on the lessons from the development and implementation of the CO₂ tax and finally considers its future potential.

CO₂ Tax Switzerland

KEY CHARACTERISTICS



Introduced in 2008



Cross-cutting sectoral scope



Businesses can apply for an exemption and in turn commit to a legally binding emission reduction target. Companies are also exempt from the tax if they are subject to the Swiss emissions trading system



Aim to reduce CO₂ emissions by 20% by 2020 in comparison to 1990



Levied onto fossil fuels used for energetic use, but excludes motor fuels



Price per ton of CO₂ steadily increased from 12 CHF in 2008 to 96 CHF in 2018

KEY RESULTS

Success/effectiveness of CO₂ tax is regularly evaluated, distinguishing between short and medium/long-term impacts and also between impacts on households and the economy



Estimated 4.1 - 8.6 million tons of CO₂ emission reductions (2005-2015)



Majority of CO₂ emission reductions through substitution of heating oil in households with less CO₂-intensive energy sources



CO₂ intensive businesses exempt from the tax commit to and undertake the most extensive CO₂ emission reduction measures



Two thirds of the tax revenue is recycled back into companies and to the population

SUCCESS FACTORS



Adaptability: The tax is re-evaluated and adjusted based on current CO₂ emissions and goals set by the government (dynamic pricing). Incremental increases to tax rate were crucial to making the CO₂ tax effective



Longevity: The comprehensive legal framework that underpins the tax is key to its longevity. It is a long-standing element of Switzerland's energy policy and ensures that the tax is embedded in a broader climate policy



Exemptions: The exemption scheme ensures not only that businesses approve of the tax (or at least do not oppose it), but also support reduction commitments by companies

IMPLEMENTATION & REPLICATION PROCESS

Define the tax base



Identify the entities subject to the tax (the taxpayer/collection point)



Specify the tax rates



Use revenues generated by the tax



Case study - Energy and Climate Funds

The case study is available at: https://ec.europa.eu/clima/policies/effort_en

Energy and climate funds are financial instruments that provide financial support to a variety of energy and climate related projects. They are financed by national governments and managed by government-mandated institutions and organisations that may also draw funds from other sources. They often address Effort Sharing sectors and can be effective in their ability to realise emission reduction potentials in previously untapped areas, produce long-term changes, change behavioural patterns, and address a multitude of barriers.

This case study considers four best-practice examples of energy and climate funds and assesses how the institutions and organisations manage and evaluate the activities funded. The funds were identified against the following criteria: the availability of information on the fund and for its evaluation; its size (different size funds demonstrate how different contexts may require different approaches); and geographic region (to ensure funds were represented across the EU). The funds are: the Climate and Energy Fund managed by Enova (Norway), the National Climate Initiative (Germany), the National Trust ECO Fund (Bulgaria), and the JESSICA-FIDAE Fund (Spain) – see the table below. The case study gives an overview of each fund, compares insights from the implementation phases of the funds, and assesses the funds in terms of their successes, limitations, and future potentials.

Overview of energy & climate funds considered in this case study

COUNTRY	NAME	SIZE OF FUNDS	WHAT IS FUNDED?	TIME PERIOD
Norway	Climate and Energy Fund – Enova	€540 million (total funds available in 2018)	Individual projects in non-ETS sectors related to technological development and market transformation.	2012- present
Germany	National Climate Initiative	€715 million (2008-2017) / around € 80 million per year (average over operational period)	Information-based and investment incentives for projects including: energy and climate concepts, information and advice projects, networking and exchange, subsidies for energy/climate-related investments.	2008- present
Bulgaria	National Trust EcoFund	€9.2 million (total funds available at end of 2018)	Investment programs for geothermal energy, energy efficiency, electric vehicles, and educational programs.	1995- present
Spain	JESSICA-F.I.D.A.E. Fund	€123 million (2013-2016) / €84 million (actually spent)	Urban sustainable development projects related to energy efficiency and energy management.	2013- 2016

Energy and Climate Funds

DEFINED AS AN ENTITY THAT PROVIDES FINANCIAL SUPPORT FOR ENERGY AND CLIMATE RELATED PROJECTS

KEY CHARACTERISTICS

ENOVA (NORWAY)



Focus on technological development and market transformation



Large budget & large no. of projects



Produces long-term effects

JESSICA-FIDAE FUND (SPAIN)



Targeted input of limited financial resources



High uptake in limited time-frame

NATIONAL TRUST ECO FUND (BULGARIA)



Flexibility in diversification of projects



High impact with low financial input

NATIONAL CLIMATE INITIATIVE (GERMANY)



Benefits from diversity and adaptability



Large budget & large no. of projects



Produces long-term effects, behavioral changes



Very effective in municipalities

SUCCESS FACTORS



A steady and secure line of funding ensures the longevity of a fund and increases its ability to facilitate long-term changes



A clear objective, scope, in terms of target groups and sectors



The diversity of projects, target groups, and sectors increases its ability to address untapped reduction potentials and promote changes



Flexibility ensures that financial support can be re-directed where it is needed and going to be most effective

IMPLEMENTATION & REPLICATION PROCESS

Identify potentials



Set objectives under consideration of available funding



Periodic evaluation and corresponding adaptation

Authors:

This brochure has been prepared by Ricardo, Öko Institute, the Flemish Institute for Technological research (VITO), and Wageningen Environmental Research (WER) for the European Commission, Directorate-General for Climate Action.

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