

HANDBOOK ON THE IMPLEMENTATION OF EU CLIMATE CHANGE LEGISLATION

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of EU Climate Change Legislation



Handbook on the Implementation of EU Climate Change Legislation

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Disclaimer

This fourth edition and update of the Handbook covers the period 1 January 2012 until 1 January 2016. It introduces some new pieces of legislation and amendments in the climate change sector. Major updates have also been made to the whole handbook in terms of inserting cross-references to new legislation, adding new, available Commission guidance or other resource documents, checking hyperlinks, reviewing national implementing measures and national good practices. Due to the volume of the Handbook (1500 pages) and the level of detail and versatile sources, it has not been possible to cross-check all information. Hence, the consultant Hulla & Co Human Dynamics, party to the contract with the EU, do not take legal responsibility for possible information that may be out of date or faulty. It is important to note that the main purpose of the Handbook is to provide a source of guidance in transposition and implementation endeavours of the EU Candidate Countries and Potential Candidates. These countries are strongly advised to always first consult the official legal texts (i.e. texts of primary and secondary legislation and guidance from the Commission) and the case-law of the Court of Justice of the European Union and mainly use the Handbook as complementary information and source of unofficial guidance. The content and implementation advice are those of the authors and do not necessarily represent those of the European Commission itself, it cannot be quoted as reflecting the European Commission's position. Equally the consultant Hulla & Co Human Dynamics do not take responsibility for ensuring the accuracy of the information covering EU environmental legislation for the period prior to 1 January 2008 being the work of previous contractors.

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The Handbook, in its original format of 1999, was the result of a collaborative effort between the European Commission (Directorate General for Environment) and the Phare-funded DISAE programme (a Phare environmental approximation facility). The first revision of the Handbook was carried out in 2002 by Project Management Group (PM Group), under the Phare-funded project EUROPEAID/113417/D/SV/R20. In 2007, the Regional Environmental Center for Central and Eastern Europe (REC) carried out a major second update and revision covering all legislative developments in the area of EU environmental law for the period 1 January 2003 to 31 December 2007, but also covering acquis from 2008 under the project. The last revision of the Handbook was carried out in 2011 by Human Dynamics, under the RENA project EUROPEAID/128906/C/SER/Multi covering the period 1 January 2008 to 31 December 2011, but also some acquis passed in 2012.

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INTRODUCTION

1. OBJECTIVE OF THE HANDBOOK

The objective of the Handbook on the Implementation of EU Climate Change Legislation is to provide a planning framework and step-by-step guidance on the approaches, measures and specific activities that may contribute to ensure the effective and legally compliant implementation of EU Climate Change legislation. It targets the EU Candidate Countries and the Potential Candidates, but can also provide a source of information for the existing Member States, especially in the implementation of completely new legislation. Although, the Handbook aims at being a useful planning and guidance tool it should not be seen as a binding document. Candidate countries and Member States are first obliged to check the wording and spirit of primary and secondary legislation, official guidance and the case-law of the Court of Justice of the European Union (CJEU).

2. TARGET GROUP

The Handbook is primarily aimed at officials (legislators, civil servants, planners, environmental advisers, etc.) in national, regional and local government agencies in candidate countries and potential candidate countries (hereinafter referred to as candidate countries), who are responsible for the planning, management and implementation of environmental laws and programmes. However, it is hoped that the Handbook may also be of interest to other parties in candidate countries, such as people working in the industrial and commercial sectors who are affected by the legislation, and non-governmental organisations (NGOs) - in fact, all relevant stakeholders in the candidate and potential candidate countries. Similarly, the Handbook will provide useful information, guidance, and sense of direction for existing Member States in their transposition and implementation of recently adopted legislation. The Handbook can similarly serve as an important information source for scholars, and practitioners in EU climate change law.

3. STRUCTURE OF THE HANDBOOK

The Handbook covers seven policy sectors and main chapters which each provides:

- an introduction to each climate change policy sector setting out a framework for planning the implementation of the legislation contained within that particular sector;
- separate fiches for each legal act, providing a summary of the main requirements, their implications for implementing entities and affected parties, cost implications;
- guidance for smooth and cost-efficient implementation, comprising the establishment of the necessary institutional, policy and legislative frameworks;

- inspirational examples of implementation in existing Member States (if relevant) , providing for good practices regarding legal, technical or policy approach.

Table 1. Structure of the Handbook

Section 1	Climate Change Policy and Legislation – Overview
Section 2	GHG Emissions monitoring and reporting
Section 3	The Greenhouse Gas Emissions Trading Directive
Section 4	Effort Sharing of Greenhouse Gas Emission Reductions
Section 5	The Carbon Capture and Storage Directive
Section 6	Fuel Quality
Section 7	The Regulations on CO ₂ emissions from road transport
Section 8	The Regulations on Certain Fluorinated Greenhouse Gases

This Handbook is based on the climate change acquis up to 1 January 2016. The content is based on a list of climate change legislation, approved by DG Clima, the European Commission, in May 2015. The overall scope of the Handbook has been reduced somewhat with the chief objective to focus on climate change legislation which is of key importance for the candidate and potential candidate countries. Secondly, the Handbook reflects the policies and mandates of DG Clima.

Access to all the legal instruments contained in this Handbook is available through:

<http://eur-lex.europa.eu/>, which is the official provider of EU legislation. It is a service provided free of charge in all the official EU languages. This website provides direct access to all legal instruments (Decisions, Regulations and Directives). It provides the official texts of the EU legislation as well as a bibliography with details on all amendments, corrections or repealing acts, the legal basis and references to consolidated versions of the legislation as well as to repealed legislation. The Eur-lex search engine allows both simple and more advanced searches using different type of parameters including the natural number of the legal act, words in the title of the measure or other key words relevant to the measure.

In addition, Eur-lex contains case law from the European Courts, mainly from the the Court of Justice of the European Union (CJEU), which is the new name for former European Court of Justice (ECJ). These cases often concern situations where a Member State has failed to implement an EU Directive on time or has failed to implement it correctly and adequately (e.g. implementation did not satisfy the objectives and aims of the relevant EU legislation). These rulings provide important information on what action Member States are required to take to ensure full implementation and adequate application of EU environmental legal acts. The specially designated site for European Court rulings is CURIA: <http://curia.europa.eu/>

This website provides details on past but also ongoing cases brought before the European Courts. This website also provides references to court opinions and opinions of the Advocate-General.

In addition to these two main sites, summaries of EU environmental legislation and policy can be obtained at the „Summaries of EU Legislation” website: <http://eur-lex.europa.eu/browse/summaries.html>

The “Summaries of EU legislation” website presents the main aspects of EU legislation in a concise, easy-to-read and unbiased way. It provides summaries of European legislation, divided into 32 subject areas, including environment. This website is available in all EU languages and provide a general overview of the policy and legislative framework in each sectoral areas followed by separate fiches on each policy and legislative measure. The summaries are normally one to three pages long and include references to legislative proposals and policy documentation such as communications and guidelines. The summaries set out the main objectives of the acts, the key provisions and responsibilities of the Member States, as well as implementation deadlines. These summaries are organised in a sectoral order (e.g. air, chemicals, waste, water, horizontal legislation).

Another source of information is PreLex: <http://eur-lex.europa.eu/collection/eu-law/pre-acts.html>. PreLex follows all Commission proposals (legislative and budgetary dossiers,), Council common positions, European Parliament legislative and budgetary resolutions and initiatives, European Economic and Social Committee opinions and Committee of the Regions opinions.

It is also important to mention the website of Directorate General for Climate Action (DG ENV): (http://ec.europa.eu/clima/index_en.htm).

This website is well structured (e.g. divided into policy areas, linking to other EU policies) and containing all the essential information necessary for understanding the climate change policies and legislation. The site contains reference to legislative texts, official guidance, best practices, information on draft legislation, relevant events, projects, funding opportunities etc. The candidate countries are strongly advised to consult this website regularly to stay abreast of new developments and tools which are helpful in the transposition and implementation of climate change legislation.

CLIMATE CHANGE POLICY AND LEGISLATION – OVERVIEW

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1. INTRODUCTION AND OVERVIEW

This Handbook deals with climate change related legislation (also sometimes referred to as “*legislation*”) comprising a wide range of Directives, Regulations and Decisions relating to fuel quality, greenhouse gas monitoring, emission trading, control of fluorinated gases and regulation of some activities which directly impact the emissions of greenhouse gases to the atmosphere. It does not cover all the relevant legislation in the energy sector, agricultural sector or transport sectors, albeit these sectors notably have a large impact on the overall greenhouse gas emission levels. The climate change legislation was previously dealt with in the Handbook on Implementation of the EU Environmental Legislation but it was decided in 2012 that this will be covered in a separate Handbook, also reflecting the division of responsibilities in the Commission. The handbook was revised and updated in 2015.

The Directorate-General for Climate Action (“DG CLIMA”) was established in February 2010 and took over responsibility for climate policy and legislation previously in the remit of DG Environment. DG CLIMA leads international negotiations on climate, helps the EU to deal with the consequences of climate change and to meet its targets for 2020 and 2030, and develops and implements EU legislation on climate change, including the EU Emissions Trading System. It also monitors the implementation of Member States' emission reduction targets in the sectors outside the EU ETS and promotes low carbon and adaptation technologies. More information about DG CLIMA, its mandate and policy developments can be obtained at: http://ec.europa.eu/clima/about-us/mission/index_en.htm.

Climate legislation is a relatively new bulk of legislation which started to develop in the early 2000s with the ground-breaking Greenhouse Gas Emission Trading Directive (hereinafter referred to as the ETS Directive) laying down an emission trading scheme of the EU, followed by a decision concerning a mechanism for monitoring EU greenhouse gas emissions, and a decision on the efforts of Member States to reduce their greenhouse gas emissions to meet the EU's greenhouse gas emission reduction commitments up to 2020 and 2030, all supporting the efforts taken under the Kyoto Protocol. DG CLIMA also covers legislation on safe capture and storage of carbon, phase out of ozone depleting substances, and the control of the use of fluorinated gases, fuel quality and CO₂ emission reduction schemes targeting the car sector. The climate change legislation is continuously growing to reflect new scientific data, progress in the Member States and new overarching EU climate change objectives and shows synergies with sectoral legislation, especially in the field of energy.

For a full picture of the scope climate change legislation covered in this Handbook please see the table below (section 1.2). The Handbook begins with an introductory overview of the sector followed by individual fiches for selected pieces of legislation.

1.1 EU POLICY

For several years now the European Union has been committed to tackling climate change both internally and internationally and has placed it high on the EU agenda, as reflected in European climate change policy.

The EU is taking action to curb greenhouse gas emissions in all its areas of activity (e.g. industrial policy, enterprise policy, energy policy, transport policy, environmental policy, agricultural policy, forestry

policy, research policy). The actions and measures are intended to reduce greenhouse gases and prevent temperatures from increasing to more than 2°C above pre-industrial levels. EU policy affecting climate change consists of:

- The core EU climate change policy with a long-term policy framework to meet its targets for 2020 (the 20-20-20 targets), and consequent targets for 2030, supplemented and to be supplemented with legislation aiming at the reduction of greenhouse gas emissions. Its domestic policies also aim at protecting the ozone layer and at ensuring that climate considerations are appropriately integrated into other sectoral policies and legislation. In addition, a policy framework is being developed which will reduce the European Union's vulnerability to climate change. In the international field DG Climate Action is at the forefront of international efforts to combat climate change. In response to the scientific results that tell us that developed countries need to make deeper cuts in greenhouse gases in order to have a chance of keeping global warming below 2°C, the long term political commitment of the European Union is to reduce domestic GHG emissions by 80 – 95% by 2050. It should be noted that the Paris Agreement resulted in increased ambition to aim in addition to limit the increase to 1.5°C, since this would significantly reduce risks and the impacts of climate change;
- Energy policy: to ensure the functioning of the internal market and the security of energy supply, and to promote energy efficiency and the development of renewable forms of energy, thereby reducing the EU-27 energy imports dependency within the framework of the Energy Union process;
- Transport policy: creating cleaner and more balanced transport options, with a long term vision to cut carbon emissions in transport by 60% by 2050. This comprises efforts to revitalise EU transport policy to reduce the impact of transport on climate change, to improve the balance between transport modes and to promote less polluting means of transport, through various means and measures;
- Enterprise policy: making companies more environmentally responsible without compromising their competitiveness. Companies are obliged to reduce the impact of their activities on the environment (according to the “polluter pays” principle), both through mandatory requirements and through a number of environmental management instruments available;
- Agricultural and land-use policy: man-made greenhouse gas emissions can be reduced by proper land-use management, including carbon storage and the promotion of low-emission agricultural and land-use activities;
- Adapted innovation framework: the EU has set up a raft of direct and indirect financial assistance packages, particularly to support innovative projects and technological development with a view to create conditions conducive to research and innovation.

Below the EU climate change policy and the other closely related sectoral policy areas will be explained in brief. The Handbook is limited to the core climate change policy and the implementing legislation which is under the remit of DG CLIMA with the focus of responsibilities of Member States. Hence, beyond the general introduction to policies on energy, transport, enterprise, research and agricultural, the handbook will not provide information on the various implementing policy and legislative measures.

1.1.1 EU CLIMATE CHANGE POLICY

The EU Climate Change Policy is based on a long-term comprehensive policy framework and strategy, following on from work under the European Climate Change Programme (ECCP), which is underpinned by a number of Regulations, Directives and Decisions focusing on the various sectors affected by climate change. The core climate change policy objectives comprise:

- Reduction in overall greenhouse gas emissions as priority objective;
- Thorough monitoring and regular assessment of EU Greenhouse Gas Emissions, which assists in developing EU climate policies and targets and monitors progress;
- Protection of the ozone layer;
- Adaptation to the inevitable consequences of climate change;
- The EU's commitment as world leader in climate abating policies in international negotiations in the framework of the United Nations Framework Convention on Climate Change.

1.1.1.1 EU long-term climate change policy framework

The policy framework for action at EU level is mainly set up through the following key policy instruments, supplemented by targeted measures (e.g. policy, market-based or legislative) in the various EU sectors:

Commission Communication on EU policies and measures to reduce greenhouse gas emissions: towards a European Climate Change Programme¹

The aim of ECCP was to enable all stakeholders to participate in preparatory work on policies and measures to reduce greenhouse gases through an inter-departmental body tasked with identifying and preparing the implementation of measures to combat climate change.

This structure is coordinated by a steering committee, which manages and coordinates the ECCP in cooperation with representatives of all the Commission departments participating in the ECCP. This steering committee is assisted by working groups, bringing in stakeholders from different economic sectors including representatives from governance bodies, industry and NGOs, to discuss specific issues. These working groups focus on transport, industry, energy supply, energy use, flexibility mechanisms, waste, agriculture and research. The reports produced by the ECCP will lead to new instruments (e.g. technical Regulations, tax measures, voluntary agreements or flexibility mechanisms).

Commission Communication: "Winning the battle against global climate change"².

This communication sets out the foundations of the EU Climate Change Policy embarking on a strategy to combat climate change perceiving it as a four-fold challenge:

¹ Communication of 8 March 2000. [COM(2000) 88 final - Not published in the Official Journal].

² Communication of 9 February 2005. [COM(2005) 35 - Official Journal C 125 of 21 May 2005]

1. The climate risk and the political will to combat it;
2. International participation in efforts to tackle climate change;
3. The innovation needed for changes in the production and use of energy;
4. Adaptation of countries to the unavoidable effects of climate change.

According to this framework any strategy should include the following strands:

- Extension of action against climate change to all the polluting countries (with common but differentiated responsibilities) and sectors involved;
- Enhanced innovation, which includes the implementation of existing technologies and the development of new technologies;
- Use and development of market-based instruments (such as the emissions trading system introduced by the EU);
- Harnessing of preventive and remedial efforts to adapt to climate change based on the most affected regions and economic sectors.

These elements at EU and national level should be addressed through the following actions:

- Immediate and effective implementation of agreed policies in order to meet the target of the 8% reduction in greenhouse gas emissions (compared with 1990 levels) agreed in the Kyoto Protocol. Measures here were identified in the Green Paper on the security of energy supply and the White Paper on transport policy (not dealt with directly in this Handbook), as well as measures to promote climate-friendly technologies, such as the eco-technologies;
- Increased public awareness to encourage people to change their behaviour, i.e. through the launching of an EU-wide awareness campaign;
- More and better focussed research to further improve knowledge on climate change and its global and regional impact and to develop cost-effective climate change adaptation and mitigation strategies;
- Strong cooperation with third countries at the scientific level and through transferring climate-friendly technology and through assisting developing countries to draw up climate-friendly development policies and strengthen the adaptive capacity of the most vulnerable countries;
- A new phase of the European climate change programme in 2005 in order to determine new measures to be taken in synergy with the Lisbon strategy, particularly in relation to energy efficiency, renewable energy, the transport sector and carbon capture and storage.

Commission Communication "Limiting Global Climate Change to 2 degrees Celsius - The way ahead for 2020 and beyond"³.

As follow-up to the 2005 Communication, the Commission urges stepped up action at all levels, with stronger EU leadership and action at the international level also targeting the developing countries. The 2020 climate and energy package was finally agreed by the European Council on 8-9 March 2007.

³ Communication of 10 January 2007. [COM(2007) 2 final - Not published in the Official Journal]

The main strands of this communication, predominantly supporting already set objectives but with new measures and tools to reach these:

- EU target in international negotiations of reducing greenhouse gas emissions in developed countries by 30 % (compared to 1990 levels) by 2020;
- EU commitment to reduce its own emissions by at least 20 % by 2020;
- Enhanced energy measures: a) improving the EU's energy efficiency by 20 % by 2020, b) increasing the share of renewable energy to 20 % by 2020; c) developing an environmentally safe carbon geological storage policy;
- Strengthen and extend the European Union Emissions Trading Scheme (EU ETS) through for instance
 - increasing the duration of quota allocations to over five years,
 - extending the scheme to other gases and sectors;
 - aligning allocation procedures across Member States and
 - linking the EU ETS to compatible mandatory schemes in other States or countries.

The package also gave rise to new legislation on including aviation in the EU ETS and to link taxes on tourism vehicles to their CO₂ emissions as well as to further to reduce CO₂ emissions from cars to reach the target of 120 grams of CO₂ per kilometre (g CO₂/km). The Communication focused on action in the transport sector to cut emissions from road freight transport by road and maritime transport and to address biofuels. It also called for more CO₂ emission reduction in construction sector, in agriculture and forestry as well as from industry, which includes stricter measures on fluorinated gases and nitrous oxide from combustion and large installations.

Finally, the Communication underlined to mobilise more funds for research on the environment, energy and transport under the Seventh Framework Programme and to increase the research budget after 2013 to promote the development of clean technology and increase climate change knowledge.

Commission Communication “Roadmap for moving to a competitive low carbon economy in 2050: The Roadmap 2050”

With its “Roadmap for moving to a competitive low-carbon economy in 2050”, the European Commission has looked beyond the above 20-20-20 objectives and set out a cost-effective pathway for achieving much deeper emission cuts by the middle of the century. All major economies will need to make deep emission reductions if global warming is to be held below 2°C compared to the temperature in pre-industrial times.

The Roadmap suggests that, by 2050, the EU should cut its emissions to 80% below 1990 levels through domestic reductions alone. It sets out milestones which form a cost-effective pathway to this goal - reductions of the order of 40% by 2030 and 60% by 2040. It also shows how the main sectors responsible for Europe’s emissions - power generation, industry, transport, buildings and construction, as well as agriculture - can make the transition to a low-carbon economy most cost-effectively.

The political goal of reducing greenhouse gas emissions by developed countries as a group by 80-95% by 2050 compared to 1990 was adopted by the European Council in October 2009.

A 2030 framework for climate and energy policies

On 27 March 2013, the European Commission adopted the Green Paper: "A 2030 framework for climate and energy policies"⁴. Based on this initiative the European Council adopted the 2030 climate and energy framework for the 2020-2030 period on 23 October 2014⁵. The 2030 framework aims to help the EU address issues such as:

- taking the next step towards the goal of **reducing greenhouse gas emissions** by 80-95% below 1990 level by 2050
- **high energy prices** and the EU economy's vulnerability to future price rises, especially for oil and gas
- the EU's **dependence on energy imports**, often from politically unstable areas
- the need to replace and upgrade **energy infrastructure** and provide a stable regulatory framework for potential investors
- the need for the EU to agree on a greenhouse gas reduction target for 2030, as part of its contribution to the forthcoming negotiations for a "**new global climate change agreement**"

The 2030 climate and energy framework sets three key targets for the year 2030:

- at least 40% cuts in greenhouse gas emissions (from 1990 levels)
- at least 27% share for **renewable energy**
- at least 27% improvement in **energy efficiency**

The framework gave a significant role for the aspect of governance as well, as the Commission underlined the need to simplify and streamline the current separate processes for reporting on renewable energy, energy efficiency and greenhouse gas reduction for the period after 2020, and to have a consolidated governance process with Member States. Meeting the relevant targets would be met by a mix of Union measures and national measures described in Member States' national plans for competitive, secure and sustainable energy which would:

- Ensure that EU policy objectives for climate and energy are delivered
- Provide greater coherence of Member States' approaches
- Promote further market integration and competition
- Provide certainty to investors for the period after 2020

Three steps can be envisaged to implement this process which is developed and implemented within the Energy Union process:

- Detailed guidance would be developed by the Commission on the operation of the new governance process and the content of national plans in particular.
- Preparation of Member State plans through an iterative process.

⁴ <http://data.consilium.europa.eu/doc/document/ST-169-2014-INIT/en/pdf>

⁵ <http://data.consilium.europa.eu/doc/document/ST-169-2014-INIT/en/pdf>

- Assessment of the Member States' plans and commitments.

1.1.1.2 Reduction in greenhouse gas emissions

One of the key priorities of EU action on climate change is to reduce greenhouse gases, coupled with a monitoring mechanism in place to keep regular track of emissions and the absorption of these gases. Core in the efforts to reduce emissions comprise the implementation of the following political decisions and core directives (most of which are explained in detailed in separate sections in the Handbook):

- European Council Conclusions on integrated climate and energy policy (2020 climate-energy package)⁶
- European Council conclusions on the 2030 climate and energy framework (23 October 2014)
- European Council conclusion on the implementation of the Energy Union (8 June 2015)⁷
- Decision No 406/2009/EC⁸, which contributes to meeting the commitment made by the European Union to reduce its greenhouse gas emissions by 20 % by 2020 in relation to 1990 levels. It sets objectives for reducing emissions for each of the Member States and defines the means for checking whether they have been met. These objectives could be increased in line with international agreements. It is an **effort sharing** arrangement between Member States has been determined solely for the reduction in emissions from sectors not covered by the EU ETS. These sectors, which are made up of small-scale emitters in a wide range of sectors such as transport (cars, trucks), buildings (in particular heating), services, small industrial installations, agriculture and waste, currently represent some 60% of total GHG emissions in the EU;
- Directive 2003/87/EC⁹ establishes a scheme for **greenhouse gas emission allowance trading** for the cost-effective reduction of such emissions.
- Regulation (EC) No 842/2006 of the European parliament and Council of 17 May 2006 on certain fluorinated greenhouse gases, which was repealed by Regulation 517/2014 of the European parliament and Council of 16 April 2014 on **fluorinated greenhouse gases**
- Directive 2009/31/EC establishes a legal framework for environmentally safe **geological storage of carbon dioxide** in order to contribute to tackling climate change. The Directive applies to the geological storage of CO₂ within the territory of the Member States, in their exclusive economic zones and on their continental shelves;
- Directive 2009/30/EC revises the **Fuel Quality** Directive (98/70/EC). It amends a number of elements of the petrol and diesel specifications as well as introducing in Article 7a a requirement on fuel suppliers to reduce the greenhouse gas intensity of energy supplied for road transport (Low Carbon Fuel Standard). In addition, the Directive establishes sustainability criteria that must be met by **biofuels** if they are to count towards the greenhouse gas intensity reduction obligation;

⁶ http://www.consilium.europa.eu/ueDocs/cms_Data/docs/pressData/en/ec/93135.pdf

⁷ <http://data.consilium.europa.eu/doc/document/ST-9073-2015-INIT/en/pdf>

⁸ Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020.

⁹ Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC.

- Directive 1999/94/EC aims at providing consumers with information on the fuel-economy of new cars. This Directive is an integral part of the European Union's (EU) strategy to reduce CO₂ emissions from passenger cars. The Directive aims at making information available to consumers in four ways: via a **fuel economy label** attached to each car in a showroom, via dissemination of a summary guide containing the fuel economy data of every vehicle on the new car market, via information displayed in a poster at the point of sale, and via the inclusion of fuel consumption data in promotional material;
- Regulation (EC) No 443/2009 (amended by Regulation (EU) No 333/2014 that defines the modalities for reaching the 2020 target to **reduce CO₂ emissions from new passenger cars**) provides that by 2015 the fleet average to be achieved by all cars registered in the EU is 130 g CO₂/km – which is about one fifth below 2007 levels. The target is gradually phased in: in 2012 65% of each manufacturer's newly registered cars must comply, rising to 75% in 2013, 80% in 2014, to reach 100% by 2015. By 2021, phased in from 2020, the fleet average to be achieved by all new cars is 95 grams of CO₂ per kilometre. Manufacturers that exceed the limit will have to pay an excess emissions premium for each car registered.
- Regulation EU No 510/2011 (amended by Regulation (EU) No 253/2014 that defines the modalities for reaching the 2020 target to **reduce CO₂ emissions from new light commercial vehicles**) provides that by 2017 the fleet average to be achieved by all cars registered in the EU is 175 g CO₂/km. The target is gradually phased in: in 2014 70% of each manufacturer's newly registered vans must comply, rising to 80 % in 2016, to reach 100% by 2017. For 2020, the target is 147 grams of CO₂ per kilometre. Manufacturers that exceed the limit will have to pay an excess emissions premium for each car registered.

1.1.1.3 Adapting to climate change

Another strand of EU climate change policy is adapting to climate change with a range of measures to be taken in case of climate change triggered natural disasters. Adaptation to climate change is crucial for reducing the risk and damage from current and future impacts of climate change in a cost-effective manner and to exploit potential benefits.

The key component of the adaptation strategy is the White Paper of 2009. This paper followed up on the 2007 Green Paper on adapting to climate change in Europe, which set out a broad outline of EU action to be taken for the EU's adaptation to climate change and a number of questions and issues to be reflected by stakeholders.

As a follow up, the Commission adopted an EU adaptation Strategy in April 2013 which has been welcomed by the Member States¹⁰. The general aim of the EU Adaptation Strategy is to make Europe more climate-resilient, at lowest possible cost. The strategy relates to the implementation of the Europe 2020 Strategy and in particular to the resource efficiency flagship as well as to the implementation of the post 2013 Multiannual Financial Framework. Adaptation to climate change is a crosscutting issue and will affect key EU policies including: Cohesion policy, Common agricultural policy, policies related to disaster risk management, maritime policy and environmental policies

¹⁰ <http://register.consilium.europa.eu/doc/srv?l=EN&f=ST%2011151%202013%20INIT>

The Strategy has a framework for action focusing on three key objectives:

- **Promoting action by Member States:** The Commission will encourage all Member States to adopt comprehensive adaptation strategies and will provide funding to help them build up their adaptation capacities and take action. It will also support adaptation in cities through the Mayors Adapt initiative, a voluntary commitment within the framework of the Covenant of Mayors.
- **'Climate-proofing' action at EU level** by further promoting adaptation in key vulnerable sectors such as agriculture, fisheries and cohesion policy, ensuring that Europe's infrastructure is made more resilient, and promoting the use of insurance against natural and man-made disasters and further developing the European Climate Adaptation Platform (Climate-ADAPT).
- **Promoting adaptation in key vulnerable sectors** through agriculture, fisheries and cohesion policy, ensuring that Europe's infrastructure is made more resilient, and encouraging the use of insurance against natural and man-made disasters

Implementation of the strategy is based on 8 actions:

1. Encourage all Member States to adopt comprehensive adaptation strategies: As part of the Adaptation Strategy package the Commission has provided guidelines to help Member States formulate adaptation strategies. The Commission will develop an 'adaptation preparedness scoreboard', identifying key indicators for measuring Member States' level of readiness. In 2017, the Commission will assess whether action being taken in the Member States is sufficient. If it deems progress insufficient, the Commission will consider proposing a legally binding instrument.
2. Provide LIFE funding to support capacity building and step up adaptation action in Europe (2014-2020): A climate-action sub-programme will be created under the 2014-2020 LIFE funding programme for the environment. This will substantially increase the LIFE funds available to combat climate change. - Priority vulnerable areas have been identified to steer discussions with Member States on the 2014-2020 LIFE work programme.
3. Introduction of adaptation in the Covenant of Mayors framework (2013/2014): The Commission will support adaptation in cities. It done by launching an initiative, based on the model of the Covenant of Mayors, through which local authorities can make a voluntary commitment to adopt local adaptation strategies and awareness-raising activities.
4. Bridge the adaptation knowledge gap: The Commission will work further with Member States and stakeholders to identify adaptation knowledge gaps and the relevant tools and methodologies to address them. The findings will be fed into the programming of Horizon 2020, the EU's 2014-2020 framework programme for research and innovation, and will address the need for better interfaces between science, policy making and business. The Commission will also promote EU-wide vulnerability assessments, taking into account, inter alia, the cross-sectoral EU overview of natural and manmade risks.
5. Further develop Climate-ADAPT as the 'one-stop shop' for adaptation information in Europe: The Commission and the European Environment Agency foreseen to improve access to information and develop interaction between Climate-ADAPT and other relevant platforms, including national and local adaptation portals. Special attention is given to cost-benefit assessments of different policy experiences and to innovative funding, through closer interaction with regional and local authorities and financial institutions. Work on the inclusion of the future Copernicus climate services (previously known as GMES – Global Monitoring for Environment and Security) has started in 2014.
6. Facilitate the climate-proofing of the Common Agricultural Policy, the Cohesion Policy and the Common Fisheries Policy
7. Ensuring more resilient infrastructure and physical assets

8. Promote insurance and other financial products for resilient investment and business decisions

1.1.1.4 Combatting ozone depletion

The European Union has a strong commitment to protect the ozone layer. To facilitate its recovery, the EU has implemented legislation that goes beyond its obligations under international agreements.

This legislative framework currently consists of Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, with three amendments: Commission Regulation (EU) No 744/2010 of 18 August 2010, Commission Regulation (EU) No 1087/2013 of 4 November 2013 and Commission Regulation (EU) No 1088/2013 of 4 November 2013.

In addition to that there is Commission Decision 2010/372/EU on the use of controlled substances as process agents, Commission Regulation (EU) No 537/2011 on the mechanism for the allocation of quantities of controlled substances allowed for laboratory and analytical uses and Commission Regulation (EU) No 291/2011 on essential uses of controlled substances other than hydrochlorofluorocarbons for laboratory and analytical purposes.

Five main components of the ozone protection policy are the following:

1) Licensing and production

The production, import and export of ODS is subject to licensing and these activities are subject to annual reporting as well as the destruction of ODS, feedstock uses and process agent uses. Furthermore, the use of ODS for laboratory and analytical uses (including the placing on the market for such uses) is subject to a registration. The Commission operates electronic databases for this purpose.

2) Record keeping

The record keeping requirements will depend on whether mobile or stationary equipment is operated and on the controlled substance (refrigerant) charge in that equipment.

3) Labelling

Applicable from 2010 for all systems containing HCFC refrigerant. When recycled or reclaimed HCFCs are added to RAC equipment it should then be labelled.

4) Gas recovery

If an ODS refrigerant needs to be removed from a system (e.g. to gain access to part of a system for maintenance or during system decommissioning at the end of life) it must be properly recovered by certified personnel. After recovery the refrigerant can be reused or sent for reclamation, recycling or destruction.

5) Use of appropriate trained personnel

Personnel carrying out leak checking, gas recovery or other refrigerant handling activities, such as plant maintenance, must have a suitable refrigerant handling qualification.

1.1.1.5 EU'S commitment in international negotiations

In the international arena, the EU is among the progressive forces of the fight against climate change and takes an active part in negotiations on the subject. The EU signed up in 1998 to the Kyoto Protocol to the United Nations Framework Convention on Climate Change, which puts quantifiable emission limitations on six greenhouse gases. Moreover, to help developing countries meet the challenge of climate change, the EU has adopted a strategy on climate change in the context of development cooperation.

1) Kyoto Protocol on climate change

Decision 2002/358/EC¹¹ on the Kyoto Protocol to the United Nations Framework Convention on Climate Change and the joint fulfilment of commitments thereunder.

This Decision implements the Kyoto Protocol, which follows the United Nations Framework Convention on Climate Change, and was one of the main instruments for tackling climate change. It contains the undertakings entered into by the industrialised countries to reduce their emissions of certain greenhouse gases which are responsible for global warming. The total emissions of the developed countries are to be reduced by at least 5% over the period 2008-2012 compared with 1990 levels.

The EU strategy for achieving the targets laid down in the Kyoto Protocol and the Buenos Aires Action Plan has been outlined in two communications:

- Communication (1998) “Climate change - Towards an EU post-Kyoto strategy”¹²;
- Communication (1999) “Preparing for implementation of the Kyoto Protocol”¹³.

2) UN Climate Change Summit - Doha talks (COP 18)

The United Nation's climate change negotiations (COP 18) in Doha, Qatar between 26 November and 8 December 2012 further called for wide global action to pave the way for the international agreement to take over from the Kyoto Protocol (expire at the end of 2013) expected to be adopted in 2015. It also adopted the decision regarding the continuation of the Kyoto Protocol with a second commitment period between 2013 and 2020. While the second commitment period of the Kyoto Protocol did not yet enter into force, the EU and its member states made their respective ratification decisions and the EU as a whole applies the rules for the second commitment period, which has an impact on internal monitoring, reporting and verification rules of the EU. The EU took its commitment from the 2020 climate and energy package as a commitment towards the 2nd commitment period of the Kyoto Protocol.

¹¹ Council Decision 2002/358/EC of 25 April 2002 concerning the approval, on behalf of the European Community, of the Kyoto Protocol to the United Nations Framework Convention on Climate Change and the joint fulfilment of commitments thereunder.

¹² Communication of 3 June 1998 from the Commission to the Council and the European Parliament - Climate change - Towards an EU post-Kyoto strategy.

¹³ Communication of 19 May 1999 from the Commission to the Council and the European Parliament - Preparing for implementation of the Kyoto Protocol.

UN Climate Change Summit – Paris (COP21)

The United Nation's climate change negotiations (COP21) in Paris, France at the end of 2015 delivered a new agreement which will provide a framework for the global action addressing the challenge of climate change.

The significance of this agreement is predominantly lying in the strong signal it gives that the whole world is serious about tackling climate change, almost 20 years after the last global agreement in Kyoto. As was visible in the run up to and during the Paris conference, there is an unprecedented surge in awareness of climate change and its impacts and of action on transforming our economy, energy system and land-use practices. The agreement between more than 190 nations now galvanizes this and provides a strong signal for further action. It also makes clear that GHG emissions will have to get to (net) zero and implicitly therefore calls for end of the fossil fuel era.

Cornerstone elements of the agreement are the following:

Legal form of the agreement: The Paris Agreement has legal force and is considered to be an international treaty under the Vienna Convention. The legal form of the Agreement is of great importance with regards to the signal it provides on the degree of political will behind it. On the other hand, there are no international enforcement mechanisms in place which would allow any form of penalisation for non-compliance. While some elements within the Paris Agreement are legally binding, others are not. The long term goals and the national reporting requirements are legally binding. National mitigation targets submitted as INDCs for the post-2020 period, on the other hand, ended up as not legally binding: countries “are to undertake” these contributions (Article 3), a departure from the much stronger language “shall undertake”.

Level of ambition: UNFCCC Parties agreed a long-term goal of keeping the increase in global average temperature to well below 2°C above pre-industrial levels and to aim to limit the increase to 1.5°C, since this would significantly reduce risks and the impacts of climate change. The agreement calls for global emissions to peak as soon as possible, recognising that this will take longer for developing countries and to undertake rapid reductions thereafter in accordance with the best available science. Before and during the Paris conference, countries submitted comprehensive national climate action pledges (intended nationally determined contributions – INDCs). The sum total of the 185 INDCs prepared in advance of the Paris conference are not yet enough to keep the world below 2°C by the end of the century (enough for 2-7-3.5 °C level – no action would mean 4.5 °C or more). However, the agreement traces the way to achieving this target. Although the date of entry into force for the agreement is in 2020 may suggest delayed action, the Agreement will also have a mitigation effect before 2020. Countries in their INDCs formally propose national pledges that cover a timeframe beyond 2020, but the implications of these targets for policy making and investments are immediate.

Review of targets and action: To achieve this common ambition, governments agreed to meet every five years to set more ambitious targets as required by science. Parties also accepted to report to each other and the public on the progress to implement their targets, to ensure transparency and oversight. A global stock take will take place every five years. A transparency and accountability system is envisioned to track progress towards the long-term emission reduction goal.

Climate finance: The EU and other developed countries will continue to support climate action to reduce emissions and build resilience to climate change impacts in developing countries. Other

countries are also encouraged to provide or continue to provide such support voluntarily. The intended collective goal is to mobilise USD 100 billion per year until 2025 when a new collective goal will be set.

Loss and Damage: The Paris Agreement also features a standalone article dealing with the issue of loss and damage associated with the impacts of climate change. Countries also acknowledge the need to cooperate and enhance the understanding, action and support in different areas such as early warning systems, emergency preparedness and risk insurance.

1.1.2 EU BUDGET FRAMEWORK 2014-2020 AND CLIMATE MAINSTREAMING

In June 2011 the European Commission tabled proposals forming the package for the Multiannual Financial Framework (MFF) 2014-2020. On 8 February 2013 the European Council agreed on an overall budget for 2014-2020 totalling €960 billion (1.00% of the EU's gross national income) and after agreement with the Parliament, the Council will adopt the framework will be adopted and legally binding. The EU budget has an important role to play in promoting climate action in all sectors and in catalysing the specific investments necessary to meet climate targets and to ensure climate resilience. These investments relate to technologies that improve energy efficiency, renewable energy sources and related infrastructures, and adaptation to climate change.

The current EU budget has an important role to play in promoting climate action in all sectors of the European economy and in catalysing the investment needed to meet greenhouse gas reduction targets and ensure climate resilience. The EU institutions have agreed that at least 20 % of the €960 billion EU budget for 2014-2020 should be spent on climate mitigation and adaptation, which is three times increase compared to previous level.

1.1.3 OTHER EU POLICIES CONTRIBUTING TO CLIMATE CHANGE OBJECTIVES

1.1.3.1 Energy policy

Under the domain of DG ENERGY, a package of strategies and legislative measures were developed during the past years. This energy policy is driven by three main objectives:

- Secure energy supplies to ensure the reliable provision of energy whenever and wherever needed
- Ensure that energy providers operate in a competitive environment that ensures affordable prices for homes, businesses, and industries
- Energy consumption to be sustainable, through the lowering of greenhouse gas emissions, pollution, and fossil fuel dependence

To pursue these goals within a coherent long-term strategy, the EU has formulated targets for 2020, 2030, and 2050. The 2020 Energy Strategy defines the EU's energy priorities between 2010 and 2020. It aims to reduce greenhouse gases by at least 20%; increase the share of renewable energy in the EU's energy mix to at least 20% of consumption and to improve energy efficiency by at least 20%. From these three targets the first two are likely to meet however, on the side of energy efficiency further efforts are needed to reach the target.

The EU Member States have agreed to the following objectives to be met by 2030 as a further step beyond 2020 and towards the 2050 decarbonisation target:

- a binding EU target of at least a 40% reduction in greenhouse gas emissions by 2030, compared to 1990
- a binding target of at least 27% of renewable energy in the EU
- an energy efficiency increases of at least 27%, to be reviewed by 2020 potentially raising the target to 30%, by 2030
- the completion of the internal energy market by reaching an electricity interconnection target of 15% between EU countries by 2030, and pushing forward important infrastructure projects.

Together, these goals provide the EU with a stable policy framework on greenhouse gas emissions, renewables and energy efficiency giving investors more certainty.

As mentioned earlier, the EU aims to achieve an 80% to 95% reduction in greenhouse gasses compared to 1990 levels by 2050. In the EU's Energy Roadmap 2050 a series of scenarios are analysed on how to meet this target.

The process of developing the European Energy Union will ensure secure, affordable and climate-friendly energy by allowing a free flow of energy across national borders within the EU, and bringing new technologies and renewed infrastructure to cut household bills, create jobs and boost growth. This process has an aim to extend to EU Neighbourhood countries as well.

EU framework for the taxation of energy products and electricity

EU excises duty rules cover all energy products used for heating and transport, as well as electricity.

The primary goal of EU energy tax legislation is to ensure that the Single Market runs smoothly and to prevent distortions in competition and trade within the EU. Directive 2003/96/EC¹⁴ on an EU framework for taxation of energy products and electricity sets out minimum rates not only for mineral oils but also for coal, natural gas and electricity when used as motor or heating fuels and to electricity. This framework aims to improve the functioning of the internal market by reducing distortions in competition between mineral oils and other energy products. It encourages more efficient use of energy so as to reduce dependence on imported energy products and limit greenhouse gas emissions and also allows Member States to grant tax advantages to businesses that take specific measures to reduce their emissions.

Directive 2010/75/EU on industrial emissions (integrated pollution prevention and control)

Industrial production processes account for a considerable share of the overall pollution in Europe due to their emissions of air pollutants, discharges of waste water and the generation of waste.

Directive 2010/75/EU of the European Parliament and the Council on industrial emissions (the Industrial Emissions Directive or IED) is the main EU instrument regulating pollutant emissions from industrial installations. To control industrial emissions, the EU has developed a general framework based on integrated permitting. This means the permits must take account of a plant's complete environmental performance to avoid pollution being shifted from one medium - such as air, water and

¹⁴ Council Directive 2003/96/EC of 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity, as amended.

land - to another. Priority should be given to preventing pollution by intervening at source and ensuring prudent use and management of natural resources.

A recast of seven earlier pieces of legislation on industrial emissions, it lays down rules to prevent and control pollution into the air, water and land and to avoid generating waste from large industrial installations. The legislation covers the following industrial activities: energy, metal production and processing, minerals, chemicals, waste management and other sectors such as pulp and paper production, slaughterhouses and the intensive rearing of poultry and pigs. The installations covered by the directive must prevent and reduce pollution by applying the best available techniques* (BATs), efficient energy use, waste prevention and management and measures to prevent accidents and limit their consequences.

- The installations can only operate if in possession of a permit and have to comply with the conditions set therein.
- The BAT conclusions adopted by the Commission are the reference for setting the permit conditions. Emission limit values must be set at a level that ensures pollutant emissions do not exceed the levels associated with the use of BATs. However, they may, if it is proven that this would lead to disproportionate costs compared to environmental benefits.
- Competent authorities need to conduct regular inspections of the installations.

This directive is part of the EU acquis which is transposed under the Energy Community Treaty as well.

Energy Efficiency

In addition to general energy policy the EU has taken a package of measures also addressing the need to step up efforts on energy efficiency and to achieve the energy efficiency goals set by EU Council decisions for 2020 and 2030. The EU has set itself a 20% energy savings target by 2020 when compared to the projected use of energy in 2020 – roughly equivalent to turning off 400 power stations. At an EU summit in October 2014, EU countries agreed on a new energy efficiency target of 27% or greater by 2030.

The main tool for implementing the targets currently is the Energy Efficiency Directive (EED) of 2012.¹⁵ The EED establishes a set of binding measures to help the EU reach its 20% energy efficiency target by 2020. Under the Directive, all EU countries are required to use energy more efficiently at all stages of the energy chain from its production to its final consumption.

EU countries were required to transpose the Directive's provisions into their national laws by 5 June 2014. Three main areas of provisions under the EED:

- National Energy Efficiency Action Plans and Annual Reports: EU Member States plans showing how they intend to meet their energy efficiency targets. National Energy Efficiency Action Plans (NEEAPs) set out estimated energy consumption, planned energy efficiency measures and the improvements individual EU countries expect to achieve. Under the EED, EU Member States must draw up these plans every three years. EU countries must report the progress achieved towards their national energy efficiency targets on an annual basis.

¹⁵ Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC

- Buildings energy efficiency under the EED: EU Member States' national building renovation strategies and measures for improving energy efficiency in public buildings. The Energy Efficiency Directive places energy savings requirements on EU countries' buildings. This includes making central government buildings more energy efficient and requiring EU countries to establish national plans for renovating overall building stock. EU countries have drawn up strategies to show how they plan to foster investment into the renovation of residential and commercial buildings. These strategies are part of their National Energy Efficiency Action Plans. They provide an overview of the country's national building stock, identify key policies that the country intends to use to stimulate renovations and provide an estimate of the expected energy savings that will result from renovations. Every year, EU Member States are required to renovate at least 3% of the total floor area of buildings owned and occupied by central government. EU Member States prepare a public inventory of all central government buildings with a total useful floor area of over 500m².
- Obligation schemes and alternative measures: Energy efficiency obligation schemes or alternative measures to reduce energy consumption by final consumers. Under the [EED](#), EU Member States should set up an energy efficiency obligation scheme. This scheme requires energy companies to achieve yearly energy savings of 1.5% of annual sales to final consumers.

In order to reach this target, companies have to carry out measures which help final consumers improve energy efficiency. This may include improving the heating system in consumers' homes, installing double glazed windows, or better insulating roofs to reduce energy consumption.

The Energy Performance of Buildings Directive¹⁶ is another pillar of energy efficiency measures with strong climate relevance as buildings are one of the main consumers of energy, thus responsible for significant emissions. Key provisions of the directive are the following:

- Energy performance certificates are to be included in all advertisements for the sale or rental of buildings
- EU Member States must establish inspection schemes for heating and air conditioning systems or put in place measures with equivalent effect
- all new buildings must be nearly zero energy buildings by 31 December 2020 (public buildings by 31 December 2018)
- EU Member States must set minimum energy performance requirements for new buildings, for the major renovation of buildings and for the replacement or retrofit of building elements
- EU Member States have to draw up lists of national financial measures to improve the energy efficiency of buildings

Renewable Energy Sources

In 2007 the EU set a target of ensuring that a total of 20% of European energy consumption derives from renewable sources by 2020. To achieve this objective, the EU has adopted measures aimed at promoting renewable energy sources and developing the markets in the biomass and biofuel sectors.

¹⁶ Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings

Directive 2009/28/EC on the promotion of the use of energy from renewable sources¹⁷ established a common framework for the use of energy from renewable sources in order to limit greenhouse gas emissions and to promote cleaner transport, which includes establishing national action plans and procedures for the use of biofuels.

All EU countries have adopted national renewable energy action plans showing what actions they intend to take to meet their renewables targets for 2020. These plans include sectorial targets for electricity, heating and cooling, and transport; planned policy measures; the different mix of renewables technologies they expect to employ; and the planned use of cooperation mechanisms.

Renewables will play a key role in helping the EU to meet its energy needs beyond 2020 and it is elaborated in the 2030 climate and energy framework. In this framework EU Member States have already agreed on a new renewable energy target of at least 27% of final energy consumption in the EU as a whole by 2030. The 2030 target is different from the 2020 one not having national targets set as the way of achieving it.

1.1.3.2 Transport policy

Transport sector has an important role in EU climate policy as this is a sector where greenhouse emissions increased by 36 % between 1990 and 2007 and had only a modest decline since then. Despite the decreasing trend transport emissions were in 2012 still 20.5 % above 1990 levels and would need to fall by 67 % by 2050 in order to meet the 2011 Transport White Paper target reduction of 60% compared to 1990. As greenhouse gas emissions have been increasing for most modes of transport, the EU has so far put a range of policies in place aiming to lower emissions from the sector.

The policies include the following measures:

- aviation has been included in the EU Emissions Trading System (ETS). From 2013 onwards emissions from flights within the European Economic Area fall under the EU ETS.
- a strategy is in place to reduce emissions from cars and vans, including emissions targets for new vehicles;
- a strategy for reducing heavy duty vehicle fuel consumption and CO₂ emissions;
- a target is in place to reduce the greenhouse gas intensity of fuels - EU legislation¹⁸ requires a reduction of the greenhouse gas intensity of the fuels used in vehicles by 6 % by 2020. This legislation, the Fuel Quality Directive, also regulates the sustainability of biofuels. This directive applies to all petrol, diesel and biofuels used in road transport, as well as to fuels used in non-road-mobile machinery.

¹⁷ Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC (Text with EEA relevance).

¹⁸ Directive 2009/30/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 98/70/EC as regards the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and reduce greenhouse gas emissions and amending Council Directive 1999/32/EC as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC

- rolling resistance limits and tyre labelling requirements have been introduced and tyre pressure monitors made mandatory on new vehicles;
- public authorities are required to take account of life cycle energy use and CO₂ emissions when procuring vehicles.

1.2 EU LEGAL INSTRUMENTS

In this chapter on climate change, 32 legislative instruments are included as separate sections (see below). This legislative core comprises six Directives, seven Decisions and 19 Regulations. A Short introduction of these sections is provided below:

Greenhouse gas emission trading scheme

Directive 2003/87/EC establishes a scheme for greenhouse gas emission allowance trading for the cost-effective reduction of such emissions. This scheme should enable the EU and the Member States to meet the commitments under the Kyoto Protocol to reduce greenhouse gas emissions. Installations operating in the energy sector, iron and steel production and processing, the mineral industry and the paper and board industry will automatically be subject to the emission trading scheme. This Directive has been amended several times and the emission trading scheme has now been extended to include aviation sector as well.

Monitoring mechanism

Regulation (EU) 525/2013 extended the earlier introduced mechanism for monitoring and reporting greenhouse gas emissions. This regulation enables the EU to evaluate more accurately and more regularly the progress made in reducing emissions with a view to complying with the EU's commitments under the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol and further international agreements.

Effort sharing (to cut greenhouse gas emissions)

Decision No 406/2009/EC contributes to meeting the commitment made by the European Union to reduce its greenhouse gas emissions by 20 % by 2020 in relation to 1990 levels. It sets objectives for reducing emissions for each of the Member States and defines the means for checking whether they have been met. These objectives could be increased in line with international agreements.

Carbon capture and storage

The EU establishes a legislative framework for the environmentally safe capture and geological storage of carbon dioxide (CO₂). This new legislative framework aims at preventing or, and where that is not possible, minimising the harmful effects of CO₂ emissions and all environmental and health risks.

Fluorinated gases

Regulation (EU) No 517/2014 on certain fluorinated greenhouse gases and supplementing legislation provides a comprehensive legal framework for the containment, use, recovery and destruction of certain fluorinated greenhouse gases. This framework comprises provisions relating to the labelling of products and equipment containing these gases, to the notification of information, to prohibitions on commercialisation, as well as to the training and certification of personnel and enterprises.

Ozone depleting substances

Regulation (EC) No 1005/2009 of the European Parliament and of the Council of 16 September 2009 on substances that deplete the ozone layer brings the EU rules into line with technical developments and changes made to the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer. This Regulation is complemented by Commission Regulation (EU) No 291/2011 and Commission Regulation (EU) No 537/2011 regarding essential uses of controlled substances other than hydrochlorofluorocarbons for laboratory and analytical purposes and the mechanism for the allocation of quantities of controlled substances for such uses.

Fuel quality

Directive 98/70/EC relating to the quality of petrol and diesel fuels as amended Directive 2009/30/EC as regards the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and reduce greenhouse gas emissions introduce the control of emissions from particular types of sources, by regulating the storage and transport of petrol, coupled with limits on the lead and sulphur content of fuels. It was also amended by Directive (EU) 2015/652 of 20 April 2015 on laying down calculation methods and reporting requirements.

CO₂ emissions in cars and vans

8 Regulations and 1 Directive lay down provisions on type-approval and other control measures restricting the pollutants from the automotive sector. For instance, Regulation (EC) 443/2009 establishes emission performance standards for new passenger cars as part of the EU's integrated approach to reduce CO₂ emissions from passenger cars and light-duty vehicles.

Table 1. Legislation in the Climate Change Sector Covered by the Handbook

Monitoring Mechanism
Regulation (EU) No 525/2013 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 and repealing Decision No 280/2004/EC Text with EEA relevance
Commission Implementing Regulation (EU) No 749/2014 of 30 June 2014 on structure, format, submission processes and review of information reported by Member States pursuant to Regulation (EU) No 525/2013 of the European Parliament and of the Council
Commission delegated regulation (EU) No 666/2014 of 12 March 2014 establishing substantive requirements for a Union inventory system and taking into account changes in the global warming potentials and internationally agreed inventory guidelines pursuant to Regulation (EU) No 525/2013 of the European Parliament and of the Council

Regulation (EU) 2015/757 of 29 April 2015 on the monitoring, reporting and verification of carbon dioxide emissions from maritime transport, and amending Directive 2009/16/EC
Decision No 529/2013/EU of the European Parliament and of the Council on accounting rules on greenhouse gas emissions and removals resulting from activities relating to land use, land-use change and forestry and on information concerning actions relating to those activities
Emission Trading
Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC as amended by Directive 2004/101/EC (in respect of Kyoto Protocol's project mechanism), 2008/101/EC (to include aviation activities), 2009/29/EC (to improve and extend) and by Regulation (EC) 219/2009
Commission Regulation (EU) No 601/2012 of 21 June 2012 on the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council (amended three times in 2014)
Commission Regulation (EU) No 600/2012 of 21 June 2012 on the verification of greenhouse gas emission reports and tonne-kilometre reports and the accreditation of verifiers pursuant to Directive 2003/87/EC of the European Parliament and of the Council
Commission Regulation (EU) No 389/2013 of 2 May 2013 establishing a Union Registry pursuant to Directive 2003/87/EC of the European Parliament and of the Council, Decisions No 280/2004/EC and No 406/2009/EC of the European Parliament and of the Council and repealing Commission Regulations (EU) No 920/2010 and No 1193/2011
2010/634/EU: Commission Decision of 22 October 2010 adjusting the Union-wide quantity of allowances to be issued under the Union Scheme for 2013 and repealing Decision 2010/384/EU (notified under document C(2010) 7180)
Commission Regulation (EU) No 1031/2010 of 12 November 2010 on the timing, administration and other aspects of auctioning of greenhouse gas emission allowances pursuant to Directive 2003/87/EC of the European Parliament and of the Council establishing a scheme for greenhouse gas emission allowances trading within the Community
(2014)7809/: Commission Decision of 27 October 2014 a list of sectors and subsectors which are deemed to be exposed to a significant risk of carbon leakage, for the period 2015 to 2019;
2013/448/: Commission Decision of 5 September 2013 concerning national implementation measures for the transitional free allocation of greenhouse gas emission allowances in accordance with Article 11(3) of Directive 2003/87/EC of the European Parliament and of the Council
Commission Decision 2011/278/EU of 27 April 2011 determining transitional Union-wide rules for harmonised free allocation of emission allowances pursuant to Article 10a of Directive 2003/87/EC of the European Parliament and of the Council

(EU)2015/1814: Commission Decision of 6 October 2015 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading scheme and amending Directive 2003/87/EU
Effort Sharing
Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020
Carbon Capture and Storage
Directive 2009/31/EC of the European Parliament and of the Council of 23 April 2009 on the geological storage of carbon dioxide and amending Council Directive 85/337/EEC, European Parliament and Council Directives 2000/60/EC, 2001/80/EC, 2004/35/EC, 2006/12/EC, 2008/1/EC and Regulation (EC) No 1013/2006
F-Gases
Regulation (EU) No 517/2014 of the European Parliament and of the Council of 16 April 2014 on fluorinated greenhouse gases and repealing Regulation (EC) No 842/2006
Commission Regulation (EC) No. 1516/2007 of 19 December 2007 establishing standard leakage checking requirements for stationary refrigeration, air-conditioning and heat-pump equipment containing certain fluorinated greenhouse gases
Commission Regulation (EC) No. 1497/2007 of 18 December 2007 establishing standard leakage checking requirements for stationary fire protection systems containing certain fluorinated greenhouse gases
Commission Implementing Regulation (EU) 2015/2068 of 17 November 2015 establishing the format of labels for products and equipment containing fluorinated greenhouse gases
Commission Regulation (EC) No 1191/2014 of 30 October 2014 determining the format and means for submitting the report referred to in Article 19 of Regulation (EU) No 517/2014 of the European Parliament and of the Council on fluorinated greenhouse gases
Commission Implementing Regulation (EU) 2015/2067 of 17 November 2015 establishing minimum requirements and the conditions for mutual recognition for the certification of natural persons as regards stationary refrigeration, air conditioning and heat pump equipment, and refrigeration units of refrigerated trucks and trailers, containing fluorinated greenhouse gases and for the certification of companies as regards stationary refrigeration, air conditioning and heat pump equipment, containing fluorinated greenhouse gases
Commission Regulation (EC) No 304/2008 of 2 April 2008 establishing minimum requirements and the conditions for mutual recognition for the certification of companies and personnel as regards stationary fire protection systems and fire extinguishers containing certain fluorinated greenhouse gases

Commission Regulation (EC) No 304/2008 of 2 April 2008 establishing minimum requirements and the conditions for mutual recognition for the certification of companies and personnel as regards stationary fire protection systems and fire extinguishers containing certain fluorinated greenhouse gases
Commission Implementing Regulation (EU) 2015/2066 of 17 November 2015 establishing minimum requirements and the conditions for mutual recognition for the certification of natural persons carrying out installation, servicing, maintenance, repair or decommissioning of electrical switchgear containing fluorinated greenhouse gases or recovery of fluorinated greenhouse gases from stationary electrical switchgear
Commission Regulation (EC) No 306/2008 of 2 April 2008 establishing minimum requirements and the conditions for mutual recognition for the certification of personnel recovering certain fluorinated greenhouse gas-based solvents from equipment
Commission Regulation (EC) No 307/2008 of 2 April 2008 establishing minimum requirements for training programmes and the conditions for mutual recognition of training attestations for personnel as regards air-conditioning systems in certain motor vehicles containing certain fluorinated greenhouse gases
Commission Implementing Regulation (EU) 2015/2065 of 17 November 2015 establishing the format for notification of the training and certification programmes of the Member States
Ozone Depleting Substances
Regulation (EC) No. 1005/2009 of the European Parliament and of the Council of 16 September 2009 on substances that deplete the ozone layer, amended by: Commission Regulation (EU) No 744/2010 of 18 August 2010; Commission Regulation (EU) No 1087/2013 of 4 November 2013; Commission Regulation (EU) No 1088/2013 of 4 November 2013
Commission Regulation (EU) No 291/2011 on essential uses of controlled substances other than hydrochlorofluorocarbons for laboratory and analytical purposes in the Union under Regulation (EC) No 1005/2009
Commission Decision 2010/372/EU on the use of controlled substances as process agents under Article 8(4) of Regulation (EC) No. 1005/2009
Commission Regulation (EU) No 537/2011 of 1 June 2011 on the mechanism for the allocation of quantities of controlled substances allowed for laboratory and analytical uses in the Union under Regulation (EC) No 1005/2009
Fuel Quality

Directive 98/70/EC relating to the quality of petrol and diesel fuels and amending Council Directive 93/12/EEC (OJ L 350, 28.12.1998), as amended by Directive 2000/71/EC, Directive 2003/17/EC, Regulation (EC) No. 1882/2003, Directive 2009/30/EC, Directive 2011/63/EC, Directive 2014/77/EU and Directive (EU) 2015/1513 ¹⁹
Commission Decision 2002/159/EC of 18 February 2002 on a common format for the submission of summaries of national fuel quality data
Commission Regulation (EU) No 1307/2014 of 8 December 2014 on defining the criteria and geographic ranges of highly biodiverse grassland for the purposes of Article 7b(3)(c) of Directive 98/70/EC of the European Parliament and of the Council relating to the quality of petrol and diesel fuels and Article 17(3)(c) of Directive 2009/28/EC of the European Parliament and of the Council on the promotion of the use of energy from renewable sources
Council Directive (EU) 2015/652 of 20 April 2015 on laying down calculation methods and reporting requirements pursuant to Directive 98/70/EC of the European Parliament and of the Council relating to the quality of petrol and diesel fuels
CO₂/Cars and vans and car labelling
Regulation (EC) 443/2009 of the European Parliament and of the Council of 23 April 2009 setting emission performance standards for new passenger cars as part of the EU's integrated approach to reduce CO ₂ emissions from light-duty vehicles as amended by Commission Regulation (EU) No 397/2013, Regulation (EU) No 333/2014 and Commission Delegated Regulation (EU) 2015/6 of 31 October 2014
Commission Regulation 1014/2010 of 10 November 2010 on monitoring and reporting of data on the registration of new passenger cars pursuant to Regulation (EC) 443/2009 of the European Parliament and of the Council
Commission Regulation (EU) 63/2011 of 26 January 2011 laying down detailed provisions for the application for derogation from the specific CO ₂ emission targets pursuant to Article 11 of Regulation (EC) 443/2009 of the European Parliament and of the Council 1999/94/EC
Commission Implementing Regulation (EU) No 725/2011 of 25 July 2011 establishing a procedure for the approval and certification of innovative technologies for reducing CO ₂ emissions from passenger cars pursuant to Regulation (EC) No 443/2009
Commission Decision (of 17 February 2012) on a method for the collection of premiums for excess CO ₂ emissions from new passenger cars pursuant to Regulation (EC) 443/2009 of the European Parliament and of the Council (2012/100/EU)
Regulation (EU) 510/2011 No of the European Parliament and of the Council of 11 May 2011 setting emission performance standards for new light commercial vehicles as part of the Union's integrated approach to

¹⁹ Please note that in various sources Directive 2009/30/EC, which actually amended Directive 98/70/EC, is referred to as the Fuel Quality Directive

reduce CO ₂ emissions from light-duty vehicles as amended by Regulation (EU) No 253/2014 of 26 February 2014 and Commission Delegated Regulation (EU) No 404/2014 of 17 February 2014
Commission Implementing Regulation (EU) 293/2012 of 3 April 2012 on monitoring and reporting of data on the registration of new light commercial vehicles pursuant to Regulation 510/2011 of the European Parliament and of the Council as amended by Commission Implementing Regulation (EU) No 410/2014
Commission Delegated Regulation (EU) No 114/2013 of 6 November 2012 supplementing Regulation 510/2011 of the European Parliament and of the Council with regard to rules for the application for a derogation from the specific CO ₂ emissions targets for new light commercial vehicles, as amended by Commission Delegated Regulation (EU) No 1047/2013 of 21 August 2013 and Commission Delegated Regulation (EU) No 482/2014 of 4 March 2014
Commission Implementing Regulation (EU) No 427/2014 of 25 April 2014 establishing a procedure for the approval and certification of innovative technologies for reducing CO ₂ emissions from light commercial vehicles pursuant to Regulation (EU) No 510/2011 of the European Parliament and of the Council
Commission Implementing Decision 2012/99/EU of 17 February 2012 on the detailed arrangements for the collection of premiums for excess CO ₂ emissions from new light commercial vehicles pursuant to Regulation 510/2011 of the European Parliament and of the Council
Directive 1999/94/EC of the European Parliament and of the Council of 13 December 1999 relating to the availability of consumer information on fuel economy and CO ₂ emissions in respect of the marketing of new passenger cars as amended by Directives 2003/73/EC and 2009/30/EC and Regulations (EC) 1882/2003 and (EC) 1137/2008

Table 2 Summary of Links with Other Sectors (not exhaustive list)

Legislation in the Environmental Sector	Relevance
Horizontal	
Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment (EIA Directive).	Requires an EIA for new projects listed in Annex I that are judged to have a significant impact on the environment. These projects include for instance installation of certain pipelines for the transport of gas, oil, chemicals and for the transport of carbon dioxide (CO ₂) streams for the purposes of geological storage, including associated booster stations.
Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment (SEA Directive).	The SEA Directive lays down the procedure for undertaking an environmental assessment of plans and programmes that fall within its scope, including those pertaining to climate change mitigation and abatement.

Directive 2003/4/EC of the European Parliament and of the Council of 28 January 2003 on public access to environmental information and repealing Council Directive 90/313/EEC.	Pursuant to this Directive, public authorities have to ensure public access to any environmental information in any form regarding for instance the state of the elements of the environment, such as air and atmosphere.
Air Quality	
Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe	This Directive sets out framework for establishing air quality objectives for ground-level ozone and benzene designed to avoid, prevent or reduce harmful effects on human health and the environment as a whole.
Directive 2001/81/EC of the European Parliament and of the Council of 23 October 2001 on national emission ceilings for certain atmospheric pollutants.	This Directive lays down national emission ceilings for VOCs which contribute to the formation of ground-level ozone. Ozone is also a greenhouse gas and contributes to atmospheric warming and climate change.
European Parliament and Council Directive 94/63/EC of 20 December 1994 on the control of volatile organic compound (VOC) emissions resulting from the storage of petrol and its distribution from terminals to service stations as amended by Regulations (EC) 1882/2003 and (EC) 1137/2008.	The Directive sets out requirements for the control of vapours of petrol during its transport, loading or storage. It complements EU provisions aiming at restricting emissions from motor vehicles.
European Parliament and Council Directive 2009/126/EC of 21 October 2009 on Stage II petrol vapour recovery during refuelling of motor vehicles at service stations.	This Directive lays down measures aimed at reducing the amount of petrol vapour emitted to the atmosphere during the refuelling of motor vehicles at service stations.
Directive 98/70/EC of the European Parliament and of the Council of 13 October 1998 relating to the quality of petrol and diesel fuels and amending Council Directive 93/12/EEC	With a view to reducing lifecycle greenhouse gas emissions from road transport fuels, Directive 98/70/EC will, from 1 January 2011, permit the placing on the market of petrol containing a larger proportion of biofuel components than was previously the case. However, this may lead to an increase in VOC emissions, because of the possibility for Member States to implement limited derogations from the vapour pressure requirements of that Directive. This increase is partly offset by Directive 2009/126/EC
Waste management	
Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste	This Directive ensures high environmental protection during waste management operations and disposal, which also reduce atmospheric pollutants.

Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste.	The European Union has laid down strict requirements for landfills to prevent and reduce as far as possible the negative effects on the environment, specifically on surface water, groundwater, soil, air and human health. These restrictions help minimise the release of greenhouse gases during landfill operations.
Water Quality	
Directive 2007/60/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks.	The Floods Directive contains provisions (along with the Water Framework Directive) on preventive flood action as well as action in case of floods. These provisions are mainly relevant for climate change policy in terms of their adaptive character. The Floods Directive should also be implemented in close correlation with the Decision introducing a EU Civil Protection Mechanisms.
Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for Community action in the field of marine environmental policy.	This Directive requires Member States to attain good environmental status (GES) for marine waters and areas. In determining the GES the overall state of the environment in marine waters has to be considered also taking into account climatic factors, also referring to natural conditions and those resulting from human activities.
Industrial Pollution Control	
Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control (to replace Council Directive 2008/1/EC concerning integrated pollution prevention and control).	Implements the policy of taking integrated measures for the prevention and control of pollution. Requires permits for prescribed activities, including those giving rise to greenhouse gas emission releases. These permits must impose emission limits and preventive action.
Seveso II Directive (96/82/EC), as amended by Directive 2003/105/EC and Regulation (EC) 1882/2003.	Aims to prevent major accidents involving dangerous substances and to limit their impacts on people and the environment. Such accidents often cause major air pollution incidents including greenhouse gas emissions.
Council Directive 1999/13/EC of 11 March 1999 on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain activities and installations as amended by Regulation (EC) 1882/2003 and Directives 2004/42/EC and 2008/112/EC (to be repealed as of 07.01.2014 by Directive 2010/75/EU)	The Directive sets out emission limit values for certain activities resulting in VOC emissions. In addition, the VOC content of paints, varnishes and vehicle refinishing products gives rise to significant emissions of VOCs into the air, which contribute to the local and transboundary formation of photochemical oxidants in the boundary layer of the troposphere.

<p>Regulation (EC) No 166/2006 of the European Parliament and of the Council of 18 January 2006 concerning the establishment of a European Pollutant Release and Transfer Register and amending Council Directives 91/689/EEC and 96/61/EC and amended by Regulation (EC) 596/2009.</p>	<p>The European PRTR aims, among other things, at informing the public about important pollutant emissions due, in particular, to activities covered by LED Directive (2010/75/EU) (IPPC).</p> <p>Consequently, under this Regulation, information should be provided to the public on emissions from installations covered by Annex I of that Directive. The operator of each facility that undertakes one or more of the activities specified in Annex I above the applicable capacity thresholds must report the amounts annually to its competent authority. Among the air pollutants that need to be reported to the PRTR are: Methane, Carbon monoxide (CO), Carbon dioxide (CO₂), 4 Hydro-fluorocarbons (HFCs).</p>
<p>Civil Protection Mechanism</p>	
<p>2007/779/EC, Euratom: Council Decision of 8 November 2007 establishing a Community Civil Protection Mechanism (as amended).</p>	<p>This instrument supplemented with several other Decisions in the civil protection sector, provide for an emergency response. These include, in particular, the EU Civil Protection Mechanism and specific measures concerning floods and droughts.</p>

2. DEVELOPMENT OF A SECTORAL STRATEGY AND IMPLEMENTATION PLAN

The implementation management checklist presented in Section 2.4 of the introductory section of the Handbook provides an overall framework for preparing a strategy to implement the legislation contained within this sector. The following text focuses on key issues pertinent to this sector, which are developed in the remainder of this section. Further guidance on implementation is provided in the fiches for individual legal instruments. The climate change sector consists of a diverse body of legislative instruments, although this chapter only deal with a few strands of the overall framework which also extends to energy policy, transport policy, enterprise policy.

In terms of the climate change legislation covered in this Handbook, the principal tasks are concerned with:

- Designating competent authorities mainly at national but also partly at regional/local levels. The roles of the standards authority and the regulatory authority are likely to be combined within an environmental protection agency, which will also be involved in planning and data collection. The organisational structure should preferably build upon the existing institutional structures in place;
- The competent authority must maintain an overseeing role in relation to the results of climate change monitoring and the permitting process;
- Ensure efficient coordination at international level in implementing EU-level and national commitments under the Kyoto Protocol or other relevant international agreements in the field of climate change, Regulation of ozone depleting substances;
- National focal points have to be designated and coordination mechanisms defined to ensure smooth and integrated implementation of international obligations;
- The government will also need to set overall policy within the context of the EC Directives — for example establishing the role that taxation or other fiscal measures will have;
- Establishing and co-ordinating monitoring and assessment programme;
- Reporting periodically towards the Commission and the public on the results of climate change abating measures in line with EU requirements;
- Plans to deal with serious and obvious breaches of climate change;
- Ensure efficient co-operation between the competent authorities and operators in the private sector. The competent authority will need to monitor the success of the various approaches, in order that they can be adjusted as and when necessary;
- Implementing Regulations on the composition of motor vehicle and fuels;
- Ratifying the Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol on Substances That Deplete the Ozone Layer and comply with EU provisions on ozone depleting substances which calls for eventual complete phase out of use of ODS;
- Maintaining an inventory of greenhouse gas emissions and preparing a national;
- programme for limiting anthropogenic emissions (this requirement relates to the implementation of the UN Framework Convention on Climate Change, to which the individual EU Member States are all parties);
- Control the production and use of fluorinated gases to contain leakages;

- Prepare certification schemes for staff dealing with products containing fluorinated gases;
- Set up laboratories and testing facilities for the procedures to test personal cars' and fuels compliance with CO₂ technical standards;
- Data collection, analysis and dissemination taking into account standard formats for instance set out in the INSPIRE Directive (2007/2/EC);
- Setting up a system to administrate national accounts in the EU Registry;
- Prepare for joining the EU ETS Auctioning Platform;
- Prepare for phasing in emission reduction targets for new passenger cars and light commercial vehicles and to support eco-innovations in this industry;
- Prepare measures for complying with the Effort Sharing Decision targeting greenhouse gas emission reductions in sectors others than those covered by the ETS (e.g. transport, energy, built environment);
- Efficient monitoring, reporting and verification schemes;
- Inspection and enforcement of legislation, introducing efficient, dissuasive and proportionate sanctions.

3. INSTITUTIONS AND RELEVANT PARTIES

3.1 STAKEHOLDERS

A large number and great variety of national, regional and international stakeholders have an interest in, or may be affected by, climate change issues. The principal stakeholders and their roles in the process of developing and implementing a sectoral strategy to achieve compliance with EC policies and legislation as well as directly related international commitments on greenhouse gas reductions and monitoring and adaptation measures are identified in the Table 3 below.

3.2 NATIONAL GOVERNMENT INSTITUTIONS

National governments are ultimately responsible for ensuring compliance with EU climate change policies and legislation on greenhouse gas reductions, monitoring and adaptation and ensure harmonious coordination with other sectoral policies affecting climate change (e.g. transport policy, energy policy, enterprise policy, research and innovation, agricultural practices) and with legislation and policy regulating emergency response (e.g. in case of floods, draughts).

Typically, the primary responsibility for transposing and achieving compliance is vested in a single national institution, e.g. the Ministry of Environment or Energy, department or government agency with responsibility for the environment and/or energy with co-responsibility or close links to related policy sectors such as agriculture, enterprise and transport. The lead ministry should identify and appoint the competent authority (or authorities, taking into account the large number of legislative and policy measures) required to take responsibility for functions prescribed in the legislation. The lead ministry must ensure that the competent authorities have the required legal powers, mandate, public trust and resources (financial, technical, logistical and human) to meet their obligations. Competent authorities are discussed further in Section 3.3 below.

Other ministries or departments in national government have to be involved and consulted in several ways at the various stages in the planning and implementation process, depending on the legislative measure concerned, e.g. ministries with responsibilities for energy, transport, industry, agriculture, tourism, labour and finance. For example, the establishment of the greenhouse emission trading scheme or the greenhouse gas emission monitoring mechanism is likely to require technical inputs from other public bodies, such as local authorities, national standards or accreditation institute, financial institutions, insurance companies, meteorological institutes, technical bodies for calibration of monitoring instruments, and other regulatory bodies at central or regional level. The role and input of each type of organisation to be involved must be carefully identified and agreed between the lead ministry and the organisation concerned. The roles of the standards authority and the regulatory authority are likely to be combined within an environmental protection agency and energy agency, which will also be involved in planning and data collection. The organisational structure should preferably build upon the existing institutional structures in place.

Table 3 Principal Stakeholders and Their Roles in the Climate Change Sector

Stakeholders	Roles
Central government (e.g. a ministry or department)	<ul style="list-style-type: none"> ▪ Transpose and implement legislation; ▪ Implement and maintain compliance with EU climate change provisions; ▪ Determine national policy on the environment, energy, transport etc.; ▪ Set technical standards; ▪ Set up a national system including QA/QC for annual GHG inventory process; ▪ Determine fiscal incentives or taxes; ▪ Plan the EU ETS scheme; ▪ Designate national administrator to manage its own accounts in the Union Registry.
Environmental or energy agencies working on behalf of central government.	<ul style="list-style-type: none"> ▪ Provide planning, Regulation and technical assistance; ▪ Oversee compliance with IPPC provisions; ▪ Approve monitoring/ emission reports and issue permits; ▪ Assist in administering the EU ETS and the registry; ▪ Provide technical guidance, e.g. for implementing EU ETS; ▪ Cooperation with key stakeholders such as the affected industries (producers or users or fluorinated gases, products with ODS), car industry, fuel producers and suppliers, aviation industry; ▪ Provision of information to the general public and consumers (e.g. on fuel consumption and CO₂ emission properties of personal cars and vans); ▪ Regular inspection of installations participating in the ETS.
Technical and specialised regulatory authorities (e.g. national standards or accreditation laboratory; meteorological office; institute responsible for vehicle type-approvals; regular vehicle testing and roadside vehicle inspections; fuel testing agencies).	<ul style="list-style-type: none"> ▪ Monitor weather and collect data on meteorological conditions and general air quality; ▪ Compile data inventories; ▪ Modelling and computer programming; ▪ Measurement and accreditation services; ▪ Fuel testing.

Stakeholders	Roles
Training institutes.	<ul style="list-style-type: none"> ▪ Training and certification of staff handling equipment with fluorinated gases; ▪ Training of staff of ministry and competent authorities in operating the EU ETS and the monitoring mechanism; ▪ Training of staff for carbon storage.
Police, environmental prosecutors and customs authorities.	<ul style="list-style-type: none"> ▪ Control import and export of goods, e.g. ozone-depleting substances; ▪ Sanction non-compliance with provisions and especially breaches against the Environmental Crimes Directive.
Public utilities.	<ul style="list-style-type: none"> ▪ User of fuels and emitters of greenhouse gases can take informed decisions on using more environmentally friendly fuels and technical systems.
Regional and local government.	<ul style="list-style-type: none"> ▪ Traffic management; ▪ Regulation of emissions from stationary sources; ▪ Undertaking local air quality assessment including monitoring; ▪ Evaluation of trading standards, e.g. checking fuel quality and possibly ozone-depleting substances.
<p>Industry and commercial organisations involved in:</p> <ul style="list-style-type: none"> ▪ Metals and mining; ▪ Production, sale and use of products containing fluorinated gases (e.g. switchgears, fire extinguishers, cooling equipment); ▪ Production/processing/distribution of fuels e.g. petroleum, fuels for power generation, industrial, transport and domestic use, including petrol and petrol additives (e.g. tetra-ethyl lead); power generation; products e.g. domestic heating appliances, refrigeration and air-conditioning; ▪ Design and production of equipment, motor vehicles and pollution abatement technology; ▪ Manufacturers of new passenger cars and light commercial vehicles; ▪ Waste collection and disposal; ▪ Air aviation industry (construction and operation of aeroplanes); ▪ CO₂ geological capture and storage. 	<ul style="list-style-type: none"> ▪ Significant emitters of air pollutants and greenhouse gases; ▪ Provision of pollution control equipment and technology; ▪ Provision of waste management and disposal services; ▪ Land developers and users.

Stakeholders	Roles
Consultants	<ul style="list-style-type: none"> Advise the private and public sector; Analysing implementation efforts and various technical issues as input to central and local authorities.
NGOs, media and trade unions	<ul style="list-style-type: none"> Represent the public's interest; Research; Opinion raising; Monitor compliance and put pressure on non-compliers; Contribute to ensuring efficient enforcement system in case of non-compliance.
Public, including motorists and householders.	<ul style="list-style-type: none"> Significant emitters of air pollutants and greenhouse gases can take informed decisions on choosing motor vehicles, fuels, heating systems and purchase of goods e.g. refrigerators.

3.3 COMPETENT AUTHORITIES

Some of the required technical expertise may already exist in one or more ministries, environment or energy agencies or other public authorities in the candidate countries. However, in some areas the expertise or sufficient staff resources may not be readily available, meaning that some investments into new personnel and training and/or outsourcing of certain tasks have to be considered.

Existing public bodies that may have suitable characteristics include environmental or energy ministries, energy agencies, environmental protection agencies, standardisation bodies, public laboratories and various local authorities involved in planning, permitting, supervisory, monitoring or enforcement tasks. There may be a need to define working relationships between different bodies in order to fulfil legislative requirements or, alternatively, to bring together expertise presently existing in different bodies. New roles may be created for specialist staff, requiring training, replacement or recruitment.

Competent authorities can be appointed for one or more functions across several environmental sectors. For example, the drafting of legislation and Regulations may be undertaken, or at least co-ordinated, by a single body, such as the Ministry of Environment or Ministry of Energy. The area of climate change abatement and adaptation is different from the point of view that Regulation is the main legislative instrument, which is directly applicable without formal transposition into national legislation. Also EU provisions on greenhouse gases and ozone depleting substances, especially the Greenhouse Gas Emission Trading Scheme Directive and Regulation on Control of Ozone Depleting Substances, are largely based on international commitments already set out in international conventions, e.g. Kyoto Protocol and the Montreal Protocol. Competent authorities have normally already been designated for these international commitments and it is useful to see how the existing system of competent authorities can be built on and expanded.

Box**Experience from EU Member States**

Taking the example of the EU ETS, implementation of this system, should preferably be ensured by more than one authority given the complexity and many sectoral dimensions. For instance, the distribution and powers for the EU ETS can be set in the following manner:

Energy Agency:

- maintains and operates the Emission Trading Registry;
- informs about the trading scheme, preparation of the proposed decisions on allowances in a special council together with representatives from the other main central authorities which may be the agency responsible for environment and for enterprise;
- administers grants to the regional authorities for permit processing.

Environmental Protection Agency

- Makes decisions on allocation of allowances to participating installations. The decisions are prepared in a special council with representatives from the other main competent authorities;
- Assists the regional/local authorities in their role as permit-issuing authority;
- Is the supervisory authority, and is to examine the companies' annual reports of actual emissions;
- Is responsible, together with the Energy Agency, for information about the trading scheme.

Board of Industrial and Technical Development

- Prepares proposed decisions on allowances in a special council with representatives from the Environmental Protection Agency and the Energy Agency.

The County Administrative Boards

- Handle applications for permits to emit carbon dioxide, and make decisions on such permits for the companies involved. Also handle amendments to permits and permits for new operators.

Again in the regulatory area, various Regulations, Directives and Decisions linked to climate change require permitting of installations and preventive and responsive action to minimise emission of greenhouse gases. Therefore, consideration should be given to the interaction between the competent authorities appointed in the climate change sector, the air quality sector, and those operating in other sectors, particularly waste, water and industrial pollution control. A coordinating council with decision rights and wide consultation mandate is useful. Also the main central authorities, e.g. an energy agency or environmental protection agency have integrative features and a sufficient overview to ensure high integration also in regard to overseeing the potential role for local authorities (e.g. county boards, municipalities) in monitoring, permitting and supervisory functions.

The closest form of integration for cross-sectoral competent authorities would be provided either by a single national body, or by regional bodies operating under the same management system. This type of structure would help to avoid duplication in many areas and provide economies of scale through shared facilities and resources. Alternatively, a sectoral approach could be adopted, but mechanisms would be required to ensure close co-operation and co-ordination between the different sectoral authorities. Some countries have found that integrated energy or environmental protection agencies provide the most effective regulators of pollution sources, whereas others work most efficiently with several agencies and authorities (provided that their mandate, responsibilities, tasks and financial and institutional resources are clear and sufficient).

Competent authorities with strategically important roles or requiring specialised technical expertise should be established at the national level in order to provide consistency of approach and make efficient use of scarce resources. Examples are functions for legal work (analysis and drafting), national planning, and setting technical standards. Where local experience or local accountability is important, competent authorities can be established at the regional or local level, for example in local planning, permitting and the inspection of facilities.

3.4 REGIONAL AND LOCAL GOVERNMENT

The role of regional and local government is important for two reasons. Most countries have a tiered administrative structure in which certain powers are devolved to the regional (county, département, Länder) or local level of government (local planning authority or municipality). This decentralisation is stronger in federal countries but exists elsewhere. However, compared to water management and air quality management, where decentralisation is very common given the shared responsibilities for drawing up regional water management basis, air zoning etc., climate change policies and Regulation is mainly carried out at central level. However, a national strategy on climate change and the implementation of the EU climate change legislation should, for several reasons also be implemented at regional level. For instance, this can enhance efficiency, facilitate public participation and ensure better cooperation with the operators from the relevant sectors. Some legislation such as the Effort Sharing Decision and the Fuel Quality legislation and CO₂ in Cars Regulation require action also at regional level, also to facilitate monitoring, reporting and verification of data.

EU legislation does not stipulate the division of powers and responsibilities between national, regional and local administration. However, it is logical for some functions (for example, setting of technical standards and guidance) to be undertaken at national level, and others (for example, inspection of small air pollution sources, issuing and amendment of industrial permits and certain supervisory and monitoring tasks) to be undertaken at local level. A range of tasks between these two extremes could be undertaken either nationally or locally. Where regional or local government takes on more than one role, there is a potential for conflicts of interest to arise. This could be the case where local government has responsibility for regulating certain local industrial activities producing greenhouse gas emissions, taking action on meeting national or local emission reduction targets while also operating communal facilities such as district heating schemes or waste incineration facilities.

Some countries may have a large number of small municipalities with individual responsibility for implementing the complex climate change provision. These may be too small and have too few human and financial resources and political outreach to achieve the high standards demanded by EU legislation, either because they do not have relevant specialist staff or technologies, or because they are mainly affected by pollution from beyond their boundaries. In this case, inter-municipal co-operation and pooling of resources can be very beneficial.

If the regional approach is to be promoted, the existing policy, legal and administrative framework governing local government bodies needs to be reviewed to ensure that there is an adequate basis for inter-municipal co-operation. It is necessary to examine carefully the nature of any forms of voluntary agreements, joint ventures or associations between local government bodies to ensure that issues such as resource sharing and liability are addressed appropriately.

Local authorities play an important role in cutting an area's carbon emissions. Their role should preferably be set out in a local performance framework with indicators, regulatory tools and milestones.

In some Member States (Sweden), the County Boards for the implementation of the EU ETS handle applications for permits to emit carbon dioxide, and make decisions on such permits for the companies involved.

Box

Experience from EU Member States – United Kingdom

A key driver for local authorities originated in the Local Government White Paper 2006. This introduced a new local performance framework, which includes:

- the national indicators (NIs);
- local area agreements (LAAs), which are three-year agreements between local strategic partnerships (LSPs) and central government about their priorities for performance improvement.

All local areas must report annually on their performance against a wide range of national indicators (NIs). These include two indicators of CO₂ emissions:

- NI 185: CO₂ reduction from local authority operations;
- NI 186: Per capita reduction in CO₂ emissions in the local authority area.

Local authorities have participated in the Carbon Reduction Commitment (CRC) Energy Efficiency scheme, which was introduced in 2010. The Local Government Information Unit (LGIU) has operated Carbon Trading Councils, simulated carbon trading for local authorities, since 2008. This gives councils an opportunity to learn about trading in a safe environment before the introduction of CRC.

Furthermore, The Low Carbon Transition Plan noted that:

“The government wants to encourage and empower local authorities to take additional action in tackling climate change, where they wish to do so. It believes that people should increasingly be able to look to their local authority not only to provide established services, but also to coordinate, tailor and drive the development of a low-carbon economy in their area, in a way that suits their preferences. The government will shortly consult stakeholders on the role that local authorities can play in meeting national carbon budgets...with possible new powers and flexibilities in this area.”

3.5 PRIVATE SECTOR INVOLVEMENT

The private sector has begun to address the issue of adaptation to climate change. Although many private sector activities are focused on reducing greenhouse gas emissions through energy efficiency, such activities improve the region's capacity to deal with warming in general and heat waves in particular. A significant share of the private sector activities to date have involved large multi-national corporations, many of which are based locally, and/or coalitions of regional businesses and associated trade or professional organizations. The multinational corporations taking the lead in examining and in some cases responding to the threat of climate change are often financial institutions, particularly insurance companies, as they have direct financial interests involved. Multinational corporations are often focused on the effects of environmental Regulations and future climate changes upon their activities and those of financial institutions. Some industrial sectors even have a more active interest, such as those developing technical solutions, systems and producing eco-friendly products and services (e.g. car manufacturers investing in eco-friendly models). Regional business coalitions are also

becoming more common and can constitute for instance a consortium of gas and electric utilities, which join forces in various joint plans and platforms to support regional energy efficiency partnerships.

The United Nations Development Programme and the Centre for Health and the Global Environment at Harvard Medical School formed the Climate Change Futures Project, an international, multidisciplinary project designed to formulate future scenarios and their consequences based on a set of climate projections and development trajectories. The Climate Change Futures Project has sponsored several workshops and conferences with corporate leaders, scientists, and economists to integrate climate change understanding with public health, biological resources, and the long-term security of investments.

A modern trend in environmental enforcement is to increase the use of private organisations in accreditation, testing, sampling and analysis. For example, vehicle roadworthiness testing is undertaken by private sector enterprises in several EU countries. In these cases, the private sector enterprises must be accredited and their operations monitored and verified by government authorities. In some countries, former government laboratories and contractors undertaking monitoring and verification services have been transferred to the private sector.

The private sector may be able to provide valuable finance and offer substantial improvements in efficiency in privatised industries and utilities which own or operate stationary or mobile sources (e.g. power stations, passenger, freight transport and air transport). Experience in some countries has shown that separating polluters from regulatory authorities, where both are publicly owned, can lead to more effective Regulation and enforcement in relation to polluting emissions. Any successful programme of privatisation will need to be accompanied by an effective system of Regulation (enforcement). All entities must be regulated under the same terms, regardless of their ownership and administration.

It makes good sense to support and promote private sector initiatives for attaining a greener economy, since there are still many climate change deniers sitting in various political bodies, causing a slow-down of actions on climate change mitigation and adaptation. Also the private sector has both the necessary technological know-how and finances to launch new collaborative partnerships and projects.

3.6 COMMUNICATION, CONSULTATION AND COORDINATION

Planning and implementation of the EU climate change legislation and policy will require co-ordination between government, competent authorities and other stakeholders. Consequently, communications are important for effective implementation of the legislation.

During the development of the implementation plan and especially the putting into place the EU ETS and greenhouse gas emission monitoring mechanism as well as the Fuel Quality Directive and Regulations on CO₂ in Cars, a communication programme should be conducted whereby the views and opinions of interested and affected parties are solicited by national government and the key competent authorities in order to assess the acceptability and practicability, taking into financial, organisational and technical issues. Parties which should be consulted, at least initially, include all those listed as stakeholders. For example, it is common in the EU for national governments to consult industry on new standards, Regulations and permitting and reporting requirements. Stakeholders should also be involved in the drafting of practical guidance documents giving advice on certain technical and regulatory aspects since at least the industrial stakeholders have best knowledge of issues such as BAT/BATNEC and the specifics of a specific market. The regulatory requirements can in certain case be supplemented with voluntary agreements between industry and government. This was

for instance the case in the initial framework covering CO₂ in cars where there were agreements with industry on attaining certain greenhouse gas emission reductions in passenger cars. This framework has now been replaced with mandatory reduction targets. Giving the industry an opportunity to inform government about the potential impact of the proposals on the viability of their business; to provide technical advice which may not be available to government, for example on the practicalities of procedures or techniques; and to start planning for the introduction of the new regime is sure to provide more efficient Regulation and a better compliance record.

Upon having consulted the stakeholders in the planning, designing of the various regulatory frameworks, technical standards been determined, which has resulted in new institutional structures, division of responsibilities, clear lines of communication are needed between the competent authorities to support the roles and activities of the various bodies involved.

Government will also need to continue a dialogue with interested parties such as industry, multinational corporations, research bodies, financial institutes, technical standardisation bodies, various software providers, NGOs and the public, for example to update guidance notes on the control of greenhouse gas emissions, the effective implementation of the EU ETS, handling and use of controlled substances (e.g. ODS, fluorinated gases). These guidance notes aim at facilitate compliance by stationary sources, encourage design of low carbon products and transport services as well as aim at disseminating information on existing, revised or new government or regional climate change policies, also covering electricity production.

Achieving compliance with the EU's climate change provisions and understanding of why this is so important, may require changes in values and attitudes to the environment by different entities within government, industry, public utilities and consumers (e.g. of energy, electricity, cars, and transport services).

A programme should be developed for education, training and raising awareness to ensure that everybody is well informed about the expected steps, tasks and all the implications involved. As an example, NGOs can be expected to contribute positively to public debate on climate change and should be encouraged to do so. In some countries, certain specialist NGOs have been assigned a more formal informative and communications tasks assisting the lead ministry, such as in developing and maintaining websites, develop innovative ICT based communication platforms. Public consultation forms another central element of communication, which is institutionalised through the Public Participation Directive (2003/35/EC) and the Access to Environmental Information Directive (2003/4/EC), with specific consulting requirements set out in EIA and SEA Directives. In addition, several Directives in various environmental sectors specifically require Member States to make information available to the public. Planned and targeted consultation will strengthen the support and understanding for the new legislative framework and improve the compliance.

4. TECHNICAL ISSUES

4.1 ADOPTION OF TECHNICAL STANDARDS

To ensure a uniform approach, national technical standards must be adopted. These should comply with the requirements of EU Directives, Decisions and Regulations relevant in the climate change area such as:

- Regulating the quality of fuels used for motor vehicles and heating; for products and equipment containing fluorinated gases set national standards and requirements following the specifications set out in EU provision regarding: labels and labelling requirements, standard leaking requirements, minimum requirements and the conditions for mutual recognition for the certification of companies and personnel;
- Standards and guidance regarding the consumer information that need to be provided for buyers of passenger cars;
- For fuels covered by the legislation on fuel quality introduce standards for the specification of petrol, diesel and gas-oil;
- For the setting emission performance standards for new passenger cars and light commercial vehicles and the criteria relevant to eco-innovations, eligibility for derogations, as part of the EU's integrated approach to reduce CO₂ emissions from light-duty vehicles;
- Concerning a mechanism for monitoring EU greenhouse gas emissions and for implementing the Kyoto Protocol and the future international legal framework on climate change;
- Standards regarding certain applications covered by the temporary derogations from the phase out of ODS;
- Regarding a standardised and secured system of registries, Union Registry and the EU Auctioning Platform pursuant to Directive 2003/87 and the implementing Regulations.

Standards need to take account of best practice at international, EU and national level and of certain economic constraints on the operators of the relevant activities. In some cases, national authorities have discretion to determine the technical standards that are to be applied, provided that the standards adopted are at least as stringent as those contained in the Directives and that the intended result is achieved. In other cases (for example, the Directives relating to the composition of motor vehicle fuel), the Directives specify exact standards and there is no discretion for more stringent standards to be adopted, since variations between Member States would interfere with the functioning of the single market.

4.2 MONITORING AND REPORTING OBLIGATIONS

Compared to air quality management legislation, where competent authorities have to put into place a holistic infrastructure with monitoring stations etc. to measure ambient air emissions at periodic intervals, the climate change legislation mainly require monitoring of compliance with the periodic reporting and verification obligations. Compared to the air quality sector, where the monitoring of

emissions can be undertaken by government laboratories, private consultants, local authorities or meteorological institutes, the monitoring in the area of climate change legislation is mainly carried out on a central level, also in parallel with the Commission which has a key overall role in monitoring and reporting on the total greenhouse gas emissions, partly within the ETS framework.

The monitoring requirements of the Climate Change legislation include some legal instruments exclusively dealing with establishing efficient EU and national monitoring mechanisms.

Table 4 Examples of monitoring requirements (not exhaustive, details in following chapters)

<p>Regulation (EU) No 525/2013 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 and repealing Decision No 280/2004/EC</p>	<ul style="list-style-type: none"> ▪ The Regulation expands a mechanism for monitoring all anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol on substances that deplete the ozone layer in the Member States; ▪ It provides for annual reporting of greenhouse gas inventories and for bi-annual reporting of information on policies and measures that limit or reduce greenhouse gas emissions by sources or that enhance removals by sinks; ▪ The establishment of Member State and EU inventory systems; the evaluation of progress by the EU and Member States towards fulfilling the commitments under the UNFCCC and the Kyoto Protocol; ▪ The establishment of a EU registry and Member State registries in order to ensure the accurate accounting of assigned amount units, removal units, emission reduction units and certified emission reduction units pursuant to the Kyoto Protocol; ▪ And the submission of a report to the UNFCCC Secretariat by the EU and each Member State determining their assigned amount as equal to their respective emission levels determined pursuant to Decision 2002/358/EC and the Kyoto Protocol. <p>Note that a number of actions required in this Regulation are the responsibility of the Commission and not of the Member States. These include reporting on total emissions from the EU, based on the data supplied annually by the Member States, and assessing whether sufficient progress is being made across the EU towards meeting the obligations of the UNFCCC.</p>
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<p>Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community.</p>	<ul style="list-style-type: none"> ▪ Competent authority may only issue a greenhouse gas emissions permit granting authorisation to emit greenhouse gases from an installation if the operator is capable of monitoring and reporting emissions. These permits shall also contain the monitoring requirements, specifying monitoring methodology and frequency; ▪ The monitoring and reporting of greenhouse gas emissions from industrial installations and aircraft operators will have to be in accordance with the criteria and technical specifications set out in Annex IV to Directive 2003/87/EC and Decision 2007/589/EC on guidelines for the monitoring and reporting of emissions put into place a robust, simplified, transparent, consistent and accurate monitoring, reporting and verification (MRV) – the so-called compliance cycle - to safeguard the effective operation of the Emissions Trading System, comprising an approved monitoring plan; ▪ Full compliance with the Regulation on monitoring and reporting of greenhouse gas emissions under the EU ETS and Regulation on verification and accreditation of EU ETS emission and tonne-kilometre reports verifiers under the EU Emissions Trading System (adopted in June 2011) as from 1 January 2013; ▪ Verification of the data in the annual emissions report before 31 March each year by an accredited verifier.
<p>Directive 2009/29/EC amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community</p>	<ul style="list-style-type: none"> ▪ Aircraft operators have to produce a monitoring plan.
<p>Commission Regulation (EU) No 1031/2010 of 12 November 2010 on the timing, administration and other aspects of auctioning of greenhouse gas emission allowances pursuant to Directive 2003/87/EC</p>	<ul style="list-style-type: none"> ▪ Auction platform auctioning two-day spot or five-day futures shall monitor the relationship with bidders admitted to bid in its auctions; ▪ The competent national authorities referred to in Article 37(1) of Directive 2005/60/EC shall monitor and take the necessary measures to ensure compliance of an auction platform auctioning two-day spot or five-day futures with the customer due diligence requirements of Article 19 and Article 20(6) of this Regulation, the monitoring and record keeping requirements.

<p>Directive 98/70/EC of the European Parliament and of the Council of 13 October 1998 relating to the quality of petrol and diesel fuels and amending Council Directive 93/12/EEC</p>	<ul style="list-style-type: none"> ▪ Introduce monitoring systems based on common procedures for sampling and testing; ▪ Monitor compliance including establish a fuel quality monitoring system in respect of petrol and diesel fuels based on the analytical methods of EN 228:2004 and EN 590:2004 respectively; ▪ Submit a report, each year by 30 June with national fuel quality data for the preceding calendar year, consistent with that described in the relevant European standard the total volumes of petrol and diesel fuels marketed in their territories and the volumes of unleaded petrol and diesel fuels marketed.
<p>Directive 2009/30/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 98/70/EC as regards the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and reduce greenhouse gas emissions.</p>	<ul style="list-style-type: none"> ▪ Designate the supplier or suppliers responsible for monitoring life cycle greenhouse gas emissions per unit of energy from fuel and energy supplied; ▪ Suppliers will have to report annually, to the competent authority on the greenhouse gas intensity of fuel and energy supplied within each Member State by providing at least information on 1) the total volume of each type of fuel or energy supplied, 2) life cycle greenhouse gas emissions per unit of energy. These reports have to be verified by designated public authority.
<p>Regulation (EC) 443/2009 setting emission performance standards for new passenger cars as part of the Community's integrated approach to reduce CO₂ emissions from light-duty vehicles.</p> <p>Commission Regulation 1014/2010 on monitoring and reporting of data on the registration of new passenger cars</p>	<ul style="list-style-type: none"> ▪ Monitoring and reporting information in respect of individual manufacturers as well as any pools will be recorded, reported and available in the central register; ▪ Reporting bodies or competent authorities will have to, for every calendar year, record information for each new passenger car and light commercial vehicle registered in its territory in accordance with Part A of Annex II, which must also be available to the manufacturers and their importers or representatives; ▪ Ensure that the CO₂ emission level is measured in accordance with Regulation (EC) No 715/2007 on the approval of vehicles in view of their pollutant emissions; ▪ Ensure full compliance with the provisions of Reg. 1014/2010 on data sources, including those specifying data parameters also relating to the certificate of conformity or type approval documentation applying to passenger cars.

Regulation (EC) No. 842/2006 on certain fluorinated gases and Commission Regulation (EC) No. 1493/2007 establishing, pursuant to Regulation (EC) No. 842/2006 of the European Parliament and of the Council, the format for the report to be submitted by producers, importers and exporters of certain fluorinated gases.	<ul style="list-style-type: none"> Each producer, importer and exporter of fluorinated greenhouse gases producing, importing and exporting gases in larger quantities, has to submit, by 31 March each year, an annual report to the Commission and to the competent authority of the Member State concerned regarding the amounts produced, imported and exported in the preceding year.
Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Commission Decision 2010/372/EU, Commission Regulation (EU) No 744/2010, Commission Regulation (EU) No 291/2011 and Commission Regulation (EU) No 537/2011.	<ul style="list-style-type: none"> Ensure that undertakings submit to the Commission, by 31 March each year, the data listed in paragraphs 2 to 6 for each controlled substance and each new substance listed in Annex II for the previous calendar year.
Directive 2009/31/EC of the European Parliament and of the Council of 23 April 2009 on the geological storage of carbon dioxide.	<ul style="list-style-type: none"> An obligation for CCS operators to monitor storage site and report results at least once a year to the competent authority, on the basis of a comprehensive monitoring plan established by the operator pursuant to the criteria listed in Annex II; Submit a report, each year by 30 June: with national fuel quality data for the preceding calendar year, consistent with that described in the relevant European standard the total volumes of petrol and diesel fuels marketed in their territories and the volumes of unleaded petrol and diesel fuels marketed.

Examples of important factors to be considered in the selection of monitoring systems and procedures:

- Ease of use;
- Comparability (allowing for easy comparability between the types of data and between the data of the different Member States);
- Expandability (mainly for data processing equipment);
- Reliability;
- Compatibility with any existing hardware or software;
- Availability of training and guidance manuals.

In most cases, funding for monitoring and reporting will be provided from central government. Hence, the central government has a key role in defining and approving the monitoring strategy, procedures and methodology coherent with EU wide standards and criteria laid down in the climate change legislation. The central authorities also have an important role in ensuring quality control, verification and assurance, although this can also, especially for cost-efficient and transparency reasons, be delegated to the regional level.

4.3 QUALITY ASSURANCE

Important decisions are often made on the basis of measurements and assessments of greenhouse gas emissions (through direct monitoring or by modelling). These decisions may relate to expenditure on further monitoring or assessment and, more significantly, on pollution abatement or prevention at later stages. It is essential that all such procedures are subject to objective and independent quality verification and assurance. The criterion of being objective (which may be achieved in part by being independent) is essential in maintaining the confidence of the public, of the owners and operators of other potential sources and of other Member States that EC and national legislation is being fairly and consistently applied. Some examples of quality assurance provisions in the climate change legislation are provided below:

- Commission Decision 2011/278/EU determining transitional Union-wide rules for harmonised free allocation of emission allowances require that: in the process of collecting data, Member States shall only accept data that has been verified as satisfactory by a verifier. The Decision sets out the verification process with set methodology and parameters. The verification shall address the reliability, credibility and accuracy of the data provided by the operator and shall come to a verification opinion that states with reasonable assurance whether the data submitted is free from material misstatements;
- Commission Regulation (EC) No 305/2008 establishing minimum requirements and the conditions for mutual recognition for the certification of personnel recovering certain fluorinated greenhouse gases from high-voltage switchgear require that: for training and certification of staff recovering F-gases an evaluation body is established which will ensure that examiners assigned to a test have due knowledge of the relevant examination methods and examination documents as well as an appropriate competence in the field to be examined;
- Directive 2009/30/EC amending Directive 98/70/EC as regards the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and reduce greenhouse gas emissions requires that: Member States shall require economic operators to arrange for an adequate standard of independent auditing of the information submitted, and to provide evidence that this has been done. The auditing shall verify that the systems used by economic operators are accurate, reliable and protected against fraud;
- Commission Regulation (EU) No 1014/2010 of 10 November 2010 on monitoring and reporting of data on the registration of new passenger cars requires that: the Member States shall ensure the maintenance, collection, control, verification and transmission of the aggregated monitoring data and the detailed monitoring data.

5. REGULATION AND ENFORCEMENT

5.1 OVERVIEW

Laws and Regulations governing climate change are not in themselves sufficient to ensure their success. In order to be effective, such measures must be subject to efficient inspection and enforcement, which in turn requires that adequate institutional structures, procedures, mechanisms and human resources are deployed. The new Environmental Crimes Directive (2008/99/EC) aims at harmonising the Member States' penalties for environmental offences to ensure that certain offences are coupled with effective, dissuasive and proportionate penal sanctions. Furthermore, the Environmental Liability Directive, which is based on the polluter pays principle, ensures that certain environmental damage is remediated by the polluter. However, these two Directives are only marginally applicable to the climate change sector, as non-compliance with the various climate change provisions normally does not give result to specific environmental damage (e.g. polluted soil, water bodies) to which a certain fixed pollution source can be linked. This is even more true for mobile pollution sources, such as in the transport sector. Hence, it is crucial that the candidate countries and their competent authorities introduce supplementary provisions to ensure sufficient enforcement. Some of the EU Regulations and Directives in the area of climate change stipulate concrete sanctions, e.g. an excess emissions premium in respect of each calendar year from 2012 for non-compliance with the specific emission reduction targets for new passenger cars and light commercial vehicles (Regulation (EC) No 443/2009), and the CO₂ fees for additional tonnes of CO₂ emitted in excess of allocated targets under the ETS Directive (i.e. of 100 Euros for each tonne of CO₂ emitted).

Another precondition for efficient Regulation and enforcement is good cooperation with the regulated entities, efficient supervision, on-going monitoring and assessment of the status of implementation.

The regulatory function consists of the following primary tasks:

- Setting technical standards related to fuel quality, emission performance for cars etc.;
- Issuing of licences or permits for certain activities, e.g. the geological carbon capture and storage (also subject to EIA approval), activities falling under the ETS, including aviation activities;
- Administering and monitoring compliance with the ETS at national level including timely submission of reports, compliance with the allocated CO₂ emission shares;
- Ensuring that certain activities are subject to an EIA procedure (e.g. the carbon capture and storage and certain projects covered by the ETS Directive);
- Overseeing the implementation of the Regulations on fluorinated gases in equipment requiring certification, training and certification of staff;
- Monitoring and inspecting activities to ensure that licence or permit conditions are being adhered to ensure that territory (on land or in sea) designated for carbon storage are used in accordance with permits and that an EIA has been carried out before, also involving public consultation. Also check possible leakage from the storage places;
- Taking enforcement action in cases of non-compliance.

The Commission has issued some guidance on monitoring of emissions, such as those resulting from the activities listed in Annex I of EU ETS Directive Commission Regulation (EU) No 601/2012 regulating the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC.

5.2 AUTHORISATIONS, PERMITS AND APPROVALS

In addition, to a variety of potential sources of air pollution needing some form of licensing, permitting or approval system and a wide range of industrial or commercial activities requiring permit under the IPPC Directive (to be replaced by the Industrial Emissions Directive (2010/75/EU)), there are a few activities that require prior authorisation and permit specifically under the EU climate change legislation (e.g. under Carbon Capture and Storage Directive, ETS Directive and ODS Regulations). It should be noted that the IPPC Directive (2008/1/EC) was amended to ensure that emission limit values are not set for direct emissions of greenhouse gases from an installation subject to this Directive and that Member States may choose not to impose requirements relating to energy efficiency in respect of combustion units or other units emitting carbon dioxide on the site, without prejudice to any other requirements pursuant to the IPPC Directive.

Issuing and renewal of permits for ETS participation and carbon capture and storage activities will normally be undertaken by a Ministry (environment or energy) or the national environmental protection agency or energy agency, but responsibilities may be divided between this central authority and any local branches it may have (dealing with large emission sources) and local authorities (dealing with small sources, including domestic emissions). The division should be clear and should be made on the basis of the type of source involved, the scale (expressed in terms of the rate of energy or material inputs), and the type of materials being processed. Where local authorities have a responsibility in the permitting process, it is advisable to issue clear technical guidance at a national level in order to ensure a uniform approach throughout the country. In larger countries with many large emission sources, it may also be advisable to issue guidelines to the officials who are responsible for the permitting of such sources. In addition to permits, certain type approvals are needed for legislation on vehicle types, fuels etc. Vehicle type-approvals need to be handled by a testing laboratory and implemented as part of the national vehicle registration process. Regular motor vehicle emission testing will be handled as part of regular vehicle roadworthiness checks. Where roadworthiness checks are not already in place, arrangements will need to be made for testing centres to be set up and for the integration of testing procedures with vehicle licensing.

Checks on the composition of imported fuels will be implemented by customs authorities, which need to be provided with sufficient information and testing facilities. The quality of fuels manufactured in the Member State itself, and vehicle fuels on retail sale, will also need to be tested, which may, for example, be done by local authority inspectors — typically trading standards officers. The table below provides overview of some of the permits, authorisations and approvals needed in this sector.

Table 5 Examples of permits, authorisations and approvals (Not exhaustive, details in following chapters)

Reference	Type	Summary of requirement
Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community.	Permit	Member States shall ensure that, from 1 January 2005, no installation undertakes any activity listed in Annex I resulting in emissions specified in relation to that activity unless its operator holds a permit issued by a competent authority in accordance with Articles 5 and 6, or the installation is temporarily excluded from the EU scheme pursuant to Article 27.
Commission Regulation (EU) 1193/2011 of 18 November 2011 establishing a Union Registry for the trading period commencing on 1 January 2013.	Authorisation	The administrator of an account shall have the responsibility to open, suspend access to or close an account, to approve authorised representatives, to permit such changes to account details that require the approval of the administrator, and to initiate transactions if this is requested by the account holder
Commission Regulation (EU) No 1193/2011 establishing a Union Registry for the trading period commencing on 1 January 2013, and subsequent trading periods, of the Union emissions trading scheme pursuant to Directive 2003/87/EC	Authorisation	The competent national authorities of the Member State designated pursuant to Article 48(1) of Directive 2004/39/EC shall decide on the authorisation of a regulated market for the purposes of this Regulation
Directive 2009/31/EC of the European Parliament and of the Council of 23 April 2009 on the geological storage of carbon dioxide.	Permit	Exploration requires a permit. Carbon storage sites cannot be operated without a storage permit. In the granting of the storage permit, priority should be given to the holder of the exploration permit
Regulation (EC) No. 1005/2009 of the European Parliament and of the Council of 16 September 2009 on substances that deplete the ozone layer.	Authorisation	Essential laboratory and analytical uses for which the production and import of controlled substances other than hydrochlorofluorocarbons may be permitted in the EU by the Commission

Reference	Type	Summary of requirement
Commission Regulation (EU) No 537/2011 of 1 June 2011 on the mechanism for the allocation of quantities of controlled substances allowed for laboratory and analytical uses in the Union under Regulation (EC) No 1005/2009.	Licence	The mechanism for the allocation of quantities of controlled substances allowed for laboratory and analytical uses should ensure that the quantity annually authorised under licences for individual producers and importers does not exceed 130 % of the annual average of the calculated level of controlled substances licensed for the producer or importer for essential laboratory and analytical uses in the years 2007 to 2009.
Directive 2009/30/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 98/70/EC as regards the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and reduce greenhouse gas emissions.	Authorisation	Member States with low ambient summer temperatures may, subject to paragraph 5, permit the placing on the market during the summer period of petrol with a maximum vapour pressure of 70 kPa.
Commission Implementing Regulation (EU) No 725/2011 of 25 July 2011 establishing a procedure for the approval and certification of innovative technologies for reducing CO ₂ emissions from passenger cars pursuant to Regulation (EC) No 443/2009.	Approval	Provides manufacturers and suppliers with the possibility of applying for the approval of certain innovative technologies contributing to reducing CO ₂ emissions from passenger cars.

5.3 INSPECTION AND ENFORCEMENT

Apart from the specifically regulated monitoring requirements (see section above), candidate countries will have to undertake a more general form of monitoring, which often is linked to the permits or supervisory duties of the competent authorities. This monitoring must be appropriate to the type of activity regulated, its nature and size of the source and the pollutant under consideration. In certain cases, non-continuous (intermittent or "spot check") monitoring at intervals of some months may be satisfactory. In certain cases, parameters measured in order to control the process (for example fuel quality) may be used as substitutes for measuring emission rates. The competent authority will need to ensure, as part of the inspection procedure, that monitoring is being carried out to an acceptable standard. In many cases, modelling can be used to predict the effect of different emission reduction scenarios and to assist in the selection of the most acceptable solution. Models will need to be based on up-to-date and accurate inventories of emissions. Acceptability of the possible solutions will need to be judged against national, regional and/or local criteria which may be expressed in terms of cost-effectiveness, social factors (such as employment) and/ or speed of implementation. The public

should be provided access to information relating to the allocation of greenhouse emission allowances under the EU ETS and to the results of monitoring of emissions, subject only to restrictions provided for in the Access to Environmental Information Directive (2003/4/EC).

Regarding enforcement measures, where there is breach of a permit or licence, the competent authority will need to have at its disposal an appropriate range of options to ensure compliance and sanction non-compliance. These may range from unofficial warnings to formal requests for improvement in performance (regarding monitoring procedures or emission rates or both) to closure of the plant and/or prosecution. In addition, some climate change instruments specifically calls for certain penalties such as the excess emission fee of 100 EUR for each extra tonne CO₂ emitted under the ETS Directive and the excess emissions premium under Regulation (EC) No 443/2009 on emissions reductions targets for new passenger cars.

An adapted approach, with enforcement options chosen to suit the magnitude of the breach is probably the best, which also is in line with the EU standard of calling for sanctions which are effective, dissuasive and proportionate. The inspector or inspection team needs to have a thorough technical understanding of the process, in order to be able to understand any technical problems encountered by the operator and to evaluate the proposed solutions in terms of timescale, practicality and cost.

It may be useful to separate the technical inspection function of the competent authority from an enforcement function. This will help to allow the technical inspectors to maintain a good working relationship with the operator and to avoid the strain on the relationship that the inspectors' being directly responsible for a closure notice or for a prosecution might cause.

To avoid the waste of resources and the production of potentially misleading erroneous data, monitoring should not be carried out before quality assurance procedures have been designed and put in place. All data used for assessment purposes must be quality assured, because of the high potential expenditure that may hinge on such results. Also the data may have to comply with the INSPIRE Directive regarding format and spatial requirements. From the results of these initial monitoring activities, other areas where limit values may be exceeded or where it is unlikely that they are exceeded can be identified, and monitoring or other forms of assessment undertaken where necessary.

The new Environmental Crimes Directive (2008/99/EC) aims at harmonising the Member States' penalties for environmental offences to ensure that certain offences are coupled with effective, dissuasive and proportionate penal sanctions. Such penalties will need to be imposed in case of certain air pollution causing damage. In the case of greenhouse gas emissions it is more cumbersome since the impact on environment and health is more in the medium to long term and that emissions are not particularly linked to a single fixed or mobile emission point. Member States can impose administrative sanctions. The activities to which the Directive applies include air emissions. In the case of greenhouse gas emissions, it is difficult to prove a causal link between the polluter and the damage made since greenhouse gas emissions cause global effect in the medium to long-term. Hence, Member States should complement these provisions with other means and incentives to ensure high compliance with the climate change legislation.

5.4 DATA COLLECTION AND REPORTING

Complete and efficient data collection and reporting are essential components of the compliance with greenhouse gas emission reduction efforts, fuel quality standards, CO₂ storage requirements and safe handling of equipment with fluorinated gases and the marketing and use of devices and products with ODS. Most Directives impose a duty to report to the Commission on the national implementation, usually both in mid-term and at a later stage. Also the duty to inform the public has to be taken seriously. For instance, to ensure transparency, the public should have access to information relating to the allocation of greenhouse emission allowances under the EU ETS and to the results of monitoring of emissions, subject only to restrictions provided for in the Access to Environmental Information Directive (2003/4/EC).

Data should be subject to quality control before they can be accepted as part of an archive of data. Where data need to be supplied rapidly (for example, to warn the public regarding ozone levels) it may be impossible to complete all the quality assurance procedures. Where this occurs, the data should be accompanied by a statement to this effect.

Data on emission rates from sources (and surrogate data such as traffic flows) are also of value, for example in building up a picture at the national and regional level of the causes of high pollution episodes. Major stationary sources should be required, under the terms of their licences to operate, to obtain, check, store and supply to the authorities data on their emissions.

There are also provisions in some Directives for informing other Member States about certain technical issues relating to transboundary air pollution, and for consulting each other about it.

Table 6 Checklist of the Main Types of Reporting Requirements

1	Provisions of national law adopted in the field of each Directive
2	Technical measures and standards adopted to comply with Directives
3	Competent authorities and technical bodies designated
4	Derogations permitted
5	Use of economic instruments in the implementation (e.g. taxes, charges, subsidies)
6	Non-compliance and exceeding certain set targets and values (e.g. CO ₂ emission reduction targets for car manufacturers)
7	Methods used to assess emissions, including sampling sites and analysis methods
8	Reporting relating to the Union Registry, the EU Auctioning Platform concerning participation in the EU

	ETS
9	Reports on levels of air pollution throughout the territory of the Member State
10	Use of equipment and products with controlled substances (e.g. ODS containing products used for essential uses, such as laboratory, research, medical)
11	Certain specific and aggregate data (e.g. the CO ₂ in cars Regulations)

Table 7, Selected examples of reporting requirements (not exhaustive, details in following chapters)

Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community.	This Directive stipulates that a competent authority may only issue a greenhouse gas emissions permit granting authorisation to emit greenhouse gases from an installation if the operator is capable of reporting emissions. Pursuant to the Directive, Member States must submit to the Commission a report on the its application, especially focusing on the arrangements for the allocation of allowances, the operation of registries, the application of the monitoring and reporting guidelines, verification and issues relating to compliance with the Directive and on the fiscal treatment of allowances. Also the greenhouse gas emissions permits contain further reporting requirements.
Commission Regulation (EU) No 389/2013 establishing a Union Registry pursuant to Directive 2003/87.	The central administrator shall make available the information referred to in Annex XIV to the recipients set out in Annex XIV in a transparent and organised manner via the EUTL web site. The central administrator shall take all reasonable steps to make available the information referred to in Annex XIV at the frequencies set out in Annex XIV. The central administrator shall not release additional information held in the EUTL or in the Union Registry unless this is permitted under Article 110.
Commission Regulation (EU) No 601/2012 on the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC	<p>These guidelines clarify and render more stringent the monitoring requirements for the monitoring plan to better reflect its importance in ensuring sound reporting and robust verification results.</p> <p>Annex I, Table 1 specifies minimum requirements for permanent use. The guidelines also introduce a fall-back approach with minimum uncertainty thresholds in order to provide an alternative route for the monitoring of emissions from very specific or complex installations.</p>
Commission Regulation (EU) No 1143/2013 on the timing, administration and other aspects of auctioning of greenhouse gas emission	An auction platform auctioning two-day spot or five-day futures has to report to the financial intelligence unit cases where it refuses to grant admission to bid in its auctions, or

allowances pursuant to Directive 2003/87/EC.	<p>revoke or suspends any admission to bid already granted, where there is suspicion of money laundering, terrorist financing, criminal activity or market abuse in relation to an applicant.</p> <p>The auction monitor shall monitor each auction and report on the proper implementation of the auctions conducted in the preceding month to the Commission on behalf of the Member States and to the Member States concerned.</p>
Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020.	Where a Member State request an increased carry forward rate in excess of 5 % in 2013 and 2014 in the event of extreme meteorological conditions which have led to substantially increased greenhouse gas emissions the Member State must submit a report to the Commission substantiating this request.
Directive 2009/31/EC of the European Parliament and of the Council of 23 April 2009 on the geological storage of carbon dioxide.	Member States must report pursuant to Article 3 of Decision No 280/2004/EC on annual greenhouse gas emissions resulting from Art. 3; the use, geographical distribution and types of, as well as the qualitative criteria applied to, credits used in accordance with Article 5; projected progress towards meeting their obligations under this Decision and information on planned additional national policies and measures envisaged with a view to limiting greenhouse gas emissions beyond their commitments under this Decision and in view of the implementation of an international agreement on climate change.
Regulation (EC) No 517/2014 of the European Parliament and of the Council on fluorinated greenhouse gases and repealing Regulation (EC) No 842/2006.	The Annex VII sets out the reporting requirements for producers, importers and exporters of fluorinated greenhouse gases.
Commission Regulation (EC) No 303/2008 of 2 April 2008 establishing, pursuant to Regulation (EC) No 842/2006 of the European Parliament and of the Council, minimum requirements and the conditions for mutual recognition for the certification of companies and personnel as regards stationary refrigeration, air conditioning and heat pump equipment containing certain fluorinated greenhouse gases.	The evaluation body designated by the national competent authority shall adopt reporting procedures and keep records to enable the documentation of the individual and overall results of the evaluation.
Directive 98/70/EC of the European Parliament and of the Council of 13 October 1998 relating to the quality of petrol and diesel fuels and amending Council Directive 93/12/EEC.	Each year by 30 June Member States shall submit their summary for the preceding calendar year to the Commission.

Directive 2009/30/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 98/70/EC as regards the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and reduce greenhouse gas emissions.	Member States shall designate the supplier or suppliers responsible for reporting life cycle greenhouse gas emissions per unit of energy from fuel and energy supplied. Suppliers shall report annually, to the competent authority on the greenhouse gas intensity of fuel and energy supplied within each Member State by providing at least information on 1) the total volume of each type of fuel or energy supplied, 2) life cycle greenhouse gas emissions per unit of energy. Reports have to be verified.
Regulation (EC) 443/2009 of the European Parliament and of the Council of 23 April 2009 setting emission performance standards for new passenger cars as part of the EU's integrated approach to reduce CO ₂ emissions from light-duty vehicles.	<p>For the calendar year commencing 1 January 2010 and each subsequent calendar year, each Member State shall record information for each new passenger car registered in its territory in accordance with Part A of Annex II. This information shall be made available to the manufacturers and their designated importers or representatives in each Member State.</p> <p>A supplier or a manufacturer who applies for a measure to be approved as an innovative technology shall submit a report, including a verification report undertaken by an independent and certified body, to the Commission.</p>
Commission Implementing Regulation (EU) No 725/2011 of 25 July 2011 establishing a procedure for the approval and certification of innovative technologies for reducing CO ₂ emissions from passenger cars pursuant to Regulation (EC) No 443/2009 of the European Parliament and of the Council	<p>For the purposes of the certification of the CO₂ savings in accordance with Article 11, the independent and certified body shall, at the request of the manufacturer, draw up a report on the interaction between several eco-innovations fitted to one vehicle type, variant or version.</p> <p>The report shall specify the CO₂ savings from the different eco-innovations taking into account the impact of the interaction.</p>
Regulation (EU) 510/2011 No of the European Parliament and of the Council of 11 May 2011 setting emission performance standards for new light commercial vehicles as part of the Union's integrated approach to reduce CO ₂ emissions from light-duty vehicles.	Monitoring and reporting information in respect of individual manufacturers as well as any pools will be recorded, reported and made available in the central register.

6. PRIORITIES AND TIMING

6.1 PRIORITISING THE IMPLEMENTATION TASKS

Candidate countries must agree with the Commission a timetable for transposing all of the EU legislation into national legislation. However, consideration should be given to prioritising the order in which the various items of legislation are transposed and implemented.

6.1.1 LEGISLATIVE CONSIDERATIONS

Within the climate change sector, implementation of the Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading within the EU must be given a high priority ensuring an accurate transposition coupled with institutional and technical systems to ensure smooth implementation of this key Directive and its implementing legislation such as Commission Regulation (EU) No 1031/2010 on timing, administration and other aspects of auctioning of greenhouse gas emission allowance and Commission Regulation (EU) No 920/2010 Commission Regulation (EU) 1193/2011 relating a standardised and secured system of registries and a EU registry system applying to trading from 1 January 2013. Secondly, the legislation on monitoring mechanism, i.e. Decision No 280/2004/EC and Commission Decision 2005/166/EC concerning a mechanism for monitoring EU greenhouse gas emissions and for implementing the Kyoto Protocol. Thirdly, legislation on carbon storage and containment should be implemented pursuant to Directive 2009/31/EC and steps taken to prevent carbon leakage for the sectors and subsectors which are deemed to be exposed to a significant risk of carbon leakage pursuant to Commission Decision 2010/2/EU.

Upon having put into place the emission trading scheme and the monitoring scheme, the Candidate Countries should implement the Regulation (EC) No 842/2006 on certain fluorinated greenhouse gases and the 8 implementing Regulations on the mutual recognition for the certification of companies and personnel as regards stationary refrigeration, air conditioning, heat pump equipment, fire extinguishing equipment, switch gear containing certain fluorinated greenhouse gases as well as leakage checking and labelling requirements for products containing such gases as well as reporting requirements for importers and exporters of fluorinated gases. These Regulations will require broad consultation and cooperation of several industrial sectors and certification companies or institutes for which certain guidelines might be necessary.

Next it is important to put the ozone depleting substance regulating Regulations and Decision, i.e. framework Regulation (EC) No. 1005/2009 of the European Parliament and of the Council of 16 September 2009 on substances that deplete the ozone layer, replacing earlier Regulation 2037/2000) and supplementing Decision 2010/372/EU and Regulation (EU) No 537/2011. As most Member states and candidate countries are members to the Montreal Protocol and products with ozone depleting substances are continuously being phased out, these provisions mainly regulate how to deal with essential uses of ODS for analytical or laboratory practices.

Finally, the Candidate Countries should plan transposition of legislation setting specifications on fuel quality (diesel, petrol and gas-oil) and the monitoring of compliance with these specifications, set out in Directive 98/70/EC and Directive 2009/30/EC as well as Regulation (EC) 443/2009 and the supplementing Regulations setting emission performance standards for new passenger cars,

comprising monitoring and reporting of data on the registration of new passenger cars, certification scheme and possible derogations.

Legislation with international implications should also be given a high priority. In practice, many of the actions necessary to implement these items of legislation will already have been taken following ratification of the relevant international conventions. Where conventions have been ratified, compliance is mandatory from that time, so candidate countries have to implement them independently of the timetable for accession.

Priority should also be given to ensure coordination and integration with regulatory, monitoring, reporting and supervisory requirements under the air quality framework (Directive 2008/50/EC on ambient air quality and Directives on Regulation of VOC emissions), and provisions relating to the IPPC and industrial legislation as well as legislation on waste management, emergency preparation and action (e.g. Civil Protection Mechanism, flooding and drought) and horizontal requirements regarding the need for EIA, SEA and involving and informing key stakeholders and the general public through Public Participation Directive (2003/35/EC), Access to Environmental Information Directive (2003/4/EC). The format and methods for collecting and disseminating data should also be in line with the specific requirements set out in the INSPIRE Directive (2007/2/EC).

6.1.2 COST-EFFECTIVENESS

Legislation intended to implement measures that have the ability or potential to achieve the greatest environmental benefits per unit of cost or expenditure should usually be given a higher priority than legislation with lower anticipated cost-benefit ratios. However, legislation that is likely to require major investments in new facilities should not be ignored or postponed, as the candidate countries will need to plan for their development, financing and construction, and prepare the public and industry for the eventual introduction of this legislation.

A key consideration for cost-effectiveness is phasing the implementation of the EU provisions so that industries and the key stakeholders have a defined time period to respond to the new requirements. Since the EU ETS and the provisions on fluorinated gases, introducing new standards in car and petrol industries to reduce CO₂ and other greenhouse emission rely on effective cooperation between the public authorities and the industry and other private or public bodies involved in practical application, it is essential to initiate action with an outlined policy structure and wide stakeholder consultation.

Early consultation and wide stakeholder involvement will entail some initial costs but will surely ensure a better cost-effectiveness in the long run with targets, permitting frameworks, accreditation systems and possibly time-limited derogations, which have been widely discussed and agreed. In general, the public authorities should take it as common practice where it is considering different policy options and approaches to make a cost-effectiveness assessment, which also provide a good basis for later justifying the final decisions.

6.2 TIMESCALES

It is not possible to give specific guidance on the dates by which the candidate countries must implement and comply with the climate change legislation. Some indications are provided in the EU Regulations, Directives and Decisions that stipulate the transposition periods within which Member States must have implemented and complied with the legislation. A selection of key dates to be considered is provided in the table below.

Table 8 Key implementation dates to be considered (examples, not exhaustive, details in the following chapters)

Legislation	Task	Implementation date
Commission Regulation 525/2013 of the European Parliament and of the Council on a mechanism for monitoring and reporting greenhouse gas emissions	Member States shall, for the assessment of projected progress, report to the Commission, by 15 March 2015 and every two years thereafter on national projections of greenhouse gas emissions by sources and their removal by sinks as a minimum for the years 2005, 2010, 2015 and 2020, organised by gas and by sector.	2015, 2020
Commission Regulation (EU) No 920/2010 of 7 October 2010 for a standardised and secured system of registries pursuant to Directive 2003/87/EC.	KP registry administrators of Member States with KP registries shall transfer to the aviation surrender set-aside account in the Union registry an amount of AAUs that is equal to the amount of Chapter III allowances surrendered for the current period by aircraft operators.	By 5 May 2013 and each year thereafter
Commission Regulation (EU) 389/2013 establishing a Union Registry pursuant to Directive 2003/87/EC.	Each Member State shall notify its national allocation table for each trading period to the Commission.	By 30 September 2012
Directive 2008/101/EC of the European Parliament and of the Council of 19 November 2008 amending Directive 2003/87/EC so as to include aviation activities in the scheme for greenhouse gas emission allowance trading within the Community.	The competent authority of the administering Member State shall issue to each aircraft operator the number of allowances allocated to that aircraft operator.	By 28 February 2012 and by 28 February of each subsequent year
Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas	Each Member State shall, by 2020, limit its greenhouse gas emissions at least by the percentage set for that Member State in Annex	2020

Legislation	Task	Implementation date
emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020.	It to this Decision in relation to its emissions in 2005	
Directive 2009/31/EC of the European Parliament and of the Council of 23 April 2009 on the geological storage of carbon dioxide.	The first report on national implementation shall be sent to the Commission.	30 June 2011
Regulation (EC) No 517/2014 of the European Parliament and of the Council on fluorinated greenhouse gases and repealing Regulation (EC) No 842/2006.	Operators of the equipment listed in points (f) and (g) of Article 4(2) and containing fluorinated greenhouse gases in quantities of 500 tonnes of CO ₂ equivalent or more and installed from 1 January 2017, shall ensure that this equipment is provided with a leakage detection system which alerts the operator or a service company of any leakage	1 January 2017
Regulation (EC) No. 1005/2009 of the European Parliament and of the Council of 16 September 2009 on substances that deplete the ozone layer.	Containers of controlled substances shall be labelled with a clear indication that the substance may only be used as feedstock.	1 July 2010

However, these implementation dates may not provide appropriate indications of the transposition periods that will apply to candidate countries. Timetables will need to be agreed between the candidate countries and the European Commission, taking into account the level of existing development of air quality management and the costs involved.

Implementation tasks that will tend to be especially time-consuming are:

- Setting up and putting into operation EU ETS and national registries;
- Establishing and operating the permitting system for greenhouse gas emissions;
- Continuous monitoring and assessing of greenhouse gas emissions;
- Setting up the institutional and technical systems for the quality assurance of fuels and vehicles;
- Identifying facilities within the priority areas whose problems need to be addressed;
- Specifically, and ensure that improvements at facilities and in mobile sources to meet the new requirements are being implemented.

Some improvements will need to be phased, for example the mandatory introduction of three- way catalytic converters on motor vehicles depends on the prior availability of unleaded fuel. Hence Directives relating to fuel quality need to be transposed prior to those relating to vehicle emissions.

There may be instances where implementation of a specific requirement cannot be achieved by the date of accession, for example due to the long lead times associated with planning, financing and constructing certain types of air pollution abatement facility. Candidate countries must be in a position to negotiate appropriate transitional arrangements with the Commission, such as extended periods for implementing, and achieving compliance with, specific requirements of EU legislation. The need for any transitional arrangements should be identified and taken into account when developing the overall national strategy and implementation plan for implementing the EU climate change *legislation*.

7. ECONOMIC AND FINANCIAL ISSUES

7.1 INTRODUCTION

This section provides guidance on economic and financial issues relating to the implementation of the EU provisions related to climate change. The first two subsections indicate the types of costs that will be incurred during implementation, while the last two subsections discuss cost recovery and the use of economic tools. Examples of unit costs related to specific items of legislation are provided in the fiches where appropriate.

7.2 MAIN COST AREAS

In general, the costs related to the EU ETS and the monitoring mechanism for greenhouse gas emissions will be shared between industry and the public sector. The establishment of the institutional arrangements and the monitoring and reporting mechanisms will mainly be covered by the competent authorities. In regard to the control of products with ODS, the fuel quality, consumer information on cars and CO₂ reductions in car legislation the industry has a greater share in these costs as they will have to take active measures to comply with new quality standards, technical requirements, BAT etc. The financial burden for certain producers and suppliers that have to make significant investments to bring their products into compliance with the EU provisions will be substantial. Regarding the Directive on Carbon Capture and Storage, the costs regarding complying with the provisions will mainly fall on the operators of those storage sites whether private or public operators. In general, it could be said that the main costs for supervision, general compliance checking and enforcement actions will be carried by the public sector. In some cases and sectors, the costs will be shared also with the general public in terms of somewhat higher prices or in targeted taxes, fees to recover some of the costs incurred by the public sector. However, at least regarding price sensitive sectors such as transportation fuels and passenger cars it is not certain that the consumer will be directly affected by these costs.

For the most cost intensive areas such as the EU ETS, the EU and national registries, monitoring mechanism a phased approach is to be recommended. Only to a certain extent is a phase approach necessary for provisions on restrictions of controlled substances for certain excluded uses, fuel quality and CO₂ restrictions in passenger cars. The leading car manufacturers will have known about these provisions since early planning phase and have had time to make the necessary technical, design changes to their products to ensure compliance. Also the sectors have had time to make investments into alternative fuels, alternative technologies in car sector to reduce the environmental effects of car. Also in the area of energy efficiency and waste management (e.g. End of Life of Vehicles Directive), car producers have been faced with requirements to green their vehicles. Hence, for new cars produced, a large share of them is likely to comply. However, for the Candidate Countries, possible national car manufacturers might not have adopted the same technology and standards. Also, for the existing car fleet in most of the Candidate Countries, it is expected to take at least 10 years to replace older vehicles with new, compliant, models. Regarding the existing fleet, the EU provisions will require that some of the cars are upgraded to reduce the emissions. These costs are mainly born by the private owners, but some financial incentives might be in order to achieve a quicker upgrade of the car fleet.

The main costs imposed by the climate change legislation will be those incurred by:

- Informing the public and stakeholders about the climate change *legislation* and its importance to cut national greenhouse gas emissions to meet national and international reduction targets. Involving them in wide stakeholder consultation and ensuring effective access to environmental information;
- Establishing and maintaining monitoring for greenhouse gas emissions, quality assurance equipment, and reporting the monitoring results. These costs will largely be borne by central government;
- Set up the national ETS system with national emission registries, requirements on allowance sharing, auctioning etc. These costs will mainly be incurred by central government;
- Preparing national registries for greenhouse gas emissions inventories of greenhouse gases and pollutants that significantly affect air quality. These costs will be borne by central government;
- Preparing plans and programmes to achieve compliance with greenhouse gas permits and greenhouse gas emission targets. These costs will mainly be borne by central government as well as local public authorities involved in permitting and supervisory duties;
- Setting up the system for geological capture and storage of carbon, involving landscape planning, physical interventions in soil and ground and remediation measures after usage. The involved costs will partly be covered by central and local authorities and partly by the operators of the site;
- Complying with technical requirements, certification schemes, type approval procedures and quality assurance systems, especially in regard to the restriction and control of products containing fluorinated greenhouse gases and provisions on CO₂ and cars. The initial costs will be incurred by central government although the private sector should contribute to pay fees for type approvals, certifications etc.;
- Few studies on the costs of implementing EU legislation in the potential and candidate countries have been undertaken. Some studies were carried out for the CEE countries, e.g. a study of the Danish Environmental Protection Agency, which estimated ozone-related investments to be DKK 0.8 billion (EUR 0.1 billion) and were not considered to be significant. However, this study excluded investment in the transport sector, which was thought to be considerable;
- In one of the projects funded by DISAE to estimate compliance costs for several environmental sectors in Latvia²⁰, the capital cost for implementing the Directive on VOC emissions (94/63/EC) was estimated at EUR 22.8 million;
- DISAE mini-project for Poland (POL-101)²¹ on the costing and financial analysis of environmental approximation was carried out. The estimates relating to vehicles were based on a fleet of 9.6 million vehicles in 1996 rising to a projected 18.7 million vehicles in 2010 (an increase of 95%). The cumulative capital investment cost of compliance with the Directives relating to emissions from motor vehicles was estimated at EUR 0.7 billion in the year 2000, EUR 4.2 billion in 2005 and EUR 10.9 billion in 2010. This last estimated investment cost for 2010 is about 43% of the estimated total for investment in environmental approximation in Poland, excluding the nitrates and IPPC Directives, of EUR 25.4 billion by 2010. For the same years, the annual (operating) cost of

²⁰ DISAE Project LAT-103. Development of the Latvian Approximation Strategy and Programme. 1998. Halcrow.

²¹ Agriconsulting Europe, 1998. Costing and Financial Analysis of Approximation in Environment

compliance was estimated as EUR 0.4 billion, EUR 1.3 billion and EUR 2.6 billion respectively. This last estimated annual cost for 2010 is about 48% of the estimated total annual cost for environmental approximation in Poland, namely EUR 5.3 billion in that year;

- The case of Estonia provides a useful additional example from a smaller candidate country. The DISAE mini-project EST-101/1 on the Estonian approximation strategy²² provided estimates relating to vehicles. These estimates were based on a fleet of 0.5 million vehicles in 1997, rising to a projected 0.8 million vehicles in 2010 (an increase of 53%). The cumulative capital investment cost of compliance with the Directives relating to emissions from motor vehicles was estimated as EUR 0.05 billion in the year 2000, EUR 0.25 billion in 2005 and EUR 0.61 billion in 2010. For the same years, the annual (operating) cost of compliance was estimated at EUR 0.03 billion, EUR 0.08 billion and EUR 0.13 billion respectively.

7.3 INSTITUTIONAL DEVELOPMENT

Implementation of the Regulations, Decisions and Directives regulating greenhouse gas emissions and ozone depleting substances and the trade therein with multi sectoral involvement requiring action from several ministries, environmental protection agencies, energy agencies, agricultural agencies, central and local authorities will require staff training. Without sufficient and suitably trained staff, modelling, management, planning, regulation, supervision, enforcement and evaluation cannot be effectively implemented. It is therefore important to ensure that adequate budgets are provided to enable the responsible institutions to perform their functions effectively. Salaries need to be set at levels that enable staff with the necessary experience and training to be attracted and retained, taking account of the competition for such staff from the private sector. A training needs assessment should be carried out to ensure that, once staff is recruited and working, any skills deficiencies should be able to be remedied within a reasonable period of time. Ambitious and realistic goals with mid-term assessment should be developed to ensure continuous engagement and motivation among the implementing authorities and their staff.

Human resources are required for:

- Initial consultation processes with wide range of stakeholders including awareness raising campaign with communication with the main actors affected by the EU provisions but also information targeting the general public;
- Establishing a competent authority (ies) and furnish it with the necessary resources;
- Coordination with relevant authorities at national and international level including cross-sectoral coordination;
- Drafting an implementation strategy;
- Drafting implementing legislation and developing technical standards and guidelines;

²² DISAE Project EST-101/1: Approximation Strategy and Institutional Support. 1998. AgriConsulting.

- Establishing the institutional structures for the emission trading scheme and the monitoring mechanism;
- Operating the system with ensuring compliance with CO₂ reduction scheme for cars including sufficient consumer information;
- Overseeing the system in marketing of certain allowed equipment and devices (e.g. for medical or research purposes) containing ODS;
- Issuing of licenses, permits or approvals;
- Supervision, monitoring and inspection of facilities and activities that (will) have permits in the field of the Emission Trading Scheme;
- Initiating and pursuing enforcement actions;
- Data collection, analysis (also ensuring compliance with INSPIRE Directive on data formats);
- Reporting obligations towards the EU institutions and international bodies.

It is not possible to generalise on the costs of establishing the institutional structure, which will depend on the size of country, the degree of industrialisation, the choice of organisational structure and local salary levels. These costs will be borne by central government or in some instances by local government, but some of these may be recovered from source operators.

7.4 FACILITIES

The major costs of implementation will fall on source operators, including both industrial operators, waste management operations (e.g. incineration, landfilling), energy and electricity suppliers, users of applications using fluorinated gases or ODS, producers, suppliers of passenger cars and light commercial vehicles, air carrier operators, producers and suppliers of vehicle fuels. Furthermore, constructors and managers of certain public buildings, agricultural producers and other land-users will be involved in the implementation of EU provisions on energy efficiency and use of sustainable and renewable energy sources. Some of these facilities and operators will fall under the scope of the Directive on Industrial Emissions and have to obtain an integrated permit to regulate and control emissions and various aspects of the activities. These activities will also have to comply with the requirements under Directive on Ambient Air Quality and Cleaner Air for Europe (2008/50/EC) and the other provisions in the air quality sector which requires them to invest in emission abatement and monitoring equipment, either to upgrade existing plant or to install new plant. Activities such as landfilling and incineration of waste are also covered by the IED Directive, requiring a permit and preventive actions. This means that a substantial part of the compliance costs for facilities will already be absorbed under the IED, air quality and waste legislation. Facilities emitting fluorinated gases will be particularly affected since the applicable provisions are relatively new. For the public sector, the climate change *legislation* will mainly increase the costs for monitoring, reporting and verification and for setting up the necessary institutional with the required human resources and expertise for participation in the Union Registry and the EU Auctioning Platform. The public sector also has to incur expenses for capital investments into technology, equipment and solutions for testing products' compliance with certain set methodology, standards etc. Public authorities have to invest in accreditation and certification facilities including calibration of measuring equipment. Expenses will

also be made to enhance the energy efficiency and to increase the share of energy consumption coming from renewable energy sources.

A part of the full costs of facility provision and operation and adaptations to contribute towards meeting international and national climate change objectives can be recovered from customers and clients (purchasers or users of goods, materials, services and energy). Finance may derive from the private or public sectors (for example from "green funds") or a mixture of the two, depending on national policies for the ownership of facilities and for the improvement of the environment.

7.5 APPLICATION OF OTHER ECONOMIC TOOLS

The use of economic tools or instruments in environmental policy has long been promoted by economists as a (potentially) more efficient way of achieving environmental goals. The major advantage of economic tools is that, in theory, they incorporate environmental concerns and costs directly into the market price mechanism and therefore possess all the efficiency properties of competitive market pricing.

One of the issues that should be considered is whether revenue generated through economic tools should be ring fenced for environmental purposes or go into the general national budget. In Denmark and Sweden, for instance, a tax is imposed on carbon dioxide emissions. The revenue from the tax goes into the national budget. Some examples of economic tools are the following:

- Taxes and product charges (or input charges), which are added to the price of certain goods, materials, services and energy that are considered to cause adverse effects on air quality during their production, use or disposal. Taxes on vehicle fuel can partly be considered as this type of economic tool;
- Congestion fees or road pricing for certain built-up city areas; and tradable permits, which could be used to control CO₂ emissions, in conjunction with a carbon tax. These would require a sophisticated control mechanism to ensure compliance and a functioning trading scheme.

In some instances, there may be a role for economic instruments to reallocate some of the costs borne by polluters. Differential taxation as a tool to encourage the use of unleaded fuel has been successfully adopted in some EU countries. Similarly, energy taxes and/or tradable permits can be used to achieve reductions in greenhouse gas emissions. In some countries, including Sweden, financial incentives are given for vehicles fuelled with biofuels. In general, taxes on fuels have led to an overall introduction of higher concentrations of ethanol in petrol. For instance, since 2006 the new vehicle tax in Sweden is based on the concentrations of certain pollutants in the exhaust fumes rather than on weight.

Taxes can also be levied on industry according to the emission levels of specified air pollutants. Financial subsidies are available in some countries for implementing emission reductions, for example in France through the Agency for Environment and Energy (ADEME) and financing companies (SOFERGIES). The costs of emission permitting and associated enforcement can be recovered from polluters by charging fees for issuing and renewing permits.

8. SUMMARY OF KEY ISSUES

Achieving and maintaining compliance with EU climate change policies and legislation, with a clear and concise long term framework also reflected in the national policy and environmental objectives is likely to present a major challenge to the candidate countries. In order to minimise the associated administrative burden and costs and to address the need for adequate human and technical resources, the framework for reporting and monitoring under the Kyoto Protocol and the Montreal Protocol could serve as the initial starting point. The monitoring and reporting framework for the IED is also useful for the candidate countries although the monitoring, reporting and verification framework for climate change is unique in many ways, partly because it centrally organised with the Commission taking a key role in coordination and administration.

Experience, good practices in methods and cost-efficient solutions should be sought from existing Member States. The governments of the candidate countries should endeavour to focus their efforts and actions on addressing those issues and requirements that are fundamental to the implementation of the legislation in this sector, in particular by:

- Establishing competent authorities with certain tasks delegated to regional level and put in place an efficient coordination mechanism, such as a climate change council to consolidate and integrate the policies, views and measures across sectors and institutional bodies. Equip these authorities with sufficient human and technical resources to enable them to function adequately;
- Early consultation of the key stakeholders and general public to gather support for climate change measures at national and regional level;
- Establishing the permitting framework for emissions of greenhouse gases (taking into account permitting obligations under other relevant sectors, e.g. IED, waste management, air quality management) and link with necessary supervisory, monitoring and enforcement measures;
- Early consideration of financial mechanisms to partially finance the public costs for implementing climate change legislation (carbon dioxide taxes, financial incentives for purchasing bio-fuels, bio-vehicles);
- Set up the EU ETS with national administrator for the Union Registry, participation in the EU Auctioning Platform, taking full account all the institutional, technical and financial issues;
- Integrating climate change action with other environmental sectors such as water (e.g. Water Framework Directive and Floods Directive), industrial pollution control (Directive on VOCs, Directive on Industrial Emissions), waste management (e.g. Landfill Directive and Waste Directive) but also with other policy sectors such as transport, energy, agriculture to strive towards a comprehensive and integrated policy and legal framework on climate change, which is being overseen by a single environmental protection agency;
- Quality-assured assessment and monitoring of greenhouse gas emissions which will feed into a strategy for air quality improvements, and mapping/inventory of sources and sinks;
- Putting into place arrangements for the effective involvement and participation of all other bodies or interest groups that have a significant role or function to perform in relation to monitoring of greenhouse gas emissions, awareness raising and information dissemination, research, developing technical standards and quality assurance system;
- Making adequate provision for the monitoring, regulation and enforcement of the legislation,

Regulations, permits and licenses;

- Training of various staff of competent authorities and technical bodies, comprising participation in certification schemes;
- Carrying out the record keeping, monitoring, data collection and reporting meeting the requirements of the EU provisions while ensuring sufficient coordination with information providing and reporting requirements stemming under international conventions;
- Relate the work implementing the climate change *legislation* with emergency prevention, civil protection mechanisms and responsive action;
- Planning and putting into place greenhouse gas cutting measures also in sectors not covered by the ETS to ensure adequate compliance with the Effort Sharing Decision (focus on energy sector, land-use, agriculture, built environment);
- Consultation with land-use developers, investors regarding geological capture and storage of carbon dioxide and financing the necessary infrastructure;
- Ensure efficient inspection and enforcement with efficient, dissuasive and proportionate sanctions in case of non-compliance, particularly with monitoring and reporting requirements.

GHG EMISSIONS MONITORING AND REPORTING

- Regulation (EU) No 525/2013 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 and repealing Decision No 280/2004/EC Text with EEA relevance
- Commission Implementing Regulation (EU) No 749/2014 of 30 June 2014 on structure, format, submission processes and review of information reported by Member States pursuant to Regulation (EU) No 525/2013 of the European Parliament and of the Council
- Commission delegated regulation (EU) No 666/2014 of 12 March 2014 establishing substantive requirements for a Union inventory system and taking into account changes in the global warming potentials and internationally agreed inventory guidelines pursuant to Regulation (EU) No 525/2013 of the European Parliament and of the Council
- Regulation (EU) 2015/757 of 29 April 2015 on the monitoring, reporting and verification of carbon dioxide emissions from maritime transport, and amending Directive 2009/16/EC
- Decision No 529/2013/EU of the European Parliament and of the Council on accounting rules on greenhouse gas emissions and removals resulting from activities relating to land use, land-use change and forestry and on information concerning actions relating to those activities

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1. SUMMARY OF MAIN AIMS AND PROVISIONS

The key aim of the EU monitoring mechanism aims to ensure the timeliness, transparency, accuracy, consistency, comparability and completeness of reporting by the Union and its Member States to the UNFCCC Secretariat and progress in the emission reduction commitments of the EU and its Member States. Each Member State and the EU have respectively ratified the UN Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol and the EU pledged an emission reduction target to the 2015 Paris Agreement. The UNFCCC aims to stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.

The Kyoto Protocol entered into force on 16 February 2005 and the EU ratified the Protocol earlier, through Decision 2002/358/EC²³. The Kyoto Protocol contains individual emission limitations or reduction commitments for the parties included in Annex I to the UNFCCC, covering seven main greenhouse gases (GHGs), namely carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), nitrogen trifluoride (NF₃), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆). The second commitment period of the Kyoto Protocol, also known as the Doha Amendment to the protocol, entered into force in 2012, will run for eight years, thus ensuring no gap occurs between its end and the entry into force of the new global agreement in 2020. For the second commitment period there are new rules for developed countries how to account for emissions from land use and forestry and one more greenhouse gas entered into the above mentioned basket of gases - nitrogen trifluoride (NF₃).

For the second commitment period, until 2020, the EU has taken on a greenhouse gas emissions reduction commitment in line with its domestic target of cutting emissions by 20% of 1990 levels by 2020. (The 2030 Framework Agreement for Energy and Climate includes a further cut of those emissions by 40% by 2030).

The main elements of the reporting requirements towards the UNFCCC focus on annual reporting of the greenhouse gas inventory, as well as national communications every 4 years and interim reports every second year (biennial report). Member States retained their obligations under the UNFCCC, in addition to the reporting requirements internal to the EU. The reporting requirements with respect to the UNFCCC are the same for Member States as for the Commission, the latter being the competent body in respect of the EU's obligations as a Party to the UNFCCC in its own right.

The earlier Decision 280/2004/EC (the Monitoring Mechanism) constituted the backbone of the EU's greenhouse gas monitoring system and the legal basis for the compilation of the EU inventory in accordance with the UNFCCC and the Kyoto Protocol, however it was repealed and replaced by the Monitoring Mechanism Regulation (**hereafter MMR**)²⁴, which entered into force on 8 July 2013. The

²³ Council Decision of 25 April 2002 concerning the approval, on behalf of the European Community, of the Kyoto Protocol to the United Nations Framework Convention on Climate Change and the joint fulfilment of commitments thereunder (OJ L130, 15.05.2002).

²⁴ Regulation (EU) No 525/2013 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

change is justified by the broader scope of the EU legal framework, the inclusion of additional categories of legal entities to which obligations are addressed, the more complex and highly technical nature of provisions introduced, the increased need for uniform rules applicable throughout the Union, and in order to facilitate implementation.

The Monitoring Mechanism Regulation gives detailed requirements for the structure, format, submission process and review of the information reported by Member States²⁵ and also it provides the substantive requirements for a Union inventory.

The main elements of the legislative package focus on the following tasks for Member States:

- Reporting on greenhouse gas emissions and removals, including the establishment and continuous improvement of national systems (in accordance with UNFCCC requirements) that allows estimation of anthropogenic emissions by sources and removals by sinks of seven greenhouse gases listed in Annex I in the Regulation.
- Establishment of and operation of (a consolidated) system of a Union Registry and Member State registries regarding accounting units generated under the Kyoto Protocol.
- The preparation of low carbon development strategies in accordance with any reporting provisions agreed internationally in the context of the UNFCCC process.
- Establishment, maintenance and continuous improvement of a consolidated national and Union system for reporting on policies and measures and for reporting on projections of anthropogenic greenhouse gas emissions by sources and removals by sinks and reporting under these systems
- Reporting on national adaptation actions, financial and technical support provided to developing countries as well as the use of the revenues from auctioning of EU ETS allowances by the Member States
- Provision to provide national communications and biennial reports submitted to the UNFCCC secretariat with the requirement to provide copies of these documents to the European Commission
- Commission's annual review of the inventory data submitted by Member States

The implementing regulation No 749/2014²⁶ establishes the rules to implement the Monitoring Mechanism Regulation (EU) No 525/2013, providing more details and further details are provided in its 16 annexes.

A number of actions required under the MMR are the responsibility of the Commission and not of the Member States. However, it is important to note that the contribution of Member States (through the fulfilment of their respective obligations) towards the Commission's fulfilment of these actions is crucial. The Commission's obligations include annual reporting on total emissions from the EU to the UNFCCC Secretariat, based on the data supplied annually by the Member States, and assessing

²⁵ Commission Implementing Regulation (EU) No 749/2014 of 30 June 2014 on structure, format, submission processes and review of information reported by Member States pursuant to Regulation (EU) No 525/2013 of the European Parliament and of the Council

²⁶ Commission Implementing Regulation (EU) No 749/2014 of 30 June 2014 on structure, format, submission processes and review of information reported by Member States pursuant to Regulation (EU) No 525/2013 of the European Parliament and of the Council

whether sufficient progress is being achieved across the EU towards meeting the obligations of the UNFCCC. Furthermore, as mentioned above, it provides provisions for full and effective co-operation and co-ordination between Member States and the European Commission in relation to obligations. It also provides a role for the European Commission to monitor the annual progress of Member States in fulfilling the EU's international commitments and the Effort Sharing Decision²⁷ as well, which is instrumental for fulfilling the international commitments.

In the implementation of the MMR, the Commission, is assisted by the Climate Change Committee, as spelled out in Article 26. This is a committee under comitology procedural rules, and thus includes representation of all Member States and it has two permanent working groups dealing with matters under the MMR: Working Group 1 "Inventories"; and Working Group 2 "Policies and Measures and Projections". The deliberations of the committee and these two working groups are useful sources for clarifications of obligations under the MMR. The Member States should in their monitoring and reporting obligations also take into account Commission Regulation 601/2012 on the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC²⁸.

Regulation (EU) 2015/757 establishes the rules for monitoring reporting and verification of CO₂ emissions from maritime transport and amends Directive 2009/16/EC. Under this regulation all intra-Union voyages, all incoming voyages from the last non-Union port to the first Union port of call and all outgoing voyages from a Union port to the next non-Union port of call, including ballast voyages, should be considered relevant for the purposes of monitoring. CO₂ emissions in Union ports, including emissions arising from ships at berth or moving within a port, should also be covered, particularly as specific measures for their reduction or avoidance are available. These rules should be applied in a non-discriminatory manner to all ships regardless of their flag. threshold of 5 000 gross tonnage (GT) has been selected after detailed objective analysis of sizes and emissions of ships going to and coming from Union ports. Ships above 5 000 GT account for around 55 % of the number of ships calling into Union ports and represent around 90 % of the related emissions. The monitoring and reporting obligations are directly mandated to shipping companies in this case and Member States shall ensure the implementation.

Data from this separate monitoring regime can be useful for reporting of greenhouse gas inventories. Number of useful documents that can help Member States in their monitoring obligations can be found on the DG CLIMA's website²⁹, e.g.:

- National Communications and Biennial Reports from the European Union under the UN Framework Convention on Climate Change (UNFCCC);
- Annual Reports on emission trends and projections by the European Environmental Agency;
- Annual Greenhouse Gas Inventories of the EU;

²⁷ Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020

²⁸ Commission Regulation 601/2012 on the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC (Phase II of the ETS commencing on 1 January 2013).

²⁹ http://ec.europa.eu/clima/policies/strategies/progress/monitoring/documentation_en.htm

- EU Registry

2. PRINCIPAL OBLIGATIONS

The ratification of the UNFCCC and the Kyoto Protocol and the application of the rules for its second commitment period is a prerequisite for conformity with the MMR. The legislation on monitoring and reporting contains obligations for the Commission and Member States. However, for the implementation of the requirements of the MMR further legislation might be needed on national level to enable the full implementation of the legislation. Such national legislations can have implications and obligations for third parties, such as companies and other data providers. The following analysis gives details on the obligations of the Member States.

2.1 PLANNING AND PREPARATION

Since the MMR requires information from various sectors, it is recommended that an entity is dedicated to oversee and coordinate the whole implementation of the monitoring and reporting requirements. It is building on the requirement of the Marrakesh Accords of the Kyoto Protocol (Decision 20/CP.7) which defines the requirements for **National Inventory Systems (NIS)**, including the need to establish legal, procedural and institutional arrangements to ensure that all parties to the Protocol estimate and report their GHG emissions in accordance with relevant decisions of the COP, facilitate UNFCCC Reviews and improve the quality of their inventories.

Typically, the National System building blocks are the following:

1. A National Entity: (Responsible for the outputs)
2. Management/Co-ordination (Co-ordination entity: Finding and retaining the resources, skills & tools needed for a good quality GHG inventory; Establish and maintain the institutional, legal and procedural arrangements; Define and allocate specific responsibilities; Ensure sufficient capacity for timely performance of the functions; Archiving)
3. Compilation Expertise (Co-ordinators to organise the work undertake QA/QC and bring things together on time; Sector experts that understand the data & emitting/removal processes; Strong links to national networks of technical experts and data sources for sector/category.
4. Data sources (Data owners and suppliers; National Statistics)

A National Entity may be established under the environment ministry or the environment agency but it should have a cross-sectoral role in data collection to ensure that all public and private authorities required to submit an information report do so to one focal point and that information received from various sources is quality controlled and verified by one entity to avoid gaps, duplication and fragmentation, as well as to ensure accuracy, comparability and transparency. The tasks can be fulfilled also in cooperation with various government agencies responsible for data collection, but a centrally responsible organization should take the lead in the implementation of responsibilities of the member state.

Some of the reporting requirements of the MMR such as of strategy development and update, reporting on financial contributions are usually on a different level of government institutional framework than data collection, inventory and projection modelling type of work. It is good practice

that the fulfilment of such task is embedded into the regular tasks of the ministry responsible for national implementation of climate policy with necessary cooperation with other responsible ministries.

Due consideration should also be given to the fact that reporting under the Monitoring Mechanism and under the UNFCCC and Kyoto Protocol often **overlaps with reporting under other EU legislation** and international multilateral processes. An important aspect to consider is the synergy existing between the reporting under consideration here and the reporting of air pollutants under the Ambient Air Quality Directive (2008/50/EC)³⁰, National Emissions Ceilings Directive³¹ and the Convention on Long-Range Transboundary Air Pollution (CLRTAP). The streamlining of reporting systems should be given consideration in order to avoid overlaps, make better use of resources and avoid any conflicts between the two reporting regimes. In addition, parties that implement the MMR shall:

- **525/2013 Article 5(1)** establish, operate and seek to continuously improve national inventory systems. In accordance with UNFCCC requirements 19/CMP.1
- **525/2013 Article 5(2)** ensure access to national data associated with other EU decisions and regulations (Energy, E-PRTR, EU-ETS, F-Gases)
- **749/2015 Articles 3 – 19** Report specific information and formats including descriptions of the National System (Article 6)

Requirements under other EU legislation, such as the EU ETS Directive³² and Directive 2010/75/EU on Industrial Emissions, provide useful sources of data from particular sectors. The role of entities responsible for these legislative instruments in the compilation of annual inventories of greenhouse gas emissions should be assessed when establishing the national emission inventory system under the MMR.

2.2 IMPLEMENTATION REQUIREMENTS

Member States shall maintain and continuously improve a **national system** for the estimation of anthropogenic emissions of greenhouse gases by source and for the removal of carbon dioxide by sinks (regarding carbon sinks Member States should also take into account the provision of the Carbon Capture and Storage Directive (2009/31/EC) detailing the requirements for utilizing the possibility of carbon storage). This system is usually referred to as emission inventory, but it is more than that including a set of rules as well as quality control and quality assurance mechanisms. Outputs from this national system will serve the basis of preparing the relevant emission reports under both MMR and towards the UNFCCC.

Member States shall prepare and implement **low-carbon development strategies** in order to meet the greenhouse gas emission reduction commitments of Member States under the Effort Sharing Decision

³⁰ Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe

³¹ Directive 2001/81/EC of the European Parliament and of the Council of 23 October 2001 on national emission ceilings for certain atmospheric pollutants (OJ L309, 27.11.2001).

³² Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emissions allowance trading within the Community and amending Council Directive 96/61/EC (OJ L275, 25.10.2003) as amended by Directive 2004/101/EC (OJ L 338, 13.11.2004)

No 406/ 2009/EC. They are instrumental in achieving long-term emission reductions and enhancements of removals by sinks in all sectors in line with the Union's objective to reduce emissions by 80 to 95 % by 2050 compared to 1990 levels in the context of similar reductions to be taken by developed countries as a group. Member States shall report on the implementation of these strategies according to the international requirements, as the requirement originates from UNFCCC decisions.

A Union Registry has been set up for the accurate accounting of the issuing, holding, transfer, acquisition, cancellation and withdrawal of Kyoto units. Thus for the purposes of meeting their obligations as Parties to the Kyoto Protocol and under MMR Article 10 to ensure the accurate accounting of Kyoto units, each Member State and the Union shall operate a Kyoto Protocol registry (KP registry) in the form of a standardized electronic database that have regard to the UNFCCC's requirements concerning registries. The Union and the Member States maintain their registries in a consolidated system, also known as the Union Registry. Member States shall use the Union Registry for the purposes of meeting their obligations under Art. 19 of the ETS Directive and Article 11 of the Effort Sharing Decision. The regulatory framework for the setting up and maintaining of such registries is regulated by Regulation (EC) 389/2013³³ currently. When Accession Countries decide to set up a national or regional Emission Trading System in their country, in line with the EU Emission Trading System, and/or plan to take on quantified emission limitation commitments, the establishment of a national registry, as defined in MMR Article 10, can be considered.

Furthermore, as the newest element of the monitoring system, Member States have to establish a permanent **national system for the assessment of the impacts of policies and measure for greenhouse gas emissions integrated with greenhouse gas projections**. Assessment of policies and measures and provision of greenhouse gas projections plays an increasing role in reporting needs both towards the EU and UNFCCC and relevant quality assurance requirements are increasing in detail – requirements are provided in the MMR and Commission Implementing Regulation (EU) No 749/2014.

2.3 REPORTING

2.3.1 EU AND NATIONAL EMISSION INVENTORIES (ARTICLES, 5, 6, 7, 8 AND 9)

The national inventory system is to estimate anthropogenic emissions by sources and removals by sinks of greenhouse gases listed in Annex I to the MMR and to ensure the timeliness, transparency, accuracy, consistency, comparability and completeness of their greenhouse gas inventories. To facilitate this, the country should have in place **appropriate regulatory and/or procedural systems that allow for the facilitated and coordinated compilation of the necessary information from all relevant data and information providers**. It should be ensured that the competent inventory authorities have access to

³³ Commission Regulation (EU) No 389/2013 of 2 May 2013 establishing a Union Registry pursuant to Directive 2003/87/EC of the European Parliament and of the Council, Decisions No 280/2004/EC and No 406/2009/EC of the European Parliament and of the Council and repealing Commission Regulations (EU) No 920/2010 and No 1193/2011 Text with EEA relevance

data and methods reported for an EU ETS like installation, data collected regarding fluorinated greenhouse gases, under the E-PRTR regulation and on energy statistics (Regulation (EC) No 1099/2008).

Furthermore, greenhouse gas inventory data for Annex I parties to the UNFCCC, and by default for EU Member States, should be submitted using the **common reporting format (CRF)** established under the UNFCCC. In this respect, national emissions inventory systems should use the CRF reporting software tool developed by the UNFCCC Secretariat. Reporting also comprises a national inventory report that accompanies the data tables and provides all the relevant information on data sources, methodologies applied, quality control/quality assurance, completeness, uncertainty assessments, key sector analysis and recalculations of data for previous years.

The reports should contain information on anthropogenic greenhouse gas emissions by sources and removals of CO₂ by sinks resulting from LULUCF, for the year X-2, in accordance with UNFCCC reporting requirements and for the LULUCF activities the relevant provisions of Decision No 529/2013/EU has to be taken into account as well.

The elements on which data are to be submitted are set out in detail in Articles 7 – 9 of the MMR.

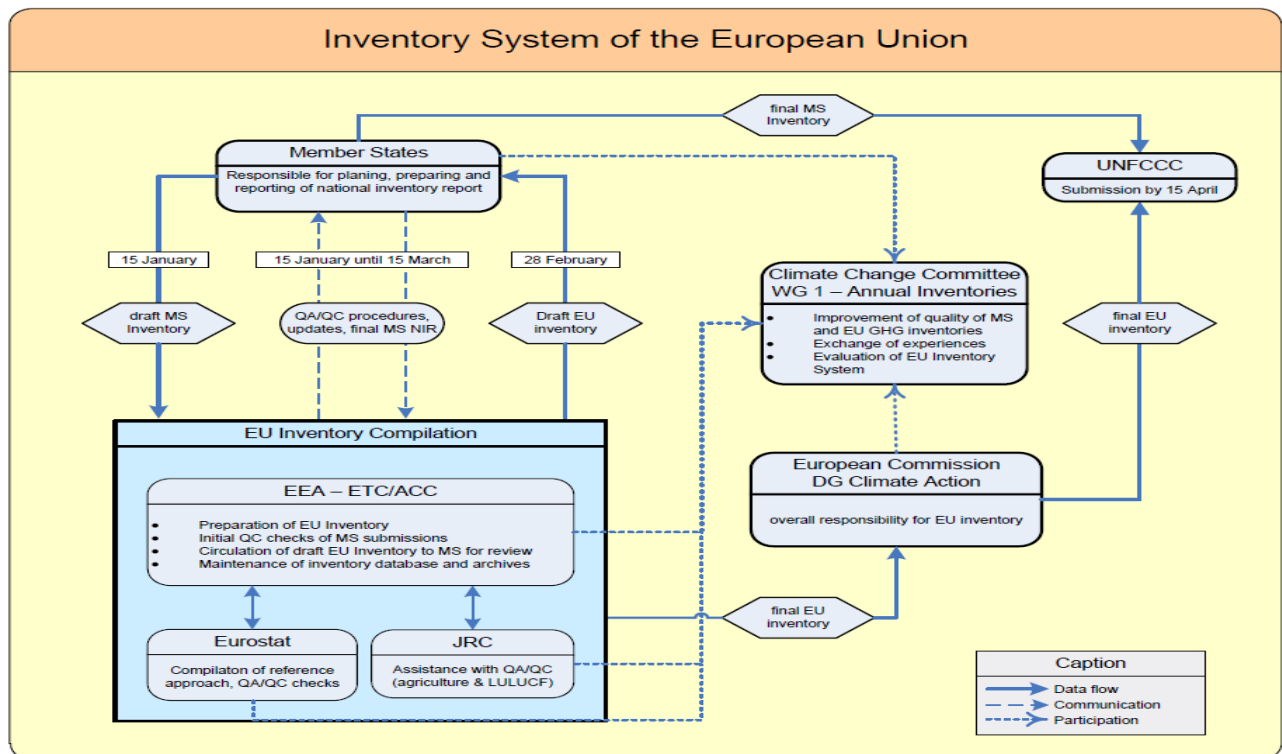
On the basis of the information supplied by Member States, the Commission, which is managing the Union inventory system, assists the Member States in implementing their quality assurance and control programs, performs an **initial check of data** and compiles and circulates to Member States for comments a draft EU inventory. The Commission also makes **estimates for missing data in consultation with Member States**.

The main institutions involved in the compilation of the EU GHG inventory are the Member States, the European Commission Directorate-General Climate Action (DG CLIMA), the European Environment Agency (EEA) and its European Topic Centre on Air Pollution and Climate Change Mitigation (ETC/ACM), Eurostat, and the Joint Research Centre (JRC).

The process of compiling the EU GHG inventory is as indicated below.

- Member States submit their annual GHG inventories by **15 January** each year to the European Commission, DG CLIMA, with a copy to the EEA.
- The EEA and its ETC/ACM, Eurostat, and JRC then perform initial checks on the submitted data. The draft EU GHG inventory and inventory report are circulated to Member States for review and comments by **28 February**.
- Member States check their national data and the information presented in the EU GHG inventory 4report, send updates if necessary, and review the EU inventory report itself by **15 March**.
- The EEA and its ETC/ACM prepare the final EU GHG inventory and inventory report by **15 April** for submission by the European Commission to the UNFCCC Secretariat.
- A resubmission is prepared by 27 May if needed.

The flowchart below outlines a summary of the inventory system of the European Union.



2.3.3 LOW-CARBON DEVELOPMENT STRATEGIES (ART. 4)

Member States, and the Commission on behalf of the EU have to prepare their low-carbon development strategies in accordance with reporting provisions agreed internationally in the context of the UNFCCC process, to contribute to monitoring of the actual and projected progress made by Member States, meeting the greenhouse gas emission reduction commitments of Member States under the Effort Sharing Decision (Decision No 406/2009) and achieving long-term emission reductions and enhancements of removals by sinks in line with the Union's objective, in the context of necessary reductions according to the IPCC by developed countries as a group, to reduce emissions by 80 to 95 % by 2050 compared to 1990 levels in a cost-effective manner.

The Member States had to report to the Commission on the status of implementation of their low-carbon development strategy by 9 January 2015 or in accordance with any timetable agreed internationally in the context of the UNFCCC process.

2.3.2 POLICIES AND MEASURES (ARTICLE 13)

The MMR mandates Member States to set up and operate national systems for reporting on policies and measures and reporting on projections of anthropogenic greenhouse gas emissions by sources and removals by sinks.

Every two years, starting from 2015, Member States shall report to the Commission on **national policies and measures by 15 March**. This information should include

- description of their national system for reporting on policies and measures and projection or changes to that system

- updates regarding the low-carbon development strategies of the Member States and regarding the progress of their implementation
- ex ante and ex post assessment of the effects of national policies and measures, or groups of measures, and on implementation of Union policies and measures, or groups of measures, that limit or reduce greenhouse gas emissions (the objectives of each policy and measure; the type of policy instrument relevant to the policy or measure; the status of implementation; information on indicators to monitor and evaluate progress achieved by policies and measures over time)

A Member State shall communicate to the Commission any substantial changes to the information reported pursuant to Article 13 during the first year of the reporting period, by 15 March of the year following the previous report.

Templates for reporting have been developed to better guide and harmonize the reporting process. However, there remains a strong onus on countries to establish their own internal systems for the collection of all necessary information and data for reporting on policies and measures.

2.3.3 NATIONAL PROJECTIONS (ARTICLE 14)

By 15 March 2015, and every two years thereafter, Member States shall report to the Commission national projections of anthropogenic greenhouse gas emissions by sources and removals by sinks, organized by gas or group of gases listed in Annex I of the MMR and by sector. Those projections shall include quantitative estimates for a sequence of four future years ending with 0 or 5 immediately following the reporting year.

These national projections shall take into consideration any policies and measures adopted at Union level and shall include projections without measures where available, projections with measures, and, where available, projections with additional measures. Along with the total greenhouse gas projections separate estimates for the projected greenhouse gas emissions for the emission sources covered by the EU ETS system and the EU Effort Sharing Decision are to be prepared as well. The projections shall clearly indicate the impact of policies and measures identified pursuant to Article 13 of the MMR. Sensitivity analysis has to be performed regarding the projections and their results has to be reported as well.

2.3.4 REPORTING ON NATIONAL ADAPTATION ACTIONS (ARTICLE 15)

By 15 March 2015, and every four years thereafter, aligned with the timings for reporting to the UNFCCC, Member States shall report to the Commission information on their national adaptation planning and strategies, outlining their implemented or planned actions to facilitate adaptation to climate change. That information shall include the main objectives and the climate- change impact category addressed, such as flooding, sea level rise, extreme temperatures, droughts, and other extreme weather events.

2.3.5 REPORTING ON FINANCIAL AND TECHNOLOGY SUPPORT TO DEVELOPING COUNTRIES (ARTICLE 16)

The MMR requires that Member States are report by 30 September each year regarding the support they have provided to developing countries. If it is applicable the so-called „Rio markers” methodology is recommended to be used and when information is provided on private financial flows mobilised, the information has to be coupled with information on the methodology used to determine the reported figures.

2.3.6 REPORTING ON THE USE OF AUCTIONING REVENUE AND PROJECT CREDITS (ARTICLE 17)

Member States should report on using credits which were used under the Effort Sharing Decision and the use of auctioning revenues of state owned allowances has to be reported as well in a report by 31 July each year regarding the previous year.

2.3.7 BIENNIAL REPORTS AND NATIONAL COMMUNICATIONS (ARTICLE 18)

Member States (and the EU) shall submit biennial reports in accordance with Decision 2/CP.17 of the Conference of the Parties to the UNFCCC (Decision 2/CP.17), or subsequent relevant decisions adopted by the bodies of the UNFCCC, and national communications in accordance with Article 12 of the UNFCCC to the UNFCCC Secretariat.

3. IMPLEMENTATION CONSIDERATIONS

3.1 KEY TASKS

The key tasks involved in implementing these Decisions are summarized in the checklist below.

Table: MMR– Key Implementation Tasks

1	Planning and Preparation
1.1	Identify any logistical, administrative and regulatory requirements so that the MMR can be implemented.
1.2	Identify relevant data sources including public and private entities and other appropriate sources such as reports and sectoral studies. Also identify other means for the collection of data and information such as surveys and questionnaires.
1.3	Organize meetings with stakeholders and public authorities to delineate duties and facilitate compliance, and to discuss the legal obligations involved. Set up the necessary administrative and procedural arrangements to ensure co-ordination between entities, including any legislation or data provision agreements required to ensure submission of data and information.
1.4	Devise information campaigns on the implications of the MMR among stakeholders and the public.
1.5	Competent authorities should assess capacity-building requirements to establish the systems and procedures for collecting data and estimating emissions and removals, including the national greenhouse gas inventory system; process the information received; compile the required reports; and ensure the timely submission of reports. The systems and processes set up should be subject to on-going monitoring to ensure that the implementation of obligations and the accuracy and completeness of the information compiled and submitted to the Commission meets the parameters set out in the legislation.
2	Regulatory actions
2.1	Establish a permanent national greenhouse gas inventory system for the estimation of anthropogenic emissions of greenhouse gases by sources and the removal of carbon dioxide by sinks and for the reporting of inventories and national inventory reports.
2.2	Devise and implement national programs for the fulfilment of commitments related to the limitation of all greenhouse gases under the UNFCCC and the Kyoto Protocol and for transparent and accurate monitoring of the actual and projected progress.
2.3	Upon taking commitment under the Kyoto Protocol appoint a responsible organization to maintain the Kyoto Protocol related registry for accurate accounting of the issuing, holding, transfer, acquisition, cancellation and withdrawal of assigned amount units, emission reduction units and certified emission reductions and the carryover of assigned amount units, emission reduction units and certified emission reductions. The registry shall adhere to EU and UNFCCC rules specified in connection with the registry.
2.4	In case taking up commitments under the Kyoto Protocol determine the assigned amount of the country and report this information to the UNFCCC Secretariat.

2.5	Establish a permanent national system for the assessment of the impacts of policies and measures for greenhouse gas emissions as well as for greenhouse gas projections, which system is able to deliver annual assessments of the changes regarding these issues.
2.6	National legislation has to be developed and implemented for the data collection needs of the national inventory system as well as the national system for policies and measures and projections
2.7	National legislation has to ensure the development and implementation of low carbon strategies, preparation of national communications towards the UNFCCC and biennial reports towards the UNFCCC
2.8	Establish administrative government procedures for the coordination and responsibilities of various government agencies and ministries to be involved in monitoring and reporting under the MMR
3	Training and Capacity Building
3.1	Competent authorities and agencies must be endowed with the necessary capacity to fulfil, within the appropriate time-frames and to the expected level of quality and on a permanent basis, reporting requirements to the Commission and the UNFCCC Secretariat.
3.2	Provide for the training and continued development of officials responsible for the inventory system, including sectoral experts involved in actual estimation of emissions and removals, also keeping abreast of developments in respect of methodologies and software systems.
3.3	Establish a permanent system for national system for policies and measures and projections with specialized staff able to conduct the necessary modelling work within the state administration. External support for these task is possible, but core responsibilities should stay within the state administration to ensure continuity and transparency
3.4	Prepare and publish guidelines, as necessary, explaining the duties of the national entities responsible for ensuring compliance with the requirements under MMR.
3.5	Provide technical training to officers in public authorities involved in: <ul style="list-style-type: none"> Collecting information and submitting data in accordance with the MMR; Ensuring the quality control of data submitted from the sectors involved.
3.5	Establish a quality control and quality system with defined protocols to ensure the overall quality of the data and information submitted and the long-term continuity of the national inventory system.
4	Reporting
4.1	Member states have to prepare a draft inventory for the preparation of the EU inventory and consider aligning with the internal deadlines of the EU GHG inventory system. The information will contain among others the following (MMR Art. 7 (1)): <ul style="list-style-type: none"> Anthropogenic emissions of greenhouse gases listed in Annex A to the Kyoto Protocol during the year before last (year X-2); Provisional data on emissions for carbon monoxide (CO), sulphur dioxide (SO₂), nitrogen oxides (NO_x) and volatile organic compounds (VOCs) during the year before last (year X-2) and final data for the year three years earlier (X-3); Anthropogenic greenhouse gas emissions by sources and removals of carbon dioxide by sinks, resulting from land use, land-use change and forestry during the year before last (year X-2); Information on the accounting of emissions and removals resulting from land use, land-use change and forestry for the years between 1990 and the year before last (year X-2) (in accordance

	<p>with Article 3 (3) and, if it is decided to make use of it, Article 3 (4) of the Kyoto Protocol and Decision No 529/2013/EU);</p> <ul style="list-style-type: none"> ▪ Any changes to the information on emissions relating to years between 1990 and the year three years earlier (year X-3); ▪ Report on the indicators specified in Annex III of MMR; ▪ The elements of the national inventory report necessary for the preparation of the EU greenhouse gas inventory report, such as information on quality control/quality assurance, a general uncertainty plan, a general assessment of completeness and information on recalculations required; ▪ Information from the registry on the issue, acquisition, holding, transfer, cancellation, withdrawal and carryover of assigned amount units, removal units, emissions reduction units and certified emissions reductions during the previous year (year X-1); ▪ Steps taken to improve estimates; ▪ Changes in the national inventory system
4.2	By 15 March each year (year X), submit the complete national inventory report and the updated and final inventory data (X-2 year) to the Commission and, by 15 April each year, to the UNFCCC Secretariat (MMR Art. 7 (2-4))
4.3	By 31 July each year the Member States should submit to the Commission the approximated greenhouse gas inventory for the previous year (X-1 year)
4.4	<p>By 15 March 2015 and every two years afterwards the Member States should report</p> <p>the status of on their national system on policies and measures, status of their low carbon development strategy, ex-ante and ex-post assessment of the impact of national and EU policies and measures which limit or reduce greenhouse gas emissions</p> <p>and their progress regarding the implementation of the Effort Sharing Decision</p> <p>Information on institutional and financial arrangements, information on the use of joint implementation, the Clean Development Mechanism and international emissions trading, pursuant to Articles 6, 12 and 17 of the Kyoto Protocol, to meet the quantified emission limitation or reduction commitments.</p>
4.5	Report to the Commission, by 15 March 2015 and every two years afterward , greenhouse gas projections which should include quantitative estimates for a sequence of four future years ending with 0 or 5 immediately following the reporting year.
4.6	By 15 of March 2015 and in every four years afterward Member States has to report their national adaptation planning and strategies
4.7	By 30 September every year Member States should report on support provided to developing countries in relation to climate change
4.8	By 31 July each year (year X) Member States has to report about the use of revenues from allowances auctioned by the Member State and about carbon credit use under the Effort Sharing Decision
4.9	Member States shall submit biennial reports in accordance with Decision 2/CP.17 to the UNFCCC and provide copies of the report to the Commission.

3.2 TRAINING AND CAPACITY BUILDING

While the legislation itself does not mandate training of staff and experts, the specific requirement enlisted in the legislation requires specific expertise which needs to be established and developed in a manner that quality assurance and quality control requirements of the national system are met.

Training and Capacity Building
Competent authorities and agencies must be endowed with the necessary capacity to fulfil, within the appropriate time-frames and to the expected level of quality and on a permanent basis, reporting requirements to the Commission and the UNFCCC Secretariat.
Provide for the training and continued development of officials responsible for the inventory system, including sectoral experts involved in actual estimation of emissions and removals, also keeping abreast of developments in respect of methodologies and software systems.
Provide for the training and continued development of officials responsible for the maintenance of the national system for policies and measures and projections. External support for these task is possible, but core responsibilities should stay within the state administration to ensure continuity and transparency.
Prepare and publish guidelines, as necessary, explaining the duties of the national entities responsible for ensuring compliance with the requirements under MMR.
Provide technical training to officers in public authorities involved in: <ul style="list-style-type: none"> ▪ Collecting information and submitting data in accordance with the MMR; ▪ Ensuring the quality control of data submitted from the sectors involved.
Establish a quality control and quality system with defined protocols to ensure the overall quality of the data and information submitted and the long-term continuity of the national inventory system.

3.3 PHASING CONSIDERATION

The first Kyoto commitment period ended in 2012. Until 2020, the international climate regime will comprise – on top of the existing provisions of the UNFCCC - new rules, institutions and commitments that have resulted from the UN climate conferences held in Copenhagen (2009), Cancun (2010), Durban (2011) and Doha (2012). These commitments include voluntary emission pledges for 2020 that have been made by more than 90 countries to date, as well as commitments by developed countries to provide financial support to help developing countries adapt to climate change and limit their emissions.

A second commitment period of the Kyoto Protocol runs from 2013 until 2020 when the global agreement enters into force.

A new international framework may create the need for new Decisions at European Union level to provide for the monitoring of emissions and removals of greenhouse gases; and of progress towards achieving new quantitative commitments by the EU and its Member States, possibly building upon what already exists pursuant to the MMR. However, these new rules will emerge from negotiations based on the agreement which emerged from the Paris COP in 2015.

Being parties to the UNFCCC and the Kyoto Protocol, candidate countries should already have a national mechanism in place for implementing their obligations under these multilateral agreements. The countries will already have had experience in compiling national greenhouse gas inventories and preparing national communications as required by the UNFCCC. **The most significant transition is the one from applying the Annex I rule set for monitoring and reporting instead of the non-Annex I one.** Although a national entity may already be monitoring the implementation of national obligations under these two multilateral legal instruments, a candidate country must review its commitments and approximate them to the MMR, and the procedures and methodologies established under this Regulation. This is likely to necessitate the retraining of officers within the national entity responsible in order to make them knowledgeable regarding the measures required to meet the obligations imposed by the MMR. It may also require the updating of systems utilized for the collection and reporting of emissions data so as to be compatible with the systems used for EU and UNFCCC submissions (particularly the CRF).

Before this can be done, national authorities must ensure the necessary capacity building, both logistically and in terms of human resources, considering that reporting of inventory data becomes an on-going annual obligation. The authorities involved should agree on a plan to ensure that the time-frames for the implementation of the obligations stipulated in the legislation will be respected, while at the same time guaranteeing the accuracy, transparency and comparability of the information submitted. Candidate countries may need to acquire expertise in order to better control and ensure the reliability of the information provided by the various data providers. Similarly, they will need to ensure the highest possible quality of inventory and projections reports submitted. It is important to note that Annex I inventories are subject to annual review. Certain aspects of the compilation of the national inventory and the inventory report are likely to be rather time-consuming processes, particularly the collection of data from the various sources.

Certain deadlines under the MMR for establishing a national inventory system have now expired. Upon accession to the EU, countries should clarify their position vis-à-vis such deadlines and obligations.

When preparing the implementation of the MMR or parts of it, it is suggested to start the preparations by knowing the situation where changes are to be made and the impacts of the changes to be made in legal, fiscal and institutional sense. Capacity analysis and mapping of the existing institutional system and available human resources cannot be avoided, as new tasks will add additional workload to existing staff or new staff should be hired. In both cases, the very specific knowledge needed for MMR related tasks justifies training or re-training of staff, which should be taken into consideration at the capacity assessment – who is the best to do the work needed for implementing MMR mandated tasks?

On the implementation side, before drafting legislation or mandating institutions with various duties, it is important to make a regulatory impacts assessment - What impacts the implementation of the MMR bring to the administrative system and what task has to be performed by whom? What financial and other capacity implications will result from separate bits of measures to be implemented? Such questions can be investigated and a clear picture for the implications of the implementation developed prior to the transposition and implementation of the legislation. Having a complex set of legislation in

question, it is also recommended that a plan is to be developed for the implementation of the legislation, for legal, institutional and financial aspects with clear tasks and deadlines for various actors and have this plan of action approved by the relevant ministries (as implementation of MMR likely involve various sectors as data providers).

3.4 IMPLEMENTATION LESSONS FROM MEMBER STATES

At the earliest stage of implementation, it is necessary to identify key actors and stakeholders who will be involved in the implementation of the MMR and to arrange for the appropriate procedures to facilitate the exchange of information. Such procedures may include existing or new legislation at national level obliging stakeholders to submit required data and information or the use of surveys, questionnaires and other such means for the collection of data. The identification of, and initial discussion with, all potential stakeholders will help to achieve the most efficient path to implement the decisions, to avoid costly errors and to encourage the co-operation of stakeholders in complying with the requirements of the implementation of the decisions.

There are two organizations typically involved in fulfilling the primary MMR requirements – a unit in the ministries responsible for climate policy and relevant strategy development and a national entity, which is a unit in a governmental institution responsible for the implementation of the national system for greenhouse gas inventory

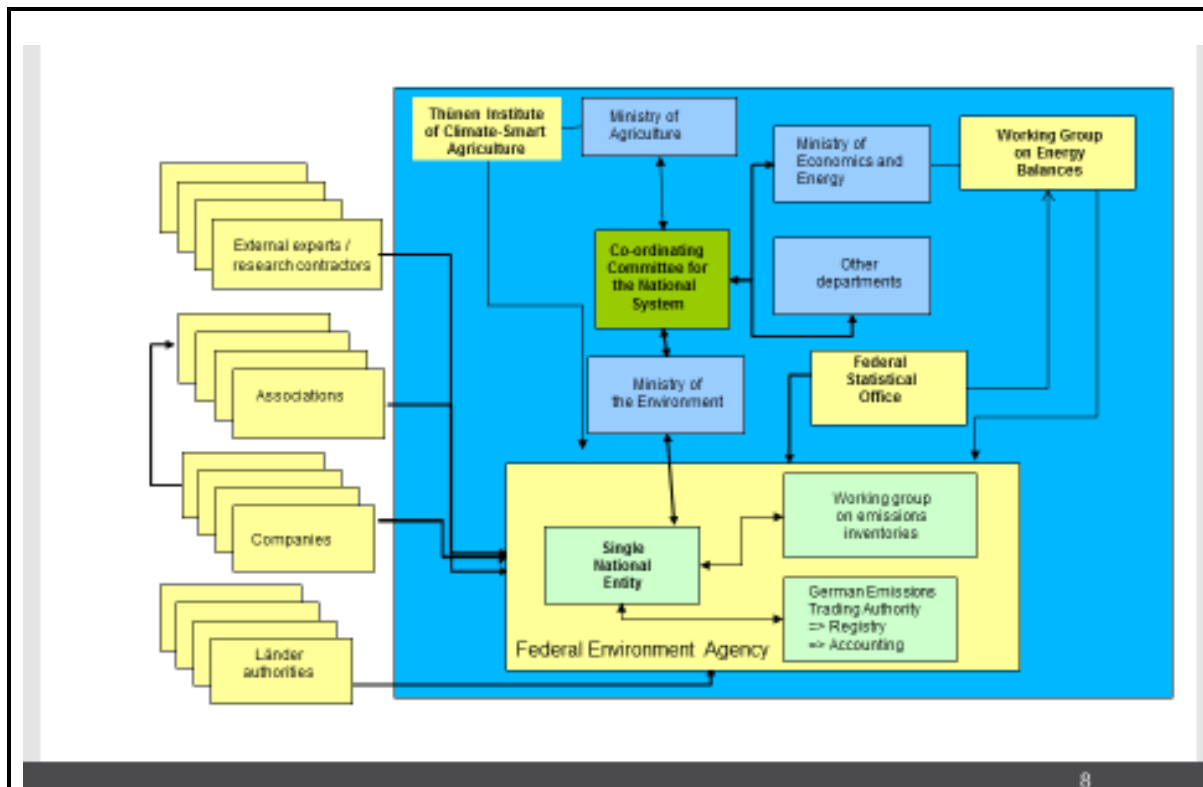
One of the main tasks of the national entity is to co-ordinate various national organizations in order to produce a GHG inventory by using data gathered from the best available sources, consistent with the guidelines and the good-practice guidance agreed upon by the Conference of the Parties to the UNFCCC. An example of the institutional arrangements in one of the EU-27 Member States is given in the box below.

Box

Example of Institutional Arrangements in Member State (Germany)

In Germany the system is based on a single system that allows for multiple reporting (UNFCCC, MMR, CLRTAP; UNEP, etc.)

The organigramme depicts the The German National System on Emissions (NaSE): Networking is essential for a successful inventory building work.



Different levels can be identified:

- Level 1A: The single National Entity
- Level 1B: The Federal Environmental Agency
- Level 2: The coordination committee of the Federal Ministries
- Level 3: Co-operation agreements with industry

Level 1A: The single National Entity has different responsibilities: It coordinates the National System, the QA/QC process; Database Management and Report compilation. It also provides capacity building (within UBA, national and international). The work is source category oriented: Energy (stat., mobile and fugitives); Industrial processes + solvent use (split over 4 colleagues); Agriculture + LULUCF (external cooperation); Waste (-water and disposal management). The Single National Entity is in fact the National Co-ordinating agency and it incorporates the expertise and knowledge from various experts from the Level 1B, which is the entire Federal Environment Agency. It receives data and information from 16 sections in 8 departments from all 5 divisions of the agency.

Level 2 is the coordination committee of the Federal Ministries. Their main task relates to establishing agreements to enable the provision of confidential data; determine “new rules” in data handling (Transfer of responsibility for statistical confidentiality to the SNE); definition of data requirements of the Federal Environment Agency; definition of the QA / QS System to be in place at the federal statistical office and the update of the data requirements on an annual basis.

On Level 3 co-operation is secured with with Business Association and enterprises mainly in the Industrial Processes sector though case specific co-operation agreements. This enables reporting according to Tier 3 methods.

The specific tasks and responsibilities of the Single National Entity (Leve 1A) are then explained/highlighted:

- Serve as Central Focal Point for ALL inventory and reporting issues
- Assure and coordinate information and data flow
- Set up Framework of inventory planning
- Determine standards
- Assure Central documentation
- Assure Central archiving

- Initiate and assure inventory improvement (QA/QC)
- Coordinate inventory issues for review
- Submission after governmental consultation
- Capacity building activities
- Link between climate and clean air policy

The national entity must ensure the implementation of all the obligations, even organizational issues. This is because the carrying out of reporting requirements and compliance monitoring, and the management and verification of information and its reporting to the Commission or the UNFCCC Secretariat, as well as the rules of procedure and methodologies used in achieving them, are all legally binding. The training of officers in all authorities that will be involved in the implementation of the decisions is essential, both for compliance purposes and good governance.

Each Member State must devise a national programme for limiting and/or reducing anthropogenic greenhouse gas emissions. The measures implemented to meet the targets to which Member States are committed are determined by the individual Member States in their national programmes. The MMR require the following areas to be addressed:

- Inventories of anthropogenic emissions by sources and removals by sinks for the base year and each year up to the year before last for the six greenhouse gases listed in Annex A to the Kyoto Protocol and emissions of CO, SO₂, NO_x and VOCs;
- Detailed assessment of national policies and measures implemented or planned;
- Projections of greenhouse gas emissions by sources and their removal by sinks; and
- Measures being taken or planned for the implementation of relevant EU legislation and policies.

The MMR does not obligate Member States to include penalties in national legislation, but if they do not abide by the conditions, rules and time-frames stipulated in the Decisions, or if they breach any obligation established in the Decisions, the Commission may initiate infringement procedures.

Box

Example of Institutional Arrangements in Member State (Ireland)

The single National Entity is the EPA. Its role relates to:

- Establish Institutional and legal arrangements
- Review before submission (Board of the EPA via the Programme Manager of the Climate Resource and Research Programme in OCLR)

The Inventory Agency: (EPA/OCLR – operational office CRRP)

- Improvements prioritisation (KCA/uncertainties) and implementation
 - Internal
 - External peer review
 - EU (EU MMR)
 - UNFCCC

Box

Example of Institutional Arrangements in Member State (Bulgaria)

The legal basis for the Bulgarian National Inventory System is provided in:

- Environmental Protection Law (State Gazette No. 91/25.09.2002; corrected, SG No. 96/2002; last amendment November 2012): Establishes the National Environmental Monitoring System and lists all of its tasks;
- Regulation on the organization and structure of ExEA: Regulates the responsibilities for monitoring of environment as well as the responsibility for preparation of emission inventories.

Agreements have been signed between the Ministry of Environment and the main data provider have been signed in 2010:

- National Statistics Institute (February 2010)
- Ministry of Agriculture and Food (March 2010)
- Ministry of Economy and Energy (June 2010)
- Ministry of Internal Affairs/Road Control Department (June 2010)



The GHG inventory represents a process, covering the following main activities:

Collect sufficient activity data, process information, and emission factors as are necessary to support the methods selected for estimating anthropogenic GHG emissions by sources and removals by sinks;

Prepare estimates and ensure that appropriate methods are used to estimate emissions from key source categories;

Identification key source categories;

Make a quantitative estimate of inventory uncertainty for each source category and for the inventory in total recalculations of previously submitted estimates of anthropogenic GHG emissions by sources and removals by sinks.

Compile the national inventory in accordance with Article 7, paragraph 1, and relevant decisions of the COP and/or COP/MOP;

Implement general inventory QC procedures (tier 1) in accordance with its QA/QC plan following the IPCC good practice guidance;

Apply category-specific QC procedures (tier 2) for key source categories and for those individual source categories in which significant methodological and/or data revisions have occurred;

Collection of all data together with emission estimates, where data sources are well documented for future reconstruction of the inventory.

The QA/QC plan is a fundamental element of a QA/QC system. It outlines QA/QC activities that will be implemented and include a scheduled time frame that follows inventory preparation from its initial development through to final reporting in any year and it contains an outline of the processes and schedule to review all source categories. It is an internal document to organize, plan and implement QA/QC activities.

In order to reproduce the inventory followed the *good practice guidance* is followed for:

- annual documenting and archiving of all information necessary to reproduce inventory
- documenting and archiving of all information relating to the planning, preparation, and management of inventory activities
- reporting a summary and key findings of all implemented QA/QC activities as a supplement to the NIR

Box

Example of Institutional Arrangements in Member State (Austria)

Reporting to the monitoring mechanism is the responsibility of the Federal Ministry of Agriculture, Forestry, Environment and Water Management. Austria has a centralized inventory system, with all the work related to inventory preparation being carried out by a single national entity. The most important legal arrangement is the Austrian Environmental Control Act (Umweltkontrollgesetz, Federal Law Gazette 152/1998). This defines the main responsibility for inventory preparation and identifies the Umweltbundesamt as the one single national entity with overall responsibility for inventory preparation.

The inspection body for the GHG inventory within the Umweltbundesamt is responsible for the compilation of the GHG inventory. Sector experts collect activity data, emission factors and all the relevant information needed to finally estimate emissions. The sector experts also have specific responsibilities regarding the choice of methods, data processing and archiving and for contracting studies, if needed. As part of the quality management system, the head of the inspection body for the GHG inventory approves the methodological choices. Sector experts are also responsible for performing quality control (QC) activities that are incorporated in the quality management system (QMS).

During the inventory preparation process, all data collected, together with emission estimates, are fed into a database, where data sources are well documented for the future reconstruction of the inventory.

For inventory management, reliable data management has been established to fulfil the data collecting and reporting requirements. This ensures the necessary documentation and archiving for the future

reconstruction of the inventory and consequently enables easy access to up-to-date and previously submitted data for the quantitative evaluation of recalculations.

The national energy balance is the most important data basis for the Austrian Air Emissions Inventory. The Austrian statistical office (Statistik Austria) is required, by contract with the Federal Ministry of Agriculture, Forestry, Environment and Water Management and with the Federal Ministry of Economics and Labor, annually to prepare the national energy balance. The compilation of several other relevant statistics is regulated by law. Other data sources include reporting obligations under national and European Regulations and the reports of companies and associations.

3.5 COSTS

The establishment of a national inventory system and the national system on projections and assessment of policies and measures require time and financial resources. Furthermore, the running of these national systems is an on-going process that will require expert resources to be in place in the long term and constitutes an on-going expense that has to be covered by the Member State. A stable system with permanent staff is needed because of the on-going learning type of specialized work which is accompanied with quality assurance and quality control measures. Outsourcing the tasks can be considered but has a clear disadvantage that it does not provide the stability and continuity needed for these national systems. In view of other inventory obligations (such as under the National Emission Ceilings Directive and CLRTAP), the benefits of streamlining national processes and procedures as far as possible should be considered.

For Candidate Countries, the practice of smaller Member States can provide examples of efficiently established institutional structures for the MMR.

Some provisions of the MMR, eg reporting in relation to the Effort Sharing Decision, will not be applicable for the Candidate Countries until their date of accession to the EU.

THE GREENHOUSE GAS EMISSIONS TRADING DIRECTIVE

Official Title: Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the EU and amending Council Directive 96/61/EC³⁴ as amended by

- Directive 2004/101/EC of the European Parliament and of the Council of 27 October 2004 amending Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading within the Community, in respect of the Kyoto Protocol's project mechanisms³⁵;
- Directive 2008/101/EC of the European Parliament and of the Council of 19 November 2008 amending Directive 2003/87/EC so as to include aviation activities in the scheme for greenhouse gas emission allowance trading within the Community³⁶, as amended by Decision 2011/149/EU;
- Regulation (EC) No 219/2009 of the European Parliament and of the Council of 11 March 2009 adapting a number of instruments subject to the procedure referred to in Article 251 of the Treaty to Council Decision 1999/468/EC with regard to the regulatory procedure with scrutiny;
- Directive 2009/29/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community³⁷.
- Decision No 1359/2013/EU of the European Parliament and of the Council of 17 December 2013 amending Directive 2003/87/EC clarifying provisions on the timing of auctions of greenhouse gas allowances
- Regulation (EU) No 421/2014 of the European Parliament and of the Council of 16 April 2014 amending Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading within the Community, in view of the implementation by 2020 of an international agreement applying a single global market-based measure to international aviation emissions

A consolidated version of the Directive containing provisions of the 6 legislative texts listed above is available online.³⁸

Legislation relevant for implementation of the ETS Directive:

- Commission Regulation (EU) No 601/2012 of 21 June 2012 on the **monitoring and reporting** of

³⁴ OJ L275, 25.10.2003

³⁵ OJ L 338, 13.11.2004

³⁶ OJ L 8, 13.1.2009

³⁷ OJ L 140, 5.6.2009

³⁸ <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02003L0087-20140430>

greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council (amended three times in 2014)³⁹;

- Commission Regulation (EU) No 600/2012 of 21 June 2012 on the **verification** of greenhouse gas emission reports and tonne-kilometre reports and the **accreditation** of verifiers pursuant to Directive 2003/87/EC of the European Parliament and of the Council;
- Commission Regulation (EU) No 389/2013 of 2 May 2013 establishing a Union **Registry** pursuant to Directive 2003/87/EC of the European Parliament and of the Council, Decisions No 280/2004/EC and No 406/2009/EC of the European Parliament and of the Council and repealing Commission Regulations (EU) No 920/2010 and No 1193/2011
- 2010/634/EU: Commission Decision of 22 October 2010 adjusting the **Union-wide quantity of allowances** to be issued under the Union Scheme for 2013 and repealing Decision 2010/384/EU (notified under document C(2010) 7180);
- Commission Regulation (EU) No 1031/2010 of 12 November 2010 on the timing, administration and other aspects of auctioning of greenhouse gas emission allowances pursuant to Directive 2003/87/EC of the European Parliament and of the Council establishing a scheme for greenhouse gas emission allowances trading within the Community ("**Auctioning Regulation**") as amended by:
 - Commission Regulation (EU) No 1210/2011 of 23 November 2011;
 - Commission Regulation (EU) No 784/2012 of 30 August 2012
 - Commission Regulation (EU) No 1042/2012 of 7 November 2012
 - Commission Regulation (EU) No 1143/2013 of 13 November 2013
 - Commission Regulation (EU) No 176/2014 of 25 February 2014
- Commission Decision (2014)7809/EU of 27 October 2014 a list of sectors and subsectors which are deemed to be exposed to a **significant risk of carbon leakage, for the period 2015 to 2019**;
- Commission Decision 2013/448/EU of 5 September 2013 concerning national implementation measures for the transitional **free allocation** of greenhouse gas emission allowances in accordance with Article 11(3) of Directive 2003/87/EC of the European Parliament and of the Council;
- Commission Decision 2011/278/EU of 27 April 2011 determining transitional Union-wide rules for harmonised free allocation of emission allowances pursuant to Article 10a of Directive 2003/87/EC of the European Parliament and of the Council
- Commission Decision (EU)2015/1814 of 6 October 2015 concerning the establishment and operation of a **market stability reserve** for the Union greenhouse gas emission trading scheme and amending Directive 2003/87/EU

³⁹ Commission Regulation (EU) 743/2014 replacing Annex VII to Regulation (EU) No 601/2012 as regards the minimum frequency of analyses; Commission Regulation (EU) 2016/2014 amending Regulation (EU) No 601/2012 as regards global warming potentials for non CO₂ greenhouse gases; Corrigendum of 5 March 2014 to Commission Regulation (EU) No 601/2012 on the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council

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1. SUMMARY OF AIMS AND PROVISIONS

The aim of the EU Emissions Trading System (EU ETS) is to help EU Member States achieve their commitments to limit or reduce greenhouse gas emissions in a cost-effective way.⁴⁰

The EU ETS was established under Directive 2003/87/EC and became operational as of 1 January 2005. Currently the EU ETS covers more than 11,000 stationary industrial installations in the 28 EU Member States plus Iceland, Norway and Liechtenstein, as well as all flights from airlines operating in the EU or flying into and/or out of the EU. The scheme covers approximately 45% of the EU's GHG emissions.

In the following, we shall present the EU ETS as it is operating in its current form, i.e. until 2020. The review of the ETS for the period after 2020 has started, with the Commission having presented its proposal in mid-2015⁴¹. At the date of drafting of this document, the negotiations on the detailed provisions aiming for adjustments to the ETS after 2020 are ongoing, especially in the size of the cap, the use of the auctioning revenues and the treatment of carbon leakage. The logic of the system is not expected to change, however.

The ETS currently applies to the following sectors⁴² and gases:

- Carbon dioxide (CO₂) from:
 - power and heat generation;
 - energy-intensive industrial sector installations⁴³: oil refineries, coke production, metal ore production, steel works and production of iron, aluminium, metals, cement, lime, glass, ceramics, mineral wool, gypsum, pulp, paper, carbon black, certain acids and bulk organic chemicals,
 - carbon capture and storage;
 - commercial aviation.
- Nitrous oxide (N₂O) from production of nitric, adipic, glyoxal and glyoxalic acids;
- Perfluorocarbons (PFCs) from aluminium production.

The EU ETS works on the "**cap and trade**" principle. This means that there is a "cap", or limit, on the total amount of allowances in the scheme, which is the limit to the total amount of greenhouse gases which can be emitted by the installations in the ETS-sectors as a whole. There is no limit on the greenhouse gas emissions of the individual installations, but they are required to return to the government ("surrender") a number of allowances that is equal to their emissions of the preceding year. Installations receive some allowances for free, may buy some more in government auctions, or from each other. The overall emissions allowances under the cap are fewer than the emissions that

⁴⁰ http://ec.europa.eu/clima/policies/ets/faq_en.htm

⁴¹ <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2015:337:REV1>

⁴² There is a possibility to opt-out small installations provided their emissions are below 25,000 tonnes of CO₂ per year, an additional capacity threshold for combustion installations is 35MW. There is also the possibility for Member States to include further installations under the ETS.

⁴³ Emissions from both fuel combustion and process related CO₂ emissions are under the ETS

would be emitted in the absence of a limit, the scarcity thus generated results in a market value for the allowances, i.e. a price for carbon.

A **centralized EU-wide cap** for the year 2013 has been determined at 2,084 million allowances for the 28 EU Member States plus Norway, Iceland and Liechtenstein. It will decrease each year by 1.74%.⁴⁴ The cap will deliver an overall reduction of 21 % below the 2005 verified emissions by 2020. The European Commission presented a proposal for Phase 4 of the ETS in July 2015 which aims to increase the annual reduction in allowances to 2.2% between 2021-2030, enabling the sectors covered by the ETS have to reduce their emissions by 43% compared to 2005 by 2030.

Within the cap, companies receive or buy emission **allowances** which they can then trade with one another. If the emission of an installation exceeds the number of allowances received, the installation must purchase allowances from other installations or through a government auction. Installations may freely sell any allowances they hold. Installations may choose to buy allowances instead of reducing their emissions if the cost of emission reduction is higher than the (current and projected) price of allowances. Installations may reduce their emissions (through investments or limiting production) if this is cheaper than buying allowances. In this way, the ETS provides a cost-effective way of reducing economy-wide emissions, because it ensures that emissions will be reduced where this is cheapest. Instead of selling surplus allowances, if an installation reduces its emissions to a level below the number of allowances it holds, it can also choose to keep the spare allowances to cover its future needs.

The default mode of allocating allowances is through auction. In 2013 only around 40% of the total cap was **allocated** to installations through an auction mechanism, but this share rises annually. **Auctions** have been held regularly from 1 January 2013 onwards. Member States have agreed to start at 20% auctioning in 2013, increasing to 70% auctioning in 2020 with a view to reaching 100% in 2027. The so-called “Auctioning Regulation”⁴⁵ covers the timing, administration and other aspects of auctioning to ensure the auctioning process is conducted in an open, transparent, harmonized and non-discriminatory manner. The European Energy Exchange (EEX) in Leipzig is the common auction platform for all auctions except those of the UK, which are done through the ICE exchange in London.

The remaining allowances are **allocated** among installations free of charge, following a so-called **benchmarking** methodology, according to harmonized EU-wide rules. This means that benchmarks (emissions per unit of production) are established on the basis of the best performing installations for each product (on the basis of the average of the top 10% most greenhouse gas efficient installations in the EU). A single benchmark is determined per product, therefore the benchmark does not take into consideration the technology or fuel used, the size of an installation or its location. Free allocations are established through a complex calculation involving historical production volumes, the benchmark values and the total amount of available free allowances. Industries that are exposed to **carbon leakage** (i.e. competition from outside the EU where production is not burdened with carbon costs)

⁴⁴ The cap for 2013 and the linear reduction factor are contained in Commission Decision 2010/634/EU of 22 October 2010 adjusting the Union-wide quantity of allowances to be issued under the Union Scheme for 2013 and repealing Decision 2010/384/EU

⁴⁵ The auctioning rules are set out in Commission Regulation (EU) No 1031/2010 of 12 November 2010 on the timing, administration and other aspects of auctioning of greenhouse gas emission allowances pursuant to Directive 2003/87/EC of the European Parliament and of the Council establishing a scheme for greenhouse gas emission allowances trading within the EU (“Auctioning Regulation”) as amended by Commission Regulation (EU) No 1210/2011 of 23 November 2011

receive a greater proportion of their needs, while as a main rule electricity generation activity⁴⁶ do not receive any free allowances at all.

Installations can also buy limited amounts of **international credits** from emission-saving projects around the world for use in the ETS. However, as of 2013 as a general rule only emission saving projects from the so-called “Least Developed Countries” are eligible for use.

Compliance of an installation covered by the ETS is achieved through the surrender of a number of allowances equal its verified GHG emissions (one allowance permits its holder to emit one ton of CO₂ equivalent). Member States are required to levy fines on installations who do not surrender enough allowances on time. Allowance holdings, annual emissions and surrenders are recorder in an electronic database called the **registry system**.

In order to ensure the integrity of the scheme, a transparent system of **monitoring, reporting and verification** of emissions has been set up. The operator of the installation monitors the emissions throughout the year, prepares an annual emissions report, and ensures that this report is verified by an accredited company. The annual emissions report has to be based on the monitoring practice and procedures laid down in the approved Monitoring Plan of the installation contained in its GHG emission permit, and in line with the monitoring and reporting regulation.

Revenues from a total of 88% of the allowances to be auctioned is distributed between the Member States on the basis of a Member State's share of historic emissions under the EU ETS. In the interest of solidarity 10% of the total allowances to be auctioned are re-distributed to the poorest Member States, and another 2% is distributed as a “Kyoto bonus” to nine, mainly Eastern European Member States who have reduced their greenhouse gas emissions by at least 20% between their Kyoto base year and 2012. There is a recommendation in the ETS Directive that at least half of the revenues from auctioning are to be spent on climate change action, within the EU and in developing countries. This recommendation is largely followed by most Member States.

Up to 300 million allowances from the new entrants reserve of the EU ETS is used to support the **demonstration of carbon capture and storage (CCS)** and innovative renewable technologies.

As a result of a rapid build-up of a surplus of allowances and international credits the auctioning of 900 million allowances was postponed from the years 2014-2016 by placing them in the newly established **Market Stability Reserve**.⁴⁷ This measure was taken in order to counter the protracted decline in allowance prices (largely due to the drop in production as a result of the economic crisis). Low allowance prices result in the inability to give a sufficient incentive to economic actors for a conversion to low-carbon technologies.

⁴⁶ However, Member States who fulfil certain conditions relating to their interconnectivity or their share of fossil fuels in electricity production and GDP per capita in relation to the EU-27 average, have the option to temporarily deviate from this rule with respect to existing power plants. Member States with a GDP per capita below 60% of the EU average may choose to give free allowances to the energy sector up to 2030.

⁴⁷ Decision (EU) 2015/1814 of the European Parliament and of The Council of 6 October 2015 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading scheme and amending Directive 2003/87/EC

A number of implementing Regulations and Decisions have been adopted to make up a concise operational framework for the EU emission trading scheme which also foresees provision in case of an international post-Kyoto agreement. A short description of the most important implementing regulations and decisions is provided below.

Commission Regulation (EU) No 1031/2010 of 12 November 2010 on the timing, administration and other aspects of auctioning of greenhouse gas emission allowances pursuant to Directive 2003/87/EC of the European Parliament and of the Council establishing a scheme for greenhouse gas emission allowances trading within the EU ("**Auctioning Regulation**")

The "Auctioning Regulation" covers the timing, administration and other aspects of auctioning to ensure that auctioning takes place in an open, transparent, harmonized and non-discriminatory manner. The regulation seeks to put into practice a number of criteria as required by the EU ETS Directive, such as predictability, cost-efficiency, fair access to the auctions and simultaneous access to relevant information for all operators.

The Regulation details the economic operators and persons entitled to submit bids directly in an auction.

Regulation also establishes the format in which the auctions need to be conducted, as well as the modalities for submission and withdrawal of bids. It also lays down rules for determining the clearing price.

Regarding the auction calendar, timing and frequency, the Regulation establishes that an auction platform will conduct auctions separately through its own regularly recurring bidding window.⁴⁸ The bidding window will be opened and closed on the same trading day, and kept open for no less than two hours.

Allowances are offered for sale on an auction platform by means of standardized electronic contracts traded on that auction platform, "the auctioned product".

The Auctioning Regulation allows Member States to opt out of the common platform for auctioning emissions allowances and instead appoint their own auction platform. Plans for procuring a separate auction platform need to be notified to the Commission to allow the Commission to verify that that the platform satisfies the provisions of the Auctioning Regulation and meets the objectives of Directive 2003/87/EC.

The Regulation entered into force on 19 November 2010. It was amended a number of times, last by Commission Regulation (EU) No. 176/2014 of 25 February 2014. A consolidated version of the regulation is available online.⁴⁹

⁴⁸ The auction calendar of the common auction platform is published on <https://www.eex.com/en/trading/calendar>

⁴⁹ <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02010R1031-20140227>

2013/448/: Commission Decision of 5 September 2013 concerning **national implementation measures** for the transitional **free allocation** of greenhouse gas emission allowances in accordance with Article 11(3) of Directive 2003/87/EC of the European Parliament and of the Council

and

Commission Decision 2011/278/EU of 27 April 2011 determining transitional Union-wide rules for harmonised free allocation of emission allowances pursuant to Article 10a of Directive 2003/87/EC of the European Parliament and of the Council ("**Benchmarking Decision**")

Member States are required to prepare **National Implementing Measures** (NIMs) that respect Article 11 of the ETS Directive, the Benchmarking Decision and the carbon leakage list. The NIMs contain a preliminary calculation of the number of free allowances to be allocated to each installation in the Member State and are notified to the Commission.

The **Benchmarking Decision** determines the transitional Union-wide rules for the harmonized free allocation of emission allowances for the third trading period 2013-2020. As stated previously, free allocations for each installation are established through a calculation involving historical production volumes and the benchmark values and adjusted for the total amount of available free allowances using the so-called "cross-sectoral correction factor".

The **benchmark** for most sectors is basically the average emission per unit of output of the most efficient 10% of installations in the EU. The benchmarks are product-based, i.e. they are established on the basis of the principle of 'one product = one benchmark'. This means that the benchmark methodology does not differentiate by technology or fuel used, nor the size of an installation or its geographical location. The benchmark is defined as an emission-value per ton of product reflecting the average greenhouse gas performance of the 10 % best performing installations in the EU producing that product.

Depending on the level of a sector's carbon exposure, installations receive an amount of free allowances that fully or partially correspond to the sectoral benchmark for the base period, after adjusting for the total amount of allowances available.

The free allocation thus calculated is not intended to be an emission limit or a target, but simply a contribution to the installation's obligation to cover its emissions with allowances. In the case of sectors where there is no carbon leakage, the amount of free allocation is lowered each year, and will reach 30% of the benchmark in 2020. Installations that do not meet the benchmark will have a shortage of allowances. They then have the option to either lower their emissions (e.g. through engaging in abatement) or to purchase additional allowances to cover their excess emissions.

It should be expected that the ETS review will bring certain changes to the process of free allocation for the period after 2020.

(2014)7809/: Commission Decision of 27 October 2014 a list of sectors and subsectors which are deemed to be exposed to a significant risk of **carbon leakage**, for the period 2015 to 2019

The allocation rules take account of the potential for **carbon leakage**. "Carbon leakage" occurs when there is an increase of CO₂ emissions in a third country as a consequence of a more pro-active climate policy in the EU compared to climate policies in a third country. Carbon leakage is a problem because it results in a loss of competitiveness for EU industries, and at the same time does not result in a reduction of global GHG emissions, as emissions are only displaced to other geographic locations, and are therefore not reduced overall.

(2014)7809/: Commission Decision of 27 October 2014 a list of sectors and subsectors which are deemed to be exposed to a significant risk of **carbon leakage**, for the period 2015 to 2019

In order to avoid the risk of unfair competition, especially from industries in non-EU countries which do not have a comparably strict climate policy in place, the allocation system allows certain industrial sectors that face international competition from industries outside the EU which are not subject to comparable climate legislation to receive a higher share of free allowances than those which are not subjected to the risk of such so-called carbon leakage. The list of sectors which are eligible for a higher share of free allowances is contained in this decision, which is sometimes also referred to as the “carbon leakage list”.

According to the ETS Directive (Article 10a), a sector or sub-sector is deemed to be exposed to a significant risk of carbon leakage if:

- The extent to which the sum of direct and indirect additional costs induced by the implementation of the Directive would lead to an increase of production cost, calculated as a proportion of the Gross Value Added, of at least 5%; and
- The trade intensity (imports and exports) of the sector with countries outside the EU is above 10%.

A sector or sub-sector is also deemed to be exposed to a significant risk of carbon leakage if:

- The sum of direct and indirect additional costs is at least 30%; or
- The non-EU trade intensity is above 30%.

Commission Regulation (EU) No 601/2012 of 21 June 2012 on the **monitoring and reporting** of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council

The so called Monitoring and Reporting Regulation (**MRR**) establishes the requirements for the monitoring and reporting of greenhouse gas emissions by installations under the ETS. The new Monitoring and Reporting Regulation No 601/2012 provides detailed technical interpretation of the requirements set out in Article 14 and in Annex IV to the Directive. It aims at establishing basic monitoring methodologies to minimize the burden on operators and aircraft operators and facilitate the effective monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC. The MRR requirements are designed to ensure regular and precise monitoring and reporting of greenhouse gas emissions in the participating countries (i.e. the EU Member States and countries in the EEA).

The MRR is a highly technical regulation which sets out the technical specificities of monitoring and reporting in a number of annexes. The Regulation contains the following 10 Annexes:

- Annex I sets out the minimum content of the Monitoring Plan for installations and for aviation emissions, (Art 12(1));
- Annex II sets the tier thresholds for calculation-based methodologies related to installations (Art 12(1));
- Annex III sets out the methodologies for aviation (Article 52 and Article 56);
- Annex IV sets out activity-specific monitoring methodologies related to installations listed in Annex I of the ETS Directive (Article 20(2);
- Annex V establishes the minimum tier requirements for calculation-based methodologies involving category A installations and calculation factors for commercial standard fuels used by Category B and C installations (Article 26(1));

Commission Regulation (EU) No 601/2012 of 21 June 2012 on the **monitoring and reporting** of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council

- Annex VI presents the reference values for calculation factors (Article 13(1)(a));
- Annex VII specifies the minimum frequency of analyses (Article 35) ⁵⁰;
- Annex VIII specifies the measurement-based methodologies (Article 41);
- Annex IX indicates the minimum data and information which need to be retained by installations and aircraft operators (Article 66(1));
- Annex X specifies the minimum content of the Annual Reports (Article 67(3)).

Commission Regulation (EU) No 600/2012 of 21 June 2012 on the **verification** of greenhouse gas emission reports and tonne-kilometre reports **and the accreditation** of verifiers pursuant to Directive 2003/87/EC of the European Parliament and of the Council.

The **“Accreditation and Verification” (AVR) Regulation** applies to the verification of greenhouse gas emissions and tonne-kilometres data reported pursuant to Article 14 of Directive 2003/87/EC. Verification provisions are legally provided for by Article 15, while the criteria for the verification are defined in Annex V of Directive 2003/87/EC.

Verification involves an independent assessment of the way the monitoring plan has been implemented and of the data sources that have been used. Verification is carried out by an independent accredited or certified verifier (a natural person or legal entity) which has been accredited or certified by the National Accreditation Body/National Certification Authority in accordance with the AVR.

In relation to **verification**, the AVR lays out the principles of verification and steps of the verification process. The **principles of verification** are completeness, consistency, comparability, accuracy, integrity of the methodology, transparency and continuous improvement, which have been laid down in Article 5 to 9 of the MRR.

The **requirements related to the verifier** are reliability (i.e. a faithful representation of reality), independence of the verifier, and an attitude of professional skepticism and exercising due professionalism. Verifiers must establish, document, implement and maintain a competence process to ensure that all verification personnel are competent for the tasks that are allocated to them. The verifier must be independent from an operator and bodies that are trading emission allowances.

In its verification of emissions, the verifier must provide a **reasonable level of assurance** with respect to absence of material misstatements. The verifier must assess the risks of misstatements and non-conformities and any likely material effect they may have on the reported data and request that the material misstatements be corrected as only reports free of misstatements can be deemed as satisfactory.

In addition, the AVR also contains requirements related to the **scope and process of verification**. The depth and detail of verification activities may be different for small and simple installations. The rules for addressing misstatements and non-conformities are set out in the AVR.

⁵⁰ Replaced by Commission Regulation EU No 743/2014 <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R0743&from=EN>

Commission Regulation (EU) No 600/2012 of 21 June 2012 on the **verification** of greenhouse gas emission reports and tonne-kilometre reports **and the accreditation** of verifiers pursuant to Directive 2003/87/EC of the European Parliament and of the Council.

The AVR also sets out the elements of the verification plan, which include a verification programme, a test plan and a data sampling plan.

Regarding accreditation, the AVR contains provisions regarding the scope, process and objectives of accreditation, as well as requirements related to the National Accreditation Bodies including peer evaluation of NABs by the European Cooperation for Accreditation

Commission Regulation (EU) No 389/2013 establishing a **Union Registry** pursuant to Directive 2003/87/EC of the European Parliament and of the Council, Decisions No 280/2004/EC and No 406/2009 of the European Parliament and repealing Commission Regulations (EU) No 920/2010 and No 1193/2011

Procedural and technical requirements for the functioning and operation of registries are provided for in Commission Regulation 389/2013 (the “**Registry Regulation**”) for the trading period commencing on 1 January 2013.

The EU ETS Directive (Article 19(1)) requires the operation of an EU registry system by the European Commission. A registry is an electronic database that records the allocation, holding, transfer, surrender and cancellation of allowances. It has an account for every operator and account holder, and allowance owners can transfer their allowances through this system, much like they could through an internet bank. While there is a separate “sub-registry” for every Member State, where the allocations and accounts of those registered in the Member State are managed by the Member State, the technical background for the registries and the supervision of the legality of transactions is provided by the European Commission. The registries together are called the Union registry.

In addition to recording allowance holdings and transactions, the registry also records information on:

- National Implementation Measures in phase 3 (2013-2020) (free allocations);
- Annual verified GHG emissions from installations;
- Annual reconciliation of allowances and verified emissions, whereby each company must have surrendered enough allowances to cover all its verified emissions.

In addition to the Union registry, there is the EU Transaction Log (EUTL), operated and controlled by the European Commission, which automatically checks, records, and authorizes all transactions that take place between accounts in the Union registry. This verification ensures that any transfer of allowances from one account to another is consistent with the EU ETS rules. Processes that fail these checks are terminated.

It is important to note that **both the Directive itself and the implementing provisions are subject to continuous changes** and candidate countries are encouraged to ensure that they are up to date with the latest legal texts and guidelines.

The European Commission has published a range of guidance documents, templates and other tools to assist in the common understanding and implementations of the complex EU ETS requirements. Moreover, from time to time some Member States issue their own guidance to operators and other stakeholders in the scheme, explaining in greater detail and in less legal terms the requirements of the Directive and

its implementing provisions⁵¹. It is worth taking note of the wide range of guidance documents, exemplars and templates on the website of the Commission, assessing best practices from other Member States, and adapting these practices and guidance to local requirements as applicable.

A more detailed analysis of the obligations pertaining to Member States in respect of the various elements of Directive 2003/87/EC is presented under Section 2.

As noted above, Proposals for the 2020-2030 period (Phase IV) of the ETS have been published by the Commission but they are yet to be adopted by the European Parliament and the Council. Therefore, by the time accession countries become Member States the rules of the ETS will have changed. The proposals for Phase IV are briefly summarized below. The proposals have not been integrated into the current text as they are not yet adopted and are therefore subject to change. The Directive will have to be adopted by the European Council and Parliament during which process modifications to the text of the proposal will be made.

The Commission proposal contains the following main elements:

- Change in the annual reduction factor applicable to the cap: the overall number of emission allowances will decline at an annual rate of 2.2% from 2021 onwards, compared to 1.74% currently. This will ensure that emissions in the ETS sector are reduced by 43% by 2030 compared with 2005.
- Better targeted carbon leakage rules which focus only on sectors at highest risk of carbon leakage. The number of sectors deemed to be of high risk of carbon leakage will be around 50.
- More flexible rules for free allocation to ensure that the number of allowances is better aligned with production. This will mean that there will be a more frequent alignment of allocation with production data to ensure that fast growing installations and sectors have access to a sufficient number of allowances.
- Benchmarks will be updated to reflect technological progress made since the current benchmark values were proposed
- The introduction of two support mechanisms to ensure that sufficient investment in innovation and the transition to a low carbon economy is ensured.
 - The Innovation Fund will support demonstration projects for innovative technologies in renewable energy and carbon capture and storage as has been the case until now with NER300, but also in energy intensive industries.
 - The Modernisation Fund will support investment in the power sector in 10 low income Member States, to the effect of 310 million allowances. This will replace the current system of support for modernisation in the electricity sector in the countries which have chosen to make use of the derogation allowing a free allocation with a more transparent scheme.
- The derogation relating to transitional free allocation to electricity sector installations will be prolonged, making free allowances available post-2020.

⁵¹ Examples of such guidance may be found on the websites of competent authorities and implementing authorities in Member States such as the Department for Environment, Food and Rural Affairs of the UK: <http://www.defra.gov.uk/environment/climatechange/trading/eu/> and the German Emissions Trading Authority: <http://www.dehst.de/>

- The need for Member States to provide support in line with State Aid rules for electricity-intensive sectors with the use of auctioning revenues.

2. PRINCIPAL OBLIGATIONS

The participation of an installation in the EU emissions trading scheme is limited to installations located in Member States of the European Union, unless a special agreement is concluded with a non-Member country. Under the terms of the EEA Agreement, the EFTA states have also been part of the ETS from 2008 onwards, and there were as of yet unsuccessful negotiations regarding the linking of Switzerland, and later Australia to the EU ETS.

Considering the technical and diplomatic complexity involved in linking a non-Member country to the EU ETS, it is unlikely that candidate countries will participate in the ETS until they become members of the EU. However, as participation in the ETS scheme can be challenging for both national administrations, installations covered by the scheme and other private sector participants (e.g. accredited verifiers), candidate countries should take the necessary steps to prepare for implementing the scheme in their own countries early on. Therefore, preparations including steps to harmonize legislation, beginning the monitoring of emissions, training of administrative staff, establishing a list of installations which will fall under the EU ETS, trainings for the operators of relevant installations, preparation of accreditation activities for verifiers, etc. will need to be undertaken in the coming years.

The ECRAN project supports the design and implementation of a regional training programme targeted at the relevant stakeholders and has held a number of workshops and assisted in the preparation of guidance materials. These can be found on the following website: <http://www.ecranetwork.org/Climate/Emissions-Trading>

2.1 PLANNING AND PREPARATION

Setting out a plan and timeline of activities

- Discuss and reach an understanding with the European Commission on the **timeframe expected for the implementation of various aspects of Directive 2003/87/EC**, including setting up of the organisational structure and procedures that ensure compliance with the Directive's requirements and its compliance processes, and other steps such as the cooperation with and access to the Union Registry, the EU Auctioning Platform, setting up a system of monitoring and verification, and the drafting of the National Implementing Measures and their submission to the Commission for approval. Section 3.1 can be of assistance in planning the order and timeframe of activities.

Transposing legislation

- Develop new legislation and revise, where necessary, national and local legislation and guidelines in line with the legal provisions and guidelines issued by the Commission.

Box: Recommendation for elements of national legislation to transpose Directive 2003/87/EC

The transposition of Directive 2003/87/EC should contain at least the following elements:

- Scope (based on Annexes I and II of Directive 2003/87/EC, possibly with additional clarifying provisions on e.g. the interpretation of the term combustion installation);
- Definitions (requires mostly a simple translation of the terms used in the ETS Directive, can be supplemented with additional clarifying provisions e.g. in the case of definition of installation);
- Identification of Competent Authority and tasks of CA: permitting, penalties;
- Permitting: obligation to hold permit, legal status of permit, coordination with IED permitting, elements of application and permit, provisions for simplified monitoring for installations with emissions below 25000 tCO₂ per annum, provisions stating when CA can refuse to issue permit/when it must issue permit, validity of permit, information obligation if changes in installation, review and update of permit, conditions under which permit can be revoked, administrative charges for permitting;
- Monitoring and reporting: obligation to monitor, verify and report, with deadlines;
- Verification: obligation for accreditation, recognition of verifiers accredited in other MS;
- Allowances: legal definition of nature of allowances: The legal and fiscal treatment of emission allowances may be defined in different ways;
- Allocation: rules for free allocation with reference to relevant Commission Regulations for incumbent installations and aviation operators, identification of responsible entity for preparing draft National Implementation Measures and National Allocation Plan Tables for submission to European Commission, allocation procedure for new entrants, procedure for closed installations, procedure if significant extension or reduction in capacity;
- Information on decision for free allocation to electricity sector installations, allocation rules, rules on use of these allowances, rules for use of revenues from allowances to retrofit and upgrade installations;
- Information on decision to opt-out small installations and measures to achieve a comparable reduction in emissions;
- Rules and procedures related to the surrender of allowances;
- Information on the adoption of financial measures in favour of sectors exposed to a significant risk of carbon leakage;
- Use of auctioning revenues;
- Registry: identity of national administrator;
- Public access to information: permits, verified emissions, allocation to installations, penalties and fines, reports compiled by public authorities;
- Penalties: when penalties are applicable, types of penalties (fine, revoked permit, etc.) and level of penalty (can be contained in separate legislation);
- Identity of body responsible for reporting to European Commission;
- Rights to enact implementing regulation on e.g. the details of the greenhouse gas emissions permit, the implementing provisions of the accreditation procedure, elements of the monitoring and verification process that are not regulated in regulations at the EU level, establishing the level of penalties applicable for failures to comply with obligations, the level of administrative charges payable for permit applications, reviews and updates;
- List of Categories of Activities (Annex I of Directive 2003/87/EC);
- List of Greenhouse Gases (Annex IIa of Directive 2003/87/EC);
- Principles for Monitoring and Reporting (Annex IV of Directive 2003/87/EC);

Box: Recommendation for elements of national legislation to transpose Directive 2003/87/EC

- Criteria for Verification (Annex V of Directive 2003/87/EC).

Clarification of certain terms and more detailed legislation may be included above than what is contained in Directive 2003/87/EC. To this end, information contained in Commission Decisions and guidance documents may be used as a basis.

Setting up the institutional basis

- Allocate responsibilities for preparing the background to **policy related decision making** to ministry departments. Although the harmonised rules for allocation of allowances allow less room for manoeuvre to Member States than in previous trading periods, a number of decisions still need to be made on ETS implementation. These include:
 - Decision on transitional free allocation to installations in the electricity sector and a corresponding national plan that provides for investments in retrofitting and upgrading of the infrastructure and clean technologies and diversification of energy sources;
 - Decision on the use of auctioning revenues;
 - Decision on the exclusion of small installations and corresponding measures that will achieve an equivalent contribution to emission reductions;
 - Decision on the adoption of financial measures in favour of sectors exposed to carbon leakage;
 - Decision on the unilateral inclusion of additional activities and gases.
- Designate a **competent authority or competent authorities to implement** the Directive. The following tasks have to be allocated between competent authorities, or if there is a single authority, then preparations in terms of capacity building need to be undertaken in relation to the following tasks:
 - Tasks related to permitting, including issuance of permits following the review of monitoring plans, regular review of permits, amendment of permits, inspections at installations, etc.;
 - Collection of data on emissions and other data needed for the preparation of NIMs;
 - Issuance of allowances and cancellation of allowances which are no longer valid;
 - Review of submitted verified emission reports;
 - Making information available to the public;
 - Reporting to the European Commission.
- Designate a **national administrator** for managing user accounts in the Union registry
- Preparation of the (existing) **National Accreditation Body or National Certification Authority** for tasks related to the accreditation or certification of verifiers
- If an opt out is planned from the use of the common auctioning platform established by the Auctioning Regulation (1030/2010) then steps to prepare for **establishing an own auctioning platform**.

The primary competent authority for implementing this Directive is usually the ministry responsible for environment, or an agency for environmental protection. It is possible for other authorities to be

involved, particularly where local or regional authorities are designated as principal implementing bodies for specific elements such as the permitting of installations and the receipt of verified emission reports. Other authorities responsible for certain elements, such as accreditation and verification, will also be part of the overall framework of the implementation of the Directive and the monitoring of the compliance cycle. Other types of national bodies that may have regulatory powers and/or provide related services include environmental protection agencies, federations of industries, and trade and commerce bodies. At the regional and local level, monitoring may be carried out by sub-national or local environmental inspectorates or environment agency offices.

2.1.1 PERMITTING OF STATIONARY INSTALLATIONS (ARTICLES 4, 5, 6, 7, 8, 16 AND 26)

Annex I of Directive 2003/87/EC contains a list of categories of activities which fall under the EU ETS. The list specifies sectors and in some cases minimum capacities of installations.

There is a need to identify a list of installations which fall under the scope of Directive 2003/87/EC. There are two possible approaches to identifying a list of installations. The passive approach relies entirely on the installations to apply for a permit when the legislation on permitting is transposed into national legislation, thereby identifying themselves. The other approach which requires more activity on behalf of the authorities seeks to actively identify these installations based on available information sources and additional contact with the installations, e.g. through questionnaires. In this latter approach itemised statistical data on energy use or industrial production can be of use, or data on companies which have been registered and their activities can be of assistance. Confirmation about the activity and capacity of installations would be needed, which could be obtained through direct contact with the operator.

If implementation of the Industrial Emissions Directive is already underway then this can provide additional information, as there are significant overlaps between the installation coverage of the two directives. Generally speaking the scope of the IED is wider, however, it does not cover combustion installations between 20-50MW, therefore these would need to be identified separately.

As of 1 January 2005 (or for accession countries from the date of accession), no installation carrying out an activity listed under Annex I resulting in emissions specified in relation to that activity under the same annex can undertake that activity unless it holds a greenhouse gas emissions permit (GHGE permit or permit) issued by the competent authority. (Article 4)

It is important to emphasize that the greenhouse gas emission permit is not to be confused with the allocation. The permit is a general authorization to emit GHGs specified in the permit, without quantitatively defining any limit. The permit requires that its holder monitor and report emissions and surrender a quantity of allowances equal to the reported emissions. The allocation is a quantified amount of allowances (rights to emit) that is given to the operator of the permitted installation which may or may not correspond to the expected emissions.

In their applications for a permit, operators of installations have to submit information as required by Article 5 of the Directive, shown in the box below.

Box: Information to be included in the application for a GHGE permit

- The installation, the activities undertaken in the installation, and technology used;
- The use of raw and auxiliary materials likely to lead to emissions of GHGs;
- The sources of GHG emissions from the installation listed in Annex I;
- The planned measures for monitoring and reporting GHG emissions in accordance with the Commission guidelines referred to under Article 14;
- A non-technical summary of the above.

The above are minimum requirements specified by the Directive. National authorities may require additional information in the permit application.

The competent authority, after considering the application, may grant a permit only if it is satisfied that the operator is capable of monitoring and reporting emissions. The permit has to contain a monitoring plan that fulfils the requirements under the MRR⁵² referred to in Article 14 of the Directive. Operators shall submit any updated monitoring plans to the competent authority for approval.

A permit may authorise the emission of GHGs from all or part of the installation or from one or more installations on the same site if these are operated by the same operator. The EU ETS Directive refers in several places to "installations". The term "installation" is defined in Article 3(e) as "a stationary technical unit where one or more activities listed in Annex I are carried out and any other directly associated activities which have a technical connection with the activities carried out on that site and which could have an effect on emissions and pollution".

To facilitate the application process and to allow for a streamlined application process, competent authorities may consider providing templates for the application of the permit accompanied with more detailed guidelines on completing application forms if deemed necessary. The permitting process may raise a number of questions, particularly with respect to deciding on the boundary of an installation, especially when two installations are technically connected; on what constitutes a site; on how to address situations where there are two or more operators on the same site; on issues related to aggregation rules, etc. It is important that such issues are resolved or clarified when preparing national legislation and the competent authority should be in a position to guide operators accordingly. The UK has provided guidelines for installations which can be used as a basis.⁵³ The European Commission has also published guidelines on the Interpretation of Annex I of the EU ETS Directive (excl. aviation activities)⁵⁴ which can be of assistance in answering these questions. It is necessary to establish the boundary of the installation clearly in the permit.

Part of the application consists of a monitoring plan. Monitoring Plan templates have been developed by Member States. Monitoring plan templates are available on the DG CLIMA website.⁵⁵ In addition,

⁵² Commission Regulation (EU) No 601/2012 of 21 June 2012 on the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council

⁵³ See https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/401346/LIT_7590.pdf

⁵⁴ http://ec.europa.eu/clima/policies/ets/docs/guidance_interpretation_en.pdf

⁵⁵ See e.g. http://ec.europa.eu/clima/policies/ets/monitoring/docs/t1_mp_installations_en.xls,
http://ec.europa.eu/clima/policies/ets/monitoring/docs/t1_mp_installations_example_en.xls,
http://ec.europa.eu/clima/policies/ets/monitoring/docs/t1_mp_installations_update_example_en.xls,
http://ec.europa.eu/clima/policies/ets/monitoring/docs/t2_mp_aircraft_en.xls,
http://ec.europa.eu/clima/policies/ets/monitoring/docs/t2_mp_aircraft_tkm_en.xls.

some Member States have developed web-based application systems which makes the permitting procedure even more straightforward and easy.

Box:

Information to be included in the GHGE permit

Minimum content of a permit (Article 6)

- The operator's name and address;
- A description of the installation's activities and emissions;
- A monitoring plan (i.e. in accordance with Article 16 of the Directive and Chapter II and Annex I of the MRR);
- The reporting requirements;

The obligation to surrender allowances equal to the total emissions of the installation in each calendar year, which has to take place within four months of the end of that year.

Permits may need to be amended from time to time. An operator is obliged to inform the competent authority of any changes to the nature of the installation, or an extension or significant reduction of its capacity which may require an update of the permit, or to changes to the identity of the operator of the installation. (Article 7) Competent authorities are also obliged to review all permits at least every 5 years and make amendments if necessary.

Due to the overlaps in the scope of Directive 2003/87/EC with the Industrial Emissions Directive, Member States are to ensure that where installations require a permit under Directive 2003/87/EC but also fall within the scope of the IED, the permitting procedures and the conditions are coordinated with those of the IED (former IPPC) permit. The permitting requirements under the EU ETS Directive can be integrated into the procedures provided under the IED (Article 8). Member States must include in their legislation the amendment made by Article 26 of Directive 2003/87/EC with respect to the IED. At present, there are a few MS where permitting is done jointly for the ETS and the IED, these include Germany, France, and the Belgian federal state of Flanders. A possible approach would be to first implement the IED permits, and issue a joint IED-ETS permit where an IED installation is also under the ETS. Once this is done, the government can turn to the ETS only installations (i.e. combustion installations between 20 and 50 MW.) The feasibility of this depends on the timetable for implementation of the IED and how it fits with the timetable for harmonisation of the ETS Directive.

Directive 2009/29/EC including aviation activities in the EU ETS does not provide for the permitting of aviation operators. However, the Directive does require that aircraft operators submit a monitoring plan to the competent authority for approval. If aircraft operators are eligible for an allocation of free allowances then they must also submit a tonne-kilometre monitoring plan and then apply to its administering Member State for an allocation of allowances, by submitting verified tonne-kilometre data for the eligible aviation activities performed by the aircraft operator during the relevant monitoring year.

Tasks of countries are the following:

- Designating the Competent Authority in charge of permitting;
- Determining the permitting procedure;

- Determining a procedural fee for permitting (optional but recommended);
- Developing guidelines and templates for submitting an application for a permit, including a template for monitoring plans (optional but strongly recommended);
- Developing an IT system for permit applications (optional but recommended);
- Issuing, revoking, amending permits;
- Reviewing permits at least every 5 years;
- Conducting on-site checks at installations.

2.1.2 INCLUSION OF AVIATION INTO THE EU ETS

From the start of 2012 in principle all flights that depart from or arrive at airports in the territory of a Member State fall under the scope of ETS. The EEA-wide cap for aviation is now set at 221 420 279 tonnes of CO₂⁵⁶. Free aviation allowances have been distributed to more than 900 aircraft operators, who applied for free allocation by reporting their tonne-km data for 2010, while taking into account the existing benchmarks for the trading period starting in January 2013⁵⁷.

In November 2012 the Commission made a proposal to exempt from enforcement flights into and out of Europe operated in 2010, 2011 and 2012 to provide negotiation time for the ICAO General Assembly in autumn 2013 to reach agreement on a global market based approach on the emissions from the aviation sector. “Stopping the Clock” to allow more time for a global solution http://ec.europa.eu/clima/policies/transport/aviation/docs/com_2012_697_en.pdf

‘Regulation (EU) No 421/2014 of the European Parliament and the Council of 16 April 2014 amending the Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading within the Community, in view of the implementation by 2020 of an international agreement applying a single global market-based measure to international aviation emissions’ further prolonged the suspension of the application of the ETS to flights to or from outside the EU. This was a response to the decision in 2013 of the Assembly of the International Civil Aviation Organization (ICAO) to agreed on a roadmap for developing a global market-based mechanism to address emissions from aviation. As this mechanism is set to be developed by ICAO by 2016, this suspension of the ETS applicable to aviation also applies until 2016.

Directive 2008/101/EC sets out specific criteria to determine the identity of the administering Member State in the case of aviation.

⁵⁶ The EEA wide Cap is defined in Decision 2011/149/EU: This figure represents the average of the annual emissions for the years 2004, 2005 and 2006 of all activities covered by the scope of the legislation. The calculation of historical aviation emissions is based on data from the European Organisation for the Safety of Air Navigation and actual fuel consumption information provided by aircraft operators. Additional calculations were carried out to account for fuel consumption associated with the use of the auxiliary power units (APUs) on aircraft at airports

⁵⁷ The benchmark for each period was calculated by dividing the total annual amount of free allowances applicable to the 2012 and 2013-2020 trading periods by the sum of tonne-kilometre data included in applications by aircraft operators submitted to the Commission. The submissions by aircraft operators are based on independently verified tonne-kilometre activity data recorded throughout the 2010 calendar year.

Annex 1 to the EU ETS Directive defines the categories of aviation activities to which the Directive applies, and of which thus emissions must be monitored (as from 2010), and for which emission allowances will have to be surrendered (as from 2013 for emissions for 2012).

Some activities have been exempted from the EU ETS, the most relevant of which are the following:

- Flights operated by aircraft with a certified Maximum Take-off Weight (MTOW) of less than 5700 kg do not fall under the scheme;
- Commercial airlines are exempted from the emissions trading scheme, if:
 - They operate fewer than 243 flights per period in three successive periods of four months, or;
 - The total emission of the flights comes to less than 10,000 tonnes per year.
- They fall under some other specific exemptions, such as military flights, medical flights, rescue flights and flights operated solely in accordance with visual flight rules as defined in annex 2 to the Chicago convention.

In contrast to stationary installations, aircraft operators do not need a permit, but are also required to submit a monitoring plan to the Competent Authority. In other respects, the procedures and obligations for aircraft operators are very similar to those of stationary installations. Aircraft operators are also allocated and surrender different types of allowances than stationary installations.

Box:

Annual compliance cycle of aircraft operators

The annual compliance cycle

- submission of monitoring plan by the aircraft operator in year N-1 (e.g. 2013);
- monitoring of emissions in year N (e.g. 2014) by the aircraft operator;
- issue allowances on 28 February in year N (e.g. 2014);
- submission of the verified emission report of emissions in year N (e.g. 2014) to the competent authority in 31 March of year N+1 (e.g. 2015);
- surrender of allowances received over year N (e.g. 2014) on 30 April of year N+1 (e.g. 2015).

Aircraft operators need to comply with the requirements in the Monitoring and Reporting Regulation (MRR). If Member States decide to use electronic data exchange formats, these formats must at least contain the information contained in electronic templates or file format specifications published by the Commission. This applies for electronic standard protocol for reporting of emissions from industrial installations and the reporting of emissions and tonne-kilometres of aircraft operators and to the various templates that are being used by the Member States.

2.1.3 GUIDANCE DOCUMENTS AND TEMPLATES FOR IMPLEMENTATION OF THE MRR AND THE AVR THE STATIONARY AND THE AVIATION SECTOR

Guidance documents, templates and other tools developed for the stationary and aviation sector include⁵⁸:

- Guidance document No. 1: “The Monitoring and Reporting Regulation – General guidance for installations”. This document outlines the principles and monitoring approaches of the MRR relevant for stationary installations
- Guidance document No. 2: “The Monitoring and Reporting Regulation – General guidance for aircraft operators”. This document outlines the principles and monitoring approaches of the MRR relevant for the aviation sector. It also includes guidance on the monitoring plan templates provided by the Commission
- Guidance document No. 3: “Biomass issues in the EU ETS”: This document. Relevant for operators of installations as well as for aircraft operators.
- Guidance document No. 4: “Guidance on Uncertainty Assessment”. This document for installations gives information on assessing the uncertainty associated with the measurement equipment used, and thus helps the operator to determine whether he can comply with specific tier requirements
- Guidance document No. 5: “Guidance on Sampling and Analysis” (only for installations). This document deals with the criteria for the use of nonaccredited laboratories, development of a sampling plan, and various other related issues concerning the monitoring of emissions in the EU ETS
- Guidance document No. 6: “Data flow and control system”. This document discusses possibilities to describe data flow activities for monitoring in the EU ETS, the risk assessment as part of the control system, and examples of control activities
- The Commission furthermore provides the following electronic templates
 - Template No. 1: Monitoring plan for the emissions of stationary installations
 - Template No. 2: Monitoring plan for the emissions of aircraft operators
 - Template No. 3: Monitoring plan for the tonne-kilometre data of aircraft operators
 - Template No. 4: Annual emissions report of stationary installations
 - Template No. 5: Annual emissions report of aircraft operators
 - Template No. 6: Tonne-kilometre data report of aircraft operators
 - Template No. 7 for an improvement report for stationary installations
 - Template No. 8 for an improvement report for aircraft operators

All above documents to be found on:

⁵⁸ This list is at the current stage non-exhaustive. Further documents may be added later.

http://ec.europa.eu/clima/policies/ets/monitoring/documentation_en.htm

- Besides these documents dedicated to the MRR, a separate set of guidance documents on the A&V Regulation is available under the same address. Furthermore, the Commission has provided guidance on the scope of the EU ETS which should be consulted to decide whether an installation or part thereof should be included in the EU ETS. That guidance is available under http://ec.europa.eu/clima/policies/ets/docs/guidance_interpretation_en.pdf

Reference is made to the Annex of this fiche for more details.

2.1.4 ALLOCATION OF ALLOWANCES THROUGH BENCHMARKING AND AUCTIONING (ARTICLES 9, 10, 11 AND 13)

It is an obligation of all Member States to develop the **National Implementing Measures (NIMs)**, having regard to Article 11 of the ETS Directive and the Benchmarking Decision to ensure allocation of free allowances, taking into account Decision 2010/2 on the list of sectors with significant carbon leakage. For accession countries the NIMs have to be notified to the Commission before a deadline agreed with the Commission; this date is provisionally set at the date of accession.

Free allocation of allowances to installations is much more harmonized in the 3rd phase of the ETS than it was in the first two phases. This means that there is very little scope for Member State decision making. The primary role of Member States is to collect data necessary for determining the allocation and submitting these to the European Commission. The main areas where policy decisions need to be made, i.e. decisions which can alter the outcome of the allocation or compensate sectors for their losses are the following:

- Derogation for the electricity sector allowing transitional free allocation to electricity generators;
- Opt-out of small installations;
- Inclusion of additional sectors and gases;
- Compensation of electricity-intensive sectors for an increase in electricity cost;
- Proposals for the inclusion of additional sectors or sub-sectors on the carbon leakage list.

However, the limited scope of Member State decision making does not mean that the amount of work needed from the public administration in order to ensure that the National Allocation Table is finalised, is negligible. A large amount of resources is needed to ensure that the allocations can be finalised in time for accession.

The **steps of calculating free allocations** involve obtaining data on historical production for each product (according to the product classification of benchmarks), and multiplying the benchmark value with the historic production data of the installation for each product. The complete set of product benchmarks is contained in annexes to the Benchmarking Decision. The Commission has issued

guidelines for data collection to serve as the basis of the calculation for the purpose of the NIMs.⁵⁹ If an installation also produces products not covered by a product benchmark, additional allowances will be provided based on heat or fuel use for those product, and if applicable, also an additional allocation for process emissions which are not contained in the heat or fuel benchmark. In addition, the carbon leakage factor and/or the linear reduction factor are also applied in the calculations as required.

The **steps of determining the free allocation to installations** are the following: at first, the absolute number of free allowances is allocated for each installation by the Member States on the basis of the free allocation rules in the draft NIMs. The Member States submit the resulting NIMs to the Commission for approval. The Commission may accept the NIMs or may reject the list of installations and/or the calculated allocations. The Commission may also launch infringement procedures against a Member State deemed to be in breach of the harmonised rules. After all the planned allocations for installations in all Member States have been checked, the Commission calculates the cross-sectoral correction factor. On this basis Member States can take final allocation decisions and issue the allowances.

As a general rule, no allowances are allocated free of charge for electricity production, however, limited and temporary derogations exist mainly for the new Member States and some of the candidate countries. Candidate countries can consider making use of temporary derogations in order to prepare better for a fully functional system in their own country. For instance, **derogations for the power sector** whereby free allowances can be allocated to the sector for a transitional period have been approved by the Commission for Hungary, Poland, Bulgaria, Czech Republic, Romania, Cyprus, Estonia and Lithuania. However, the costs and benefits of such a decision need to be carefully weighed. It needs to be kept in mind that a free allocation to the power sector results in a loss of revenue of the same magnitude to the state, as the allowances which are allocated free of charge could otherwise be auctioned. In addition, where such derogations are granted, the candidate countries have to put in place strict monitoring and enforcement rules to ensure that the economic value of free allowances is at least mirrored, if not exceeded, by a corresponding amount of investments in modernising their electricity generation. However, the derogation can contribute to keeping electricity prices lower than would be the case without a derogation.

The **opt-out of small installations**, i.e. installations with emissions of less than 25,000 tonnes of carbon dioxide equivalent excluding emissions from biomass, and, for installations carrying out combustion activities, have a rated thermal input below 35 MW, is allowed. When making a decision on whether to opt-out small installations and which installations the opt-out should apply to, it needs to be considered that the costs of participation of small installations can be high compared with the emission reduction achieved, resulting in high costs per tonne of CO₂ reduced, and the competitiveness of small and medium enterprises may also be affected by this undue burden. Some sectors are particularly exposed to high administrative burdens compared with the size of the enterprise, e.g. in the ceramics sector small local producers of bricks may be affected. The Member State may take the decision to opt-out small installations automatically or it can set up a scheme whereby small installations can apply for an opt-out. These small installations also need to be included in the NIMs to enable the Commission to check whether the opt-out is in line with the Directive. An alternative scheme which guarantees equivalent emission reductions has to be put in place in case of an opt-out.

⁵⁹ http://ec.europa.eu/clima/policies/ets/cap/allocation/docs/gd3_data_collection_en.pdf

It is possible to **include additional installations** under the ETS which are not mandated by the Directive, i.e. is not listed in Annex I. This requires approval from the Commission and allocations must be included in the National Implementation Plans. It is essential that the installations which are included be able to monitor and report their emissions as the current scope of the Directive has been developed with the environmental integrity and reliability of the monitoring and reporting system. Such a move may also require amendments to the monitoring and reporting obligations, which have to be approved by the Climate Change Committee as per the procedure under Article 23 of the Directive. Given that the procedure for including additional installations is complex and administrative capacities in accession countries are limited, it is recommended that these countries focus on implementing obligatory requirements of the Directive instead of taking on additional commitments.

Member States may consider whether to **compensate the most electricity intensive sectors** for increases in electricity costs resulting from the ETS through national state aid schemes, taking into account the new Environmental State Aid Guidelines. The costs and benefits of compensation need to be assessed, including the financial costs of compensation and the impact on competitiveness.

In addition, Member States may also **initiate that sectors be included on the carbon leakage list**. A sector or subsector will be deemed to be exposed to a significant risk of carbon leakage where it meets the criteria set out in Article 10a, paragraphs 14 to 17.

Obligations of Member States relate to the following:

- Data collection and calculation as a basis for the NIMs;
- Making final decision on allocation of allowances based on approved NIMs and cross-sectoral correction factor;
- Issuance of allowances each year;
- Making decisions related to the derogation for the electricity sector allowing transitional free allocation to electricity generators;
- Making decisions related to the opt-out of small installations;
- Making decisions related to the inclusion of additional sectors and gases;
- Making decisions related to the compensation of electricity-intensive sectors for an increase in electricity cost;
- Making decisions related to the proposals for the inclusion of additional sectors or sub-sectors on the carbon leakage list.

The volume of **allowances to be auctioned** each calendar year as from 2013 shall be based on the Commission's determination and publication pursuant to Article 10 (1) of the ETS Directive of the estimated amount of units to be auctioned.

Obligations of Member States relate to the following:

- where a separate auctioning platform is planned ensure that it is planned and operated in a way to ensure full compliance with the objectives of the ETS Directive and with the provisions and meaning of the Auctioning Regulation (1031/2010) regarding all the aspects for the auctioning platforms for the third auctioning period commencing in 2013;
- the competent authority shall cooperate with the Commission in the establishment of an auctioning platform comprising fair public procurement procedures.

2.1.5 REGISTRY (ARTICLES 19 AND 20)

The Union registry is operational since July 2012, and therefore, unlike in previous periods, Member States do not have the obligation to run a separate national registry on their own IT systems. Member States are still required to manage account openings and closings and allocations for the accounts that belong to them in the Union registry. This is to be done by a National Administrator (typically located in the ministry of environment or environmental agency.) These management tasks require advanced user-level skills of the Union registry application, but no specific IT-expertise.

2.1.6 MONITORING AND REPORTING (ARTICLE 14 AND ANNEX IV)

Monitoring, reporting and verification of emissions should be implemented in accordance with Regulation EU 601/2012 on the monitoring and reporting of emissions (MRR) and Regulation EU No 600/2012 on the verification of emissions and accreditation of verifiers (AVR). After the date of accession, the competent authority must ensure that the monitoring and reporting of greenhouse gas emissions by operators of installations and aircraft operators is in accordance with the criteria and technical specifications set out in Annex IV and V to Directive 2003/87/EC and the MRR and AVR. The Monitoring Plan of installations and aircraft operators serves as the basis of their monitoring activity. For stationary installations the monitoring plan is prepared by the installations and approved by the Competent Authority as part of the permitting procedure. Aircraft operators do not have to apply for permits but must nevertheless submit a monitoring plan.

It is highly advisable to start the monitoring of emissions early on to ensure that by the date of accession installations and aircraft operators have experience in monitoring. Therefore, it is advised to have at least one year of monitoring, reporting and verification prior to accession.

The annual procedure of ensuring the proper monitoring, reporting and verification (MRV) of the emissions, as well as all processes connected to these activities, are known as the “**compliance cycle**” of the EU ETS. The compliance cycle consists of the following elements:

- Industrial installations and aircraft operators covered by the EU ETS are required to have an **approved monitoring plan**, according to which they monitor and report their emissions during the year. For industrial installations, the monitoring plan forms part of the approved GHG emission permit as defined by Article 4 and issued in accordance with Articles 5 and 6 of Directive 2003/87/EC.
- During every year of operation, industrial installations and aircraft operators **monitor their emissions** as is set out in their approved monitoring plans.
- Once the year has ended, the installations and the aircraft operators have to **draft an emission report** in which they report their emissions that have been monitored and recorded according to the requirements and procedures specified in the approved monitoring plan.
- A crucial next step in the emissions trading compliance cycle is the **verification of emission reports** prepared by the operators. The objective of verification is to ensure that emissions have been

accurately monitored and reported in full accordance with the requirements of the MRR and that reliable and correct emissions data are reported according to Article 14(3) and Annex IV of Directive 2003/87/EC. The data in the annual emissions report must be verified before 31 March each year by an accredited verifier.

- Once verified, operators must **surrender the equivalent number of allowances** by 30 April of the same year.

The table below summarises the common timeline of the annual ETS Compliance cycle for emissions in year N as specified in the MRR.

Table. Common timeline of the Annual ETS Compliance cycle for emissions in year N as specified in the MRR

When?	Who?	What?
Not specified by MRR but common sense suggests before 31 December N-1	Competent Authority	Approve Monitoring Plan (aviation and installations) and issue permit (in case of installations)
1 January N		Start of the Monitoring period
By 28 February N	Competent Authority	Allocation of allowances for free (if applicable) into the Operator's account in the Registry
31 December N		End of the monitoring period ⁶⁰
31 March N+1 ⁶¹	Verifier	Finalise the verification of the emission report and issue verification report to the operator
31 March N+1 ¹⁷	Operators	Submit the verified annual emissions report
31 March N+1	Operators/Verifier	Enter the verified emissions figure in the verified emissions table of the Union Registry
March – April N+1	Competent Authority	Subject to national legislation, possible spot checks of submitted annual reports. Require corrections by the operator if applicable.

⁶⁰ Although usually not considered part of the compliance cycle, it may be useful to note that by 31 December the operator has to submit information about changes to the installation's capacity, activity level and operation, if applicable. This is a new element based on Article 24(1) of the CIMs. This notification is applicable for the first time in December 2012.

⁶¹ According to Article 67(1) of the MRR, competent authorities may require operators or aircraft operators to submit the verified annual emission report earlier than by 31 March, but by 28 February at the earliest.

When?	Who?	What?
30 April N+1	Operator	Surrender allowances (amount corresponding to verified annual emissions) in Registry system
30 June N+1	Operator	Submit report on possible improvements of the Monitoring Plan, if applicable ⁶²
(No specified deadline)	Competent Authority	Carry out further checks on submitted annual emissions reports, where considered necessary or as may be required by national legislation; require changes of the emissions data and surrender of additional allowances, if applicable (in accordance with Member State legislation).

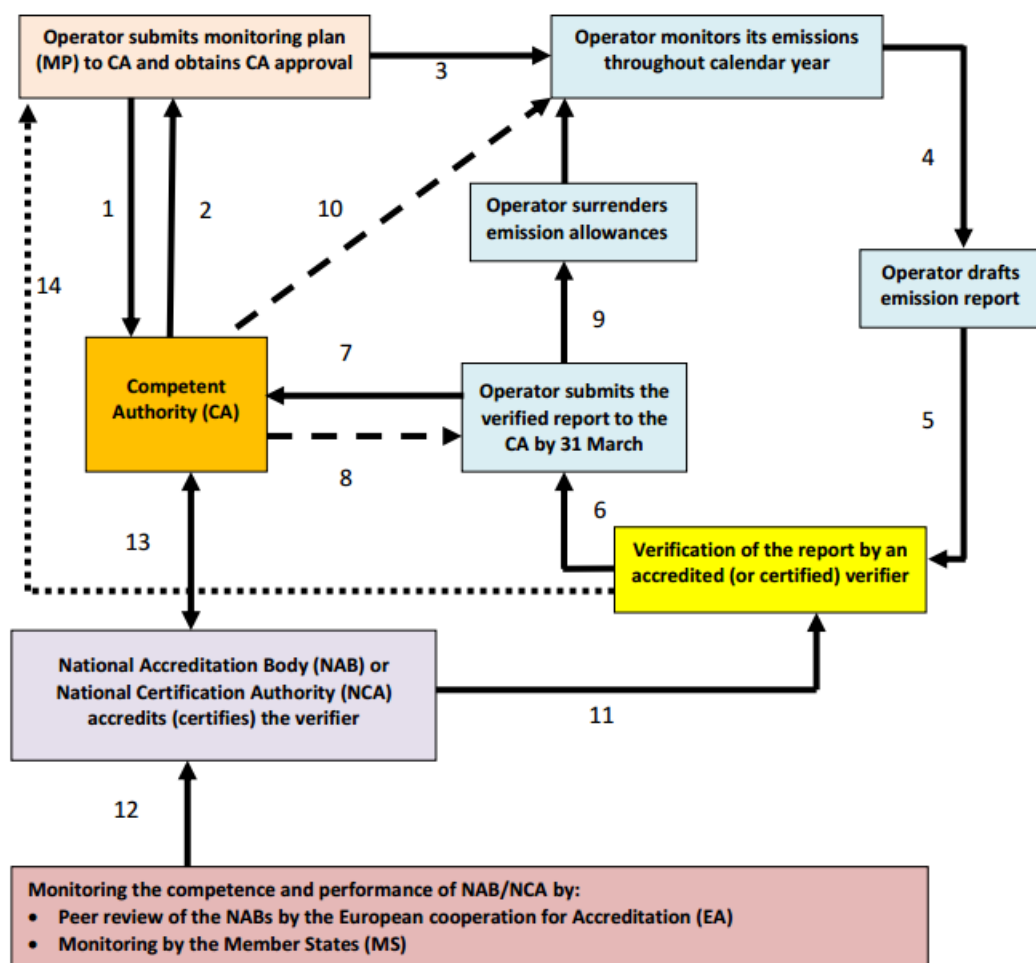
Source: EC (2012) Guidance Document. The Monitoring and Reporting Regulation – General guidance for installations. MRR Guidance Document No. 1, Version of 16 July 2012⁶³

The roles and responsibilities of each party involved in the compliance cycle are set out in the figure below.

⁶² There are two different types of improvement reports pursuant to Article 69 of the MRR. One is to be submitted in the year where a verifier reports improvement recommendations, and the other (which may be combined with the first, if applicable) every year for category C installations, every two years for category B, and every four years for category A installations. For categorisation, see Article 19 of the MRR. The CA may set a different deadline, but no later than 30 September of that year.

⁶³ http://ec.europa.eu/clima/policies/ets/monitoring/docs/gd1_guidance_installations_en.pdf

Figure: Roles and responsibilities of parties in the compliance cycle



Source: Guidance Document. The Accreditation and Verification Regulation - Explanatory Guidance

AVR Explanatory Guidance (EGD I), Version of 19 September 2012⁶⁴

Templates developed for the Annual Emissions Report can facilitate the process by which the operators have to structure, collect and present the information. The Competent Authority shall decide whether the use of electronic templates⁶⁵ is required and/or the reporting of the emissions or the use of other customised templates that contain at least the same data input. All templates developed by the European Commission to support the compliance process of the EU ETS can be downloaded from the following link: http://ec.europa.eu/clima/policies/ets/monitoring/documentation_en.htm

IT solutions can be developed to assist monitoring and reporting. This is not obligatory, and in some Member States, e.g. in Romania, submitting and compiling data is done manually. It can however save human resources in the public administration if companies input data directly into governmental systems. A number of systems can be used for this purpose: Finland and Hungary use FINETS, the UK,

⁶⁴ http://ec.europa.eu/clima/policies/ets/monitoring/docs/exp_guidance_1_en.pdf

⁶⁵ OJ C 261 p.4

Ireland and Wallonia use ETSWAP. Back in 2005, Slovenia developed its own IT system. The Commission is developing an IT system (DECLARE) to support those MS that do not yet have their own IT system. It is still in the development stage, and it should be ready by the 2nd half of 2016. Finally, the Belgian federal state of Flanders has a combined IT-reporting system for IED and ETS.

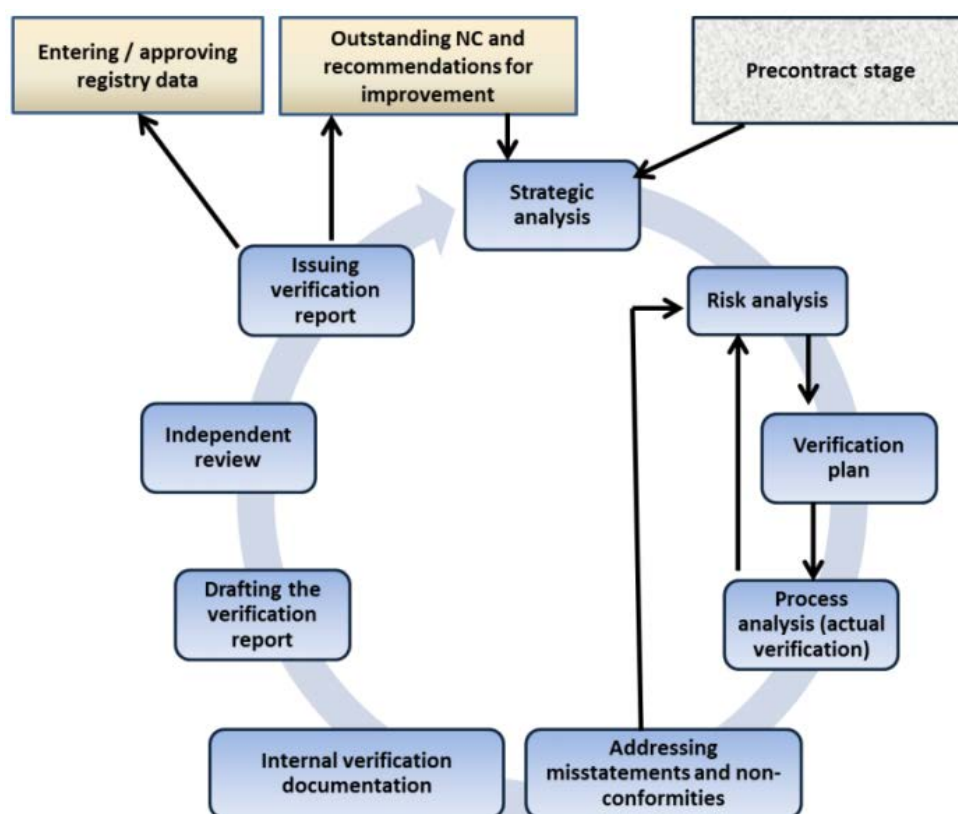
There are also linkages between monitoring and the EU Energy Efficiency Directive (EED) as the monitoring of emissions is useful for understanding the energy use profile of large installations. The EED requires all European companies larger than SMEs to carry out energy audits every four years by the end of 2015. The expectation is that these audits will help companies in identifying and exploiting energy saving opportunities within their operations.

2.1.7 VERIFICATION AND ACCREDITATION (ARTICLE 15 AND ANNEX V)

Member States must ensure that the institutional structure and procedure are in place for the accreditation or certification of verifiers. The National Accreditation Body or the National Certification Authority needs to carry out the tasks related to the accreditation or certification of verifiers.

Accredited or certified verifiers must then carry out their activity of verification of emission reports on an annual basis. The steps of the verification process are shown in the figure below.

Figure: Steps of the verification process



Source: Guidance Document. The Accreditation and Verification Regulation - Explanatory Guidance

AVR Explanatory Guidance (EGD I), Version of 19 September 2012

Guidance notes and templates relevant to verification are provided on the DG CLIMA website under the following link: http://ec.europa.eu/clima/policies/ets/monitoring/documentation_en.htm

Each applicant verifier will be assessed for compliance with the AVR requirements and the harmonised standard pursuant to Regulation (EC) No 765/2008 concerning requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition, i.e. EN ISO 14065, and further associated EA & IAF Guidance documents EA-6/03 and IAF GD5: 2006 EA-6/03 is being revised and will come available on the website of the European cooperation for Accreditation g(EA) <http://www.european-accreditation.org/>.

2.1.8 PENALTIES (ARTICLE 16)

The competent authority must lay down rules on penalties applicable to infringements of the EU ETS Directive and ensure that these penalties are established in the national legislation. Those penalties must be effective, proportionate and dissuasive.

One penalty, the penalty for failure of installations and operators to surrender sufficient allowances by 30 April of each year to cover verified emissions during the preceding year is already set out in Directive 2003/87/EC. The level of this penalty is EUR 100 (to be adjusted for inflation) for each tonne of carbon dioxide equivalent emitted by the operators of installations or aircraft operators for which they have not surrendered in time. It should be noted that the penalty does not cancel the initial obligation to carry out the surrender later.

Another set of provisions regulates the procedures that a Member State may initiate in order to request an EU-wide operating ban for an aircraft operator that does not comply with its obligations under the Directive.

However, other penalties for non-compliance of operators with their obligations as set out in the Directive need to be legislated by Member States. The most relevant obligations are:

- emitting GHGs without a valid permit;
- failure to submit a verified monitoring report by the deadline specified in the statute;
- submission of false information in the report;
- a failure to notify the competent authority of relevant changes to the installation or to the operator.

As enforcement is a Member State responsibility, the penalties created under this provision should fit into the penalty and enforcement structure of the Member State.

2.1.9 PUBLIC PARTICIPATION AND ACCESS TO INFORMATION (ARTICLES 17 AND 19)

National legislation shall give the public the **right to access to information** in accordance with Directive 2003/4/EC⁶⁶. This includes the right to access of information on decisions relating to the allocation of allowances as well as the right to access emission reports.

Access to information requirements also relate to:

- Public access to the Union Registry (Article 19);
- Option to exclude small emitters (Article 27), including making information public and consulting with the public;
- Information on the implementation of investments of electricity generators and network operators referred to in the national plan (Article 10c);
- Selection of demonstration projects on carbon capture and storage (CCS) and renewable energy demonstration projects stimulated by making available up to 300 million allowances in the new entrant's reserve (Art 10(a), 8th paragraph);
- Names of operators and aircraft operators who are in breach of requirements to surrender sufficient allowances has to be published (Article 16).

At the same time there is a need to comply with all the public participation and access to environmental information set out in other, more specific legislation, such as the EIA Directive and the IED.

2.1.10 TRAINING AND CAPACITY BUILDING

Readers who have read the whole chapter on emissions trading so far will realise that the requirements are not easy to understand and complex. Activities should devise communication and information exchange strategies and campaigns with respect to the implications of the Directive for major stakeholders, civil society and social partners to ensure that all stakeholders become aware and informed of the new requirements.

Competent authorities **and operators of installations, aircraft operators and potential verifiers** must be endowed with the necessary capacity to fulfil the requirements under the Directive within the appropriate time-frames and on a permanent basis.

It is therefore strongly advised to design and implement a training programme targeted at the above stakeholders on at least the following subjects:

⁶⁶ Directive 2003/4/EC of the European Parliament and of the Council of 28 January 2003 on public access to information and repealing Council Directive 90/313/EEC, OJ L41, 14.2.2003.

- **General Training** on the Emissions Trading Directive and its implementing provisions;
- Targeted **technical training** on the drafting of monitoring plans, tonne-kilometre monitoring plans, emissions reports and the reporting of tonne-kilometre data;
- Planning and operating of the auctioning platform (if the common platform is not used);
- Duties in relation to being a national administrator in the Union Registry;
- Also provide training in communication skills for officers who have to interact on a regular basis with operators and who will handle requests for more information and queries by the public and industry.
- Provide guidelines and other forms of guidance for stakeholders, particularly for operators, to clarify the requirements of the Directive and its implementing provisions related to e.g. monitoring, reporting, verification and surrender of allowances.

2.2 REPORTING

Member States are required to report on the application of the EU ETS Directive (Article 21). To facilitate the compilation of national reports and to ensure harmonised reporting, a template for a questionnaire is set out in Decision (2014/166/EU). These reports provide further useful data on the implementation of the scheme, including in respect of elements not directly addressed by legal provisions but that are of particular interest from a national implementation point of view, such as fees applicable under national provisions or the manner in which allowances are treated from a financial perspective.⁶⁷ These reports can be accessed from the website of the European Environment Agency. The Article 21 questionnaire is presently being revised and updated to the revised Directive and the various Regulations to support the EU ETS.

⁶⁷ Application of the Emissions Trading Directive by EU Member States — reporting year 2002/2014, Technical report No 3/2015. Available at: <http://www.eea.europa.eu/publications/application-of-the-eu-emissions>

3. IMPLEMENTATION CONSIDERATIONS

DG CLIMA has produced guidance and other support services to help the Member States and candidate countries in their implementation of the EU ETS. Candidate countries should consult all this guidance within the EU and they are also advised to keep abreast with international initiatives such as the International Carbon Action Partnership (ICAP), which provides a forum for sharing experiences and knowledge in the development of carbon markets through cap and trade systems.

Care has to be taken when searching the website of DG CLIMA for information as some of the information (e.g. Q&As and guidance documents) are out of date. Candidate countries should solely focus on the ETS in its form from 2013, taking into account the proposed changes for Phase IV. Rules which were applicable only during the first two trading periods need to be ignored.

3.1 KEY TASKS

The key tasks involved in implementing Directive 2003/87/EC and its complementary legislation are **summarised** in the checklist below. The tasks are arranged under subheadings and organised in chronological order of implementation wherever possible.

The tasks are related to **initial implementation** related to setting up of the ETS and do not contain all rules which will need to be applied after the ETS is up and running. The list below is a checklist targeted at public authorities and therefore **does not contain in detail the obligations of operators**.

Table Key tasks in implementation of Directive 2003/87/EC and its complementary legislation

1	Planning and Preparation
1.1	<p>Develop a plan and timeframe for implementation based on agreement with the European Commission on the timeframes expected for the implementation of various aspects of Directive 2003/87/EC. The focus should include capacity building, administrative, institutional and communication activities.</p> <p>Costs should be estimated. Based on the principle of better Regulation intrinsic to the <i>acquis communautaire</i>, competent authorities should assess the costs related to implementing the Directive at a national level.</p>
1.2	Identify areas for legislative action including transposition of Directive 2003/87/EC and implementing legislation.
1.3	<p>Allocate responsibilities for preparing the background to policy related decision making to ministry departments. Although the harmonised rules for allocation of allowances allow less room for manoeuvre to Member States than in previous trading periods, a number of decisions still need to be made on ETS implementation. These include:</p>

	<ul style="list-style-type: none"> Decision on transitional free allocation to installations in the electricity sector and a corresponding national plan that provides for investments in retrofitting and upgrading of the infrastructure and clean technologies and diversification of energy sources 2020; Decision on the use of auctioning revenues; Decision on the exclusion of small installations and corresponding measures that will achieve an equivalent contribution to emission reductions; Decision on the adoption of financial measures in favour of sectors exposed to carbon leakage; Decision on the unilateral inclusion of additional activities and gases.
1.4	<p>Designate a competent authority or competent authorities to <i>implement</i> the Directive. The following tasks have to be allocated between competent authorities, or if there is a single authority, then preparations in terms of capacity building need to be undertaken in relation to the following tasks:</p> <ul style="list-style-type: none"> Tasks related to permitting, including issuance of permits following the review of monitoring plans, regular review of permits, amendment of permits, inspections at installations, etc.; Collection of data on emissions and other data needed for the preparation of NIMs; Issuance of allowances and cancellation of allowances which are no longer valid; Review of submitted verified emission reports; Making information available to the public; Reporting to the European Commission. <p>Ensure coordination of permitting with the permitting process under the Industrial Emission Directive (Article 8 of the EU ETS Directive).</p> <p>Where more than one competent authority is responsible for the implementation of a particular element of the Directive, organise meetings to ensure the application of harmonised procedures and systems as far as is technically and legally possible. The cooperation of individual competent authorities with the entity having overall responsibility for particular elements of the Directive, such as the compilation of the Article 21 report, is important.</p>
1.5	<p>Make other institutional arrangements:</p> <ul style="list-style-type: none"> Designate a national administrator for managing user accounts in the registry; Preparation of the (existing) National Accreditation Body or National Certification Authority for tasks related to the accreditation or certification of verifiers; If an opt out is planned from the use of the common auctioning platform established by the Auctioning Regulation (1030/2010) then steps to prepare for establishing an own auctioning platform.
1.6	<p>Put into place a proper coordination and communication framework for the work between these authorities also linking into the work carried out by competent authorities for other relevant EU measures, e.g. the IED, EIA Directive, Directives on public participation and access to environmental information as well as with the national focal points involved in the fulfilling greenhouse gas emission requirements under the international framework (Kyoto Protocol and its expected successor).</p>

1.7	Competent authorities should assess capacity-building requirements for the implementation of the scheme, both in respect of public authorities and also in respect of operators. For the public authorities, capacity requirements need to take account of ministries, the competent authority, national administrator, and the National Accreditation Body or National Certification Authority.
1.8	Devise information campaigns with respect to the implications of the Directive among stakeholders and the public.
1.9	Make a decision regarding the transitional free allocation to installations in the electricity sector and a corresponding national plan that provides for investments in retrofitting and upgrading of the infrastructure and clean technologies and diversification of energy sources 2020.
1.10	Consider whether to compensate the sectors determined to be exposed to a significant risk of carbon leakage due to the costs relating to GHG emissions passed on in electricity prices resulting from the ETS through national state aid schemes pursuant to the revised Environmental State Aid Guidelines.
1.11	Make a decision on the use of auctioning revenues , include rules in national legislation and set up necessary institutional background for dispersing funding.
1.12	Make decision on the exclusion of small installations and corresponding measures that will achieve an equivalent contribution to emission reductions, include rules in national legislation.
1.13	Make decision on the unilateral inclusion of additional activities and gases , include rules in national legislation if needed.
1.14	Plan the introduction of the auctioning system and platform based on the provisions of the Auctioning Regulation (1031/2010, as amended). Consider whether to opt out of the common auctioning platform, based on the Auctioning Regulation (1031/2010, as amended), and instead develop own platform or to use the common EU auctioning platform (recommended).
1.15	Assessing, on the basis of Decision 2010/2 listing the sectors and sub-sectors which are considered particularly carbon leakage prone , the installations which might receive emission allowances free of charge provided that the common efficiency benchmarks are fulfilled. Submit the list to the Commission at the date of accession for approval.
1.16	If an opt out of the common auctioning platform is chosen (not recommended) then assess the national laws and procedures, including those on public procurement, to consider possible amendments and changes to ensure full implementation of certain articles of the Auctioning Regulation (No 1031/2010) and to make it possible for potential candidates to participate in the joint procurement procedure for the appointment of the common platform and perform the resulting contract.
2	Implementation – Permitting Articles
2.1	Designate Competent Authority to carry out permitting procedures

2.2	Raise awareness of the need for a permit, including identifying list of installations and communicating with operators of installations (recommended but not obligatory). With effect from the date of accession, all installations and relevant aviation operators carrying out any of the activities listed in Annex I to this Directive and emitting the specific greenhouse gases associated with that activity must be in possession of an appropriate GHG permit issued by the competent authorities.
2.3	Develop procedures, guidelines and templates for permit applications, including for the monitoring plan (highly recommended but not obligatory). Develop procedures and guidelines for applications to modify permit and/or monitoring plan. It is recommended that candidate countries allow sufficient time for competent authorities to be in a position to scrutinise permit applications and monitoring and reporting plans submitted by operators and to issue permits in time for the commencement of the participation of the installations in the scheme upon accession. This will of course depend on the number of installations expected to require a greenhouse gas emissions permit and the resources available.
2.4	Develop IT systems for permit applications (recommended but not obligatory). Applications for greenhouse gas emissions permits must provide a description of the installation, its activities, the technology used the materials used that could emit the greenhouse gases listed in Annex II, the sources of greenhouse gas emissions, and the measures to be adopted to monitor and report emissions.
2.5	Build capacity in Competent Authority to carry out permitting procedure. The authorities need to have the technical capacity to check the monitoring plans submitted by installations and operators. The authorities will issue a permit provided that they are satisfied that the operator of the installation is capable of monitoring and reporting the emissions. The permit must provide details of the name and address of the operator; the installation's activities and emissions; the monitoring methodology and frequency as approved by the competent authority; the reporting requirements in respect of emissions; and the obligation to surrender, during the first four months of each year, a quantity of allowances commensurate with the total emissions for the previous year.
2.6	Ensure capacity for enforcement, to enable Competent Authority to be able to carry out spot checks of emission reports and on-site checks of installations.
2.7	Ensure capacity to check annual compliance. Each year, no later than 30 April, competent authorities shall ensure that the operators of installations surrender the correct quantity of allowances commensurate with the total emissions over the previous year. The surrendered allowances are to be cancelled.
3	Implementation Allocation and Issuing of allowances – Articles 10, 11 and 13 EU-ETS Directive
3.1	Where a separate auctioning platform is planned (not recommended) ensure that it is planned and operated in a way to ensure full compliance with the objectives of the ETS Directive and the provisions and meaning of the Auctioning Regulation (1031/2010) regarding all the aspects for the auctioning platforms for the third auctioning period commencing in 2013.

3.2	<p>Competent authority shall cooperate with the Commission in the establishment of an auctioning platform comprising fair public procurement procedures:</p> <ul style="list-style-type: none"> ▪ Ensure that auctions are conducted in an open, transparent, harmonised and non-discriminatory manner and the process is predictable; ▪ Ensure that auctions are designed to ensure full, fair and equitable access for small and medium sized enterprises covered by the EU ETS and small emitters; ▪ Ensure that participants have access to the same information at the same time and an appropriate legal framework should be in place to minimise any risk of money laundering, terrorist financing, financial crime, insider dealing and market manipulation; ▪ Ensure that the organisation and participation in auctions is cost-efficient and that undue administrative cost is avoided.
3.3	<p>Develop the National Implementing Measures, having regard to Art. 11 of the ETS Directive and the Benchmarking Decision in the proposed allocation of free allowances taking into account Decision 2010/2 on list of sectors with significant carbon leakage. For accession countries the NIMs have to be notified to the Commission before a given deadline agreed with the Commission.</p> <p>To develop NIMs, ensure:</p> <ul style="list-style-type: none"> ▪ All relevant installations have been identified; ▪ Data has been collected from installations based on Commission guidelines, including application of the benchmark values as well as the carbon leakage factor and the linear reduction factor; ▪ Calculations have been made in accordance with the Directive; ▪ Calculations take into consideration decisions made on opt-out of small installations, inclusion of additional installations, and derogation for the electricity sector; ▪ the existence of installations in a sector or sub-sector which are deemed to be exposed to a significant risk of carbon leakage; ▪ Submit NIMs to Commission.
3.4	<p>Calculate National Allocation Table based on approval from Commission of NIMs and the cross-sectoral correction factor.</p>
3.5	<p>Publish decision on National Allocation Table following Commission approval.</p>
3.6	<p>Issue by 28 February of each year the quantity of allowances that are to be allocated for that year. The calculations have to be in accordance with Articles 10, 10a and 10c of the EU ETS Directive.</p>
4	<p>Registry (Art. 19 and Art 20 EU ETS Directive)</p>
4.1	<p>All transactions involving allowances take place via the Union registry. The national administrator should be ready to handle account opening requests from the date of accession. As account opening involves verifying documents, it is not a trivial task, but one that requires substantial administrative resources at the beginning.</p>

5	Monitoring and Reporting - Articles 14 and Annex IV of the EU – ETS Directive
5.1	<p>Before the accession date it is highly advisable to start a process of voluntary or obligatory monitoring of emissions by aircraft operators and installations in year N (on the basis of an approved Monitoring Plan submitted in year N-1) and subsequent verification of an emission report in March of year N+1.</p> <p>The above should be implemented in accordance with the Regulation (EU) 601/2012 on the monitoring and reporting of emissions (MRR Regulation) and Regulation (EU) 600/2012 on the verification of emissions and accreditation of verifiers (AVR).</p>
5.2	<p>Provide templates for monitoring and reporting. All templates developed by the European Commission to support the compliance process of the EU ETS can be downloaded from the following link: http://ec.europa.eu/clima/policies/ets/monitoring/documentation_en.htm</p>
5.3	<p>Develop an IT solution for monitoring and reporting or (preferable) use existing solutions, e.g. FINETS, ETSWAP or DECLARE.</p>
5.4	<p>Ensure a robust, simplified, transparent, consistent and accurate monitoring, reporting and verification (MRV) – the so-called compliance cycle - to safeguard the effective operation of the Emissions Trading System, comprising:</p> <ul style="list-style-type: none"> ▪ Submission of monitoring report by operator in year N-1 (e.g. 2013); ▪ Monitoring of emissions in year N (e.g. 2014) by operator; ▪ Issue allowances on 28 February in year N (e.g. 2014); ▪ Verified emission report of emissions in year N (e.g. 2014) submitted to the competent authority in 31 March of year N+1 (e.g. 2015); ▪ Surrender of allowances received over year N (e.g. 2014) on 30 April of year N+1 (e.g. 2015).
6	Verification and Accreditation - Article 15 and Annex V of the EU – ETS Directive
6.1	<p>Ensure that capacity is available at the National Accreditation Body or National Certification Authority to conduct accreditation or certification of</p>
6.2	<p>Ensure rules and procedures for accreditation for verifiers. This may be done in a separate implementing legislation, taking into account issues which are already set out in the AVR. Each applicant verifier will need to be assessed for compliance with EN45011 and associated EA & IAF Guidance documents EA-6/03 and IAF GD5: 2006 EA-6/03 is available from http://www.european-accreditation.org/ and provides guidance for Recognition of Verification Bodies under EU ETS Directive.</p>
7	Penalties - Article 16 EU-ETS Directive
7.1	<p>Ensure that rules and procedures for application of penalties as well as the type and size of penalties is set out in legislation. This may be done in a separate implementing legislation. Penalties should focus at least on the following:</p> <ul style="list-style-type: none"> ▪ emitting GHGs without a valid permit;

	<ul style="list-style-type: none"> ▪ failure to submit a verified monitoring report by the deadline specified in the statute; ▪ submission of false information in the report; ▪ a failure to notify the competent authority of relevant changes to the installation or to the operator.
8	Public participation and access to information - Articles 17 and 19 EU-ETS Directive
8.1	Ensure that procedures are in place for public access to decisions relating to the allocation of allowances and emission reports.
8.2	<p>Ensure procedures for access to information in relation to:</p> <ul style="list-style-type: none"> ▪ Public access to the Union Registry (Article 19); ▪ Option to exclude small emitters (Article 27), including making information public and consulting with the public; ▪ Information on the implementation of investments of electricity generators and network operators referred to in the national plan (Article 10c); ▪ Selection of demonstration projects on carbon capture and storage (CCS) and renewable energy demonstration projects stimulated by making available up to 300 million allowances in the new entrant's reserve (Art 10(a), 8th paragraph); ▪ names of operators and aircraft operators who are in breach of requirements to surrender sufficient allowances has to be published (Article 16).
9	Training and capacity Building (Not required by Directive but strongly advised)
9.1	<p>It is advised to design and implement a training programme targeted at the above stakeholders on at least the following subjects:</p> <ul style="list-style-type: none"> ▪ General Training on the Emissions Trading Directive and implementing provisions; ▪ Targeted technical training on monitoring plans and emissions reports and reporting on tonne-kilometre data; ▪ Planning and operating of the auctioning platform; ▪ Duties in relation to managing accounts in the Union registry. <p>Also provide training in communication skills for officers who have to interact on a regular basis with operators and who will handle requests for more information and queries by the public and industry.</p> <p>Provide guidelines and other forms of guidance for stakeholders, particularly for operators, to clarify the requirements of the Directive and its implementing provisions</p>
10	Member State Reporting
10.1	Designate the entity that will be responsible for collecting the information required to compile the annual Member State report under Article 21, establishing the structures required to facilitate collection of data, especially where a large number of competent authorities are responsible for implementing parts of the Directive.

10.2	Ensure capacity to report each year , not later than 30 June, Member States shall submit to the Commission a report (under Article 21) on the application of this Directive.
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3.2 PHASING CONSIDERATIONS

There are a large number of linked tasks which need to be carried out before the ETS can be implemented in the accession and candidate countries. The handbook proposes some deadlines which reflect ideal circumstances, and provide maximum time for all institutions and stakeholders to prepare for the implementation of the ETS. It is clear that due to limited capacities the ideal timing of tasks related to implementation may not be feasible in some countries.

As a first step a body has to be assigned with the tasks of the initial coordination of setting up the ETS. This may not be the same body which will finally be tasked with e.g. carrying out the tasks of the competent authority.

As a step towards identifying the list of installations which belong under the ETS scheme, gathering information currently available to the public administration should be carried out. This involves a review of databases and environmental permits and other sources of information which may provide information on sectors and capacities of installations in the country.

After the identification of installations, building up capacities of stakeholders needs to follow. This can involve provision of trainings and guidance materials which familiarise stakeholders with e.g. the architecture and functioning of the ETS, the compliance cycle and monitoring and reporting requirements, how to participate in trading of allowances, etc.

In parallel, transposition of legislation (to become effective on 1st day of accession) should begin. It is advised that the legislation is published approximately 1.5-2 years prior to accession, in order to provide information for installations and other stakeholders. The legislation should refer directly to all regulations and Commission Decisions, and prepare additional guidance materials which build on existing EU guidelines. The national legislation should ensure that to the extent possible, permitting is integrated with IED permitting.

The allocation of responsibilities needs to be done in the legislation transposing Directive 2003/87/EC. The necessary resources must also be estimated and made available to the bodies which have been tasked with implementing various elements of the ETS, e.g. the Competent Authority, national administrator and National Accreditation Board or National Certification Authority.

The preparation of guidance materials and templates for monitoring, reporting and verification should also take place at the same time as the transposition of legislation, ideally leaving more than 1 year for installations to prepare for monitoring by installing the necessary systems where necessary, allocating responsibilities, preparing a monitoring plan, and carrying out a few months of monitoring activity to test their systems and to submit applications for permits.

In order to ensure that the system is operational on the day of accession, the submission of applications for permits by installations needs to take place approximately 1.5 years before accession and permits should be received 1 year prior to accession.

IT systems for reporting of monitored data need to be set up to ensure that data compilation is made easier for public authorities. The systems, including access for installations, should be ready a few months before accession to give time for testing and for installations to familiarise themselves with it.

The system for the accreditation of verifiers needs to be in place in the year prior to accession to ensure that verifiers can be accredited during the first year of accession and will be ready to carry out verification in time for the deadline for submission of verified emission reports.

Decisions on inclusion of additional installations, exclusion of small installations, free allocation to power sector to be taken before the NIMS is calculated. These decisions need to be approved by the Commission.

The calculation of the National Implementing Measures needs to take place, ensuring that all relevant installations have been identified and that data has been collected from installations based on Commission guidelines, including application of the benchmark values as well as the carbon leakage factor and the linear reduction factor. Calculations need to take into consideration decisions made on opt-out of small installations, inclusion of additional installations, and derogation for the electricity sector and the existence of installations in a sector or sub-sector which are deemed to be exposed to a significant risk of carbon leakage.

Capacity building is also required. This includes training of officers within the national entity responsible for emissions trading with respect to the obligations imposed by the Directive and the associated implementing legislation. Before that can be done, national authorities need to ensure the necessary availability of resources, both financially and in terms of human resources.

Considerable time is also needed to ensure that stakeholders are well aware of the legal implications of the Directive. Candidate countries should also start guiding operators regarding permitting requirements and requisites for monitoring and reporting and for the verification of annual emission reports and should provide for the necessary procedures in respect of the accreditation of verifiers.

3.3 IMPLEMENTATION LESSONS FROM MEMBER STATES

3.3.1 CONSIDERATIONS FOR PLANNING AND SET UP

A number of preparatory activities have to be carried out as a first step to setting up the ETS. These include setting out a plan and timeline of activities, transposing legislation, and setting up the institutional basis including allocating responsibilities for preparing the background to policy related decision making to ministry departments, designating a competent authority or authorities to implement the Directive, designate a national administrator, preparation of the (existing) National Accreditation Body or National Certification Authority for tasks related to the accreditation or certification of verifiers, and if an opt out is planned from the use of the common auctioning platform established by the Auctioning Regulation (1030/2010) then taking steps towards establishing an own auctioning platform.

Examples for Member States – Choice of auctioning platform

Under the Auctioning Regulation, there is an opportunity to opt out of the common auction platform for the third phase of the EU Emissions Trading System. Germany, Poland and the UK have decided to opt out of the planned common platform for auctioning emission allowances and, instead, appoint their own auction platform. Under the EU ETS Auctioning Regulation, once these Member States have determined the identity of their intended opt-out platforms and the details of the auctions to be conducted by them, they must notify their plans so that the Commission can verify that the platform satisfies the rules of the Regulation and the objectives of the ETS Directive. If this is the case, the Commission will submit a draft amendment of the Auctioning Regulation with a view to approving the platform. The European Energy Exchange (EEX) is the common platform for the large majority of the countries participating in the EU ETS, including Poland and Germany. The ICE Futures Europe auction platform acts as the platform for the UK.

Example of Member States - EU overview: coordination of the work of Competent Authorities

“The MRR (EU, 2012b) requires countries with multiple CAs to coordinate the administrative work of the CAs for the EU ETS (Article 10). Of the 25 countries with multiple CAs, 18 countries reported at least one measure to coordinate the administrative work of CAs. The most popular coordination measure was to establish regular working groups with the CAs (11 countries). Ad hoc arrangements were also reported. For example, Romania reported meetings to be organised every time CAs and stakeholders were having difficulties in applying EU ETS provisions. Latvia added that regular meetings occur within the framework of the IED, where EU ETS activities are also discussed. The latter is a good example of integrating the application of the two Directives in order to reduce burden where an overlap occurs.”

Source: file:///C:/Users/Agi/Downloads/Tech%2003%202015_TH-AK-15-003-EN-N.pdf

3.3.2 CONSIDERATIONS RELATED TO TRANSPOSING EU LEGISLATION

The Directive sets out the general but legally binding principles on the basis of which the EU emissions trading scheme is to be implemented at EU and national level. Implementing provisions, such as the various related Decisions and Regulations, provide for more detailed and harmonised legally binding interpretations of specific articles under the Directive. The Directive needs to be transposed into national legislation. The regulations do not, as they are directly applicable to all Member States. However, Member States may choose to enact further implementing legislation beyond the regulations which exist at EU level. This, however, is not obligatory.

At the national level there may be variations in the way the legislative instruments are integrated within the framework of national procedures and law. In view of this, the Commission has produced ample guidance, templates, flowcharts and various tools to assist Member States in their tasks, comprising the monitoring, verification and reporting obligations. Hence, the candidate countries should profit from as much guidance and best practices as possible provided by the Commission and the existing Member States.

To help the Member States in setting up and operating the EU ETS, the Commission (together with Ecorys and Entec) set up a Helpdesk which operated until 2012, which was meant to answer to

questions from Member States' Competent Authorities. For the post 2013 ECRAN functions as this help desk for candidate countries in the Western Balkans and Turkey.

Examples from Member States – France: transposition measures

In France the 'General Regulation of The Autorité Des Marchés Financiers: Book VII - Regulated Markets For Emissions Trading' applies to the regulated market in financial instruments that admits greenhouse gas emission allowances. This legislative measure is available (English translation) at: http://www.amf-france.org/documents/general/7552_1.pdf

Examples from Member States – Austria: Regulation and Monitoring of GHG Allowance Trading

In Austria, the Emissions Trading Directive (2003/87/EC) has been transposed by the Act on Emissions Allowance Trading (Emissionszertifikatengesetz - EZG, BGBl. I Nr. 46/2004) and its amendments. This act sets out the main pillars of emissions trading in Austria.

In addition to the Act on Emissions Allowance Trading, Austria has further specified obligations under the emissions trading system through ordinances in the following areas.

The EU monitoring and reporting guidelines referred to in Article 14 of the Emissions Trading Directive were enacted as the Austrian Monitoring, Reporting and Verification Ordinance (Überwachungs-, Berichterstattungs- und Prüfungs-Verordnung - ÜBPV, BGBl. II Nr. 339/2007). To specify the rules for the accreditation of independent verifiers, the Accreditation Ordinance (Fachkundeverordnung für die Zulassung unabhängiger Prüfeinrichtungen, BGBl. II Nr. 424/2004) was passed).

Examples from Member States – Legislation for implementation of Monitoring and Reporting

Based on a report by the European Environment Agency, different Member States have implemented monitoring and reporting in different ways in their legislations. Some Member States have enacted legislation beyond the MRR (which is directly applicable in all EU countries), while others have not seen the need to do so. Some countries have also issued additional guidance documents, while others have not. Some countries have not enacted additional legislation or published additional guidance documents as they have found that the MRR and available guidance documents are sufficient. The choices made by different MS in this respect are summarised in the table below.

	Additional national legislation	Additional national guidance
AT	No	Yes
BE	Yes	Yes
BG	Yes	No
CY	No	No
CZ	Yes	Yes
DE	Yes	Yes
DK	Yes	Yes
EE	No	No
ES	No	Yes
FI	Yes	Yes
GR	No	No
HR	No	No
HU	Yes	No
IE	Yes	No
IS	Yes	No
LI	No	No
LT	Yes	No
LU	No	No
LV	Yes	Yes
MT	No	No
NL	Yes	Yes
NO	No	Yes
PL	No	Yes
PT	No	Yes
RO	No	Yes
SE	No	No
SI	No	No
SK	No	No
UK	Yes	Yes

Source: <http://www.eea.europa.eu/publications/application-of-the-eu-emissions/download>

3.3.3 CONSIDERATIONS RELATED TO REPORTING AND NOTIFICATION TO THE COMMISSION

Data from emissions reports can be used in other reporting contexts by Member States. Competent Authorities should try, to the extent possible, to use data derived from the annual emission reports submitted by operators of installations in the scheme as it can be useful in the compilation of annual greenhouse gas emission inventories as required under Decision 280/2004/EC. Where this is the case, due account should be taken of the compatibility or otherwise of the data derived from the EU ETS with the guidelines that define the methodologies by which emission estimations are made for the inventory — it may be the case that some Member States only use activity data from emission reports while others may actually use reported emissions. Countries may assess to what extent they can combine the overall implementation of Directive 2003/87/EC and Decision 280/2004/EC within one entity, since the data supplied under Directive 2003/87/EC could serve as an important basis for the estimation of emissions, and for ex-post assessment and ex-ante projections of emissions that form an integral part of Decision 280/2004/EC.

Examples from Member States – Harmonisation of ETS emission reports with other reporting requirements

Most Member States use EU ETS data for compiling their inventories under the UNFCCC process. The Exceptions are Belgium, Bulgaria, Netherlands, Luxembourg, Poland and the UK. In many Member States data from the emission reports is also used for verification or reporting of E-PRTR data or there is shared submission and administration of EU ETS emissions data and E-PRTR data. In a handful of countries ETS emissions data is used to improve national energy statistics.

Source: <http://www.eea.europa.eu/publications/application-of-the-eu-emissions/download>

3.3.4 CONSIDERATIONS FOR ALLOCATION OF ALLOWANCES

Due to the highly harmonised approach to allocation, the differences between Member States relate mainly to procedural/institutional set-ups or to areas where the Directive provides some flexibility with respect to allocation methodology. These are the following:

- Derogation for the electricity sector allowing transitional free allocation to electricity generators;
- Opt-out of small installations;
- Inclusion of additional sectors and gases;
- Compensation of electricity-intensive sectors for an increase in electricity cost.

Examples from Member States – Compensation of electricity-intensive installations, EU overview

“Six Member States currently make use of the possibility pursuant to Article 10a(6): Belgium (only in the Flanders region), Germany, Greece, Spain, the Netherlands and the United Kingdom. In addition, Norway also makes use of this measure. All those States have defined a fixed annual budget for this compensation, or – as in Greece and in the Netherlands – have defined a price formula based on actual CO₂ prices that will determine the budget. The maximum aid amount payable per installation will be calculated according to the two formulae outlined in point 27 of the Guidelines, taking into account:

- an EU-wide electricity consumption efficiency benchmark;
- a Member State specific CO₂ intensity of the electricity mix; and
- the maximum aid intensities as set out in point 26 of the Guidelines, being 85% of the eligible costs incurred in 2013, 2014 and 2015, 80% of the eligible costs incurred in 2016, 2017 and 2018 and 75% of the eligible costs incurred in 2019 and 2020.

The actual aid paid per installation may be lower if the total request for support is higher than the available budget.”

Details are provided in the table below.

	Belgium (Flanders)	Germany	Greece	Spain	NL	UK
Budget	Set by auction revenue, estimated to be between 7 and 113 M€, based on a CO ₂ price assumption between 1 and 15 €/t CO ₂ ¹⁾	2013: 350 M€ 2014: 203 M€ 2015: 203 M€	Set by auction revenue, estimated to be between 14 and 20 M€, based on a CO ₂ price assumption between 5 and 7.5 €/t CO ₂ ²⁾	Total 2013-2015: 5 M€ Indicative annual budgets: 2013: 1 M€ 2014: 1 M€ 2015: 3 M€	78 M€ for 2014; 50 M€ for 2015 ³⁾	GBP 50M for 2014; same for 2015
Main basis for CO ₂ price calculation (€/tCO ₂)	Based on the maximum regional emission factor of 0.76 tCO ₂ /MWh, as provided by the Guidelines	Based on the maximum regional emission factor of 0.76 tCO ₂ /MWh, as provided by the Guidelines	N/a	N/a (but indicated to be lower than 6 €/t)	8 €/tCO ₂ ³⁾	GBP 33.14 GBP/tCO ₂ ⁴⁾
Eligibility	All annex II sectors ⁵⁾ with electricity consumption > 1 M kWh/yr	All annex II sectors	All annex II sectors	All annex II sectors	All annex II sectors with electricity consumption > 1 M kWh/yr	All annex II sectors with sum of EU ETS and the costs of the Carbon Price Floor ³²³ in 2020 at least 5% of GVA.

Source: http://ec.europa.eu/clima/policies/ets/revision/docs/review_of_eu_ets_en.pdf

Examples from Member States – United Kingdom: making use of derogations for small installations

UK applied to the Commission for excluding or opting out UK small emitters and hospitals from the EU Emission Trading System from 2013, in accordance with Article 27 of Directive 2003/87/EC. This derogation is partly due to the fact that the administrative costs faced by small emitters under the EU ETS are disproportionately high per tonne of CO₂, compared to the costs for installations with larger emissions.

Per tonne of CO₂ emitted, the estimated administrative costs for UK small emitters exceeded £1, while costs for UK large emitters were estimated to be £0.04. In the UK, monitoring reporting and verification (MRV) makes up around 50% of the average administration costs for small emitters, with the verification being the largest element (around 1/3 of overall costs or £3,000). Almost all UK hospital installations are also small emitters and therefore face the same disproportionate administration cost burden per tonne of CO₂.

Through the proposal, UK Ministers intend to deliver real savings for small businesses and hospitals in the UK. The Small Emitter and Hospital Agreements Scheme is consistent with the principles and objectives of the Directive as set out in Recital 11, to “reduce unnecessary administrative burdens for smaller emitters” and to “set up simplified procedures and measures”.

Overall, only six countries reported that they had opted out installations under Article 27: Croatia, Germany, Iceland, Slovenia, Spain and the UK.

Examples from Member States – EU overview: Transitional free allocation to the electricity sector

Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Lithuania, Poland and Romania applied Article 10c of the EU ETS Directive. In total 10 Member States are eligible to apply this measure, 2 have chosen not to make use of the derogation.

“Countries applying Article 10c must submit a national plan outlining diversification of the energy mix, investments in retrofitting, upgrading of infrastructure and clean technologies. Poland allocated the most

allowances under this Article, at 65 992 703 emission allowances. Lithuania commented that they have not yet allocated allowances under this Article, but applied for 2 853 628 emission allowances for the third reporting period and are awaiting the final decision from the European Commission's Directorate-General for Competition. Poland reported the highest value of investment under Article 10c, EUR 3 407 084 845, and Estonia reported the lowest (EUR 76 688 021). Hungary reported that the total cost of two projects under this Article will be approximately EUR 26.6 million, but no money was paid in 2013. Bulgaria, Lithuania and Romania did not report on the value of investment."

Source: <http://www.eea.europa.eu/publications/application-of-the-eu-emissions/download>

Examples from Member States- Belgium: Allocation of aircraft operators

In Belgium, the three Regions (Flemish Region, Walloon Region and Brussels Capital Region) will be the administering entities for emission allowance trading for aviation. Every aircraft operator administered by Belgium must be allocated to one of the Regions.

The criterion, used for the allocation of aircraft operators to one of the 3 Regions - as determined by the Flemish Parliament on 18 March 2009 - is the following:

"For the year 2012 and the period 2013-2020, the administrative management of the aircraft operator coming under the administrative authority of Belgium shall be carried out by the Region which is allocated the most CO2 emissions, emitted by the aircraft operator in the base year.

For each aircraft operator the Flemish Region shall be allocated the CO2 emissions from all flights which relate to an aviation activity that is to be further specified by the Flemish Government, and which:
a) *depart from aerodromes situated in the territory of the Flemish Region;*
b) *arrive at aerodromes situated in the territory of the Flemish Region, provided these flights do not depart from a Member State of the European Union."*

The competent authority within the Flemish Region for the aircraft operators is the Air, Nuisance, Risk Management, Environment and Health Division of the Flemish Environment, Nature and Energy Department.

The list of aircraft operators which had performed an aviation activity within the meaning of Annex I to Directive 2003/87/EC on or after 1 January 2006 is available at:

[http://www.lne.be/themas/klimaatverandering/co2-emissiehandel/luchtvaart/bevoegde-
autoriteit/110411%20UPDATED%20LIST%20AQ%202011.pdf](http://www.lne.be/themas/klimaatverandering/co2-emissiehandel/luchtvaart/bevoegde-autoriteit/110411%20UPDATED%20LIST%20AQ%202011.pdf)

3.3.5 CONSIDERATIONS ON MONITORING AND REPORTING

The main monitoring obligations of the competent authority should be directed to:

- Checking the monitoring plans submitted by stationary installations during the permitting process;
- Ensuring that operators carry out their monitoring and reporting obligations as per guidelines and on the basis of approved monitoring and reporting plans by checking verified emission reports and performing spot checks of installations;
- Approving modifications in monitoring plans.

There are a number of different solutions to monitoring and reporting, despite the significant increase in harmonisation of requirements from Phase II to Phase III via the MRR, as well as additional guidance. A study by Ricardo-AEA and Ecofys⁶⁸ provides a very concise overview of the different solutions employed throughout Europe. Differences relate to e.g. how Competent Authorities carry out their tasks, how monitoring and reporting templates and IT solutions are utilised, or how Member States take advantage of flexibility in EU legislation related to e.g. the possibility to implement simplified monitoring and reporting requirements for small installations.

These elements of the compliance chain can better be managed through the use of IT systems, and states may wish to give serious consideration to the application of IT in their administrative procedures for receiving, processing and compiling data from submitted emission reports.

The European Union Network for the Implementation and Enforcement of Environmental Law (IMPEL) has produced useful good practice guidance to support competent authorities when monitoring the compliance chain and harmonising approaches.⁶⁹

Examples from Member States – Germany, United Kingdom and the Netherlands: Monitoring plans for the aviation sector

The German Emissions Trading Authority has developed sample monitoring plans for annual emissions and tonne-kilometre monitoring and examples of the most relevant data flow charts with input from a number of other Member State competent authorities. These example plans and charts give an indication of expected response to each section of the reporting templates and will thus be of most relevance to large aircraft operators. Although, not legally binding, they provide example of good practice that can be consulted by other Member States and the candidate countries.

The Netherlands and the United Kingdom prepared a guidance document to help aircraft operators compile their monitoring plans for participation in the EU ETS. The guidance provided practical interpretation of the legal requirements for monitoring, reporting and verification. This document is however not legally binding nor does it provide a mandatory interpretation of the legislation.

On the initiative of the Dutch Emissions Authority, the Aviation Implementation Task Force was set up in December 2008 (comprising experts from Member States and the European Commission) to identify the most pressing issues that competent authorities are faced with when preparing for the implementation of the Directive to include aviation in the EU ETS and the associated Monitoring and Reporting Guidelines.

Source: http://ec.europa.eu/clima/policies/transport/aviation/monitoring/index_en.htm

Examples from Member States – Sweden: Guidelines for CO₂ monitoring

The European Directive and decisions on GHG have been implemented in Sweden through Decree NFS 2007:5, as amended by NFS 2009:6. To support the clarification of measurement uncertainty by operators, but also other concerned parties such as accredited verifiers and competent authorities, a guide was

⁶⁸ http://ec.europa.eu/clima/policies/ets/monitoring/docs/report_4th_ets_mrav_compliance_en.pdf

⁶⁹ Further information may be accessed at: http://ec.europa.eu/environment/impel/eu_ets.htm

produced by the Swedish Technical Research Institute (Sveriges Tekniska Forskningsinstitut) at the request of the Swedish Environmental Protection Agency.

Examples from Member States – Use of electronic templates for monitoring

“Fifteen countries developed customised electronic templates or specific file formats for monitoring plans, emissions reports, verification reports and/or improvement reports. Countries have typically customised their reporting through the development of web-based reporting systems. (...) Nine EU Member States and one EEA country (Norway) have developed an automated system for electronic data exchange. The Walloon Region in Belgium, Ireland and the United Kingdom use the same application, which the United Kingdom notes is 'semi-automatic'; operators manually complete web-based forms, but then the workflows are automatic, with validation checks for completeness and correctness, reminders and notifications of progress. The Flemish Region in Belgium, Denmark, Finland, Germany and Norway use their own form for Internet reporting, with electronic signatures, encryption, verification, and automated notifications and workflows. Spain also uses online submission of reports, but the automated systems have been developed in different ways in different areas of the country.”

Source: <http://www.eea.europa.eu/publications/application-of-the-eu-emissions/download>

Examples from Member States – United Kingdom: Simplified monitoring requirements for small emitters

“74 % of the 11 000 installations in the EU ETS emit less than 25 000 t CO₂ per year and are therefore potentially “installations with low emissions” which can be excluded from the EU ETS under Article 27 of the Directive. However, they are responsible for only 2.7 % of emissions in the EU ETS.”

“Only 9 (Belgium, Croatia, Hungary, Liechtenstein, Lithuania, Luxembourg, the Netherlands, Spain and the United Kingdom) out of 29 countries reported simplified monitoring requirements for installations with emissions below 25 000 tonnes CO₂e per year, as allowed by Articles 13 and 47 of the MRR.”

The UK has published the same MRR guidance to all installations, but indicates which provisions need to be applied for small emitters. Small installations may use a simplified monitoring plan. In an attempt to decrease costs to small emitters, the use of lower tiers in monitoring are allowed for these installations. The application of higher tiers is generally more costly. Simplifications for small installations include that they are exempt from delivering an uncertainty assessment, where activity data is based on purchase records. They are also exempt from submitting a risk analysis, although the guidance document recommends that such an analysis be carried out for internal use by the small emitter regardless. Operators of small installations have to take into account recommendations of verifiers, but are exempt from submitting an improvement report to the Competent Authority. Small installations are not required to submit supporting documents required from other installations.

Source: <http://www.eea.europa.eu/publications/application-of-the-eu-emissions/download> and https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/62736/6423-general-guidance-for-installations-mrr-g.pdf and http://ec.europa.eu/clima/policies/ets/review/docs/review_of_eu_ets_en.pdf

3.3.6 CONSIDERATIONS ON VERIFICATION AND ACCREDITATION

Accreditation of verifiers is an important procedural aspect that Member States should prepare for, as this confirms the competency of verifiers to perform verification duties under the scheme. Accreditation bodies in Member States have an important role in this respect and they should be involved in the process of implementing the Directive, taking into account relevant legislation with regards to accreditation in the EU. The guidance provided by the European Cooperation for Accreditation (EA) is particularly useful⁷⁰. It is also advised to consult the guidance notes from DG CLIMA.⁷¹

Examples from Member States – Compliance checks carried out by Competent Authorities on the Verification reports

“CAs may carry out checks on emission and verification reports as an additional quality control measure to improve the overall quality of the emissions and verification reports. In addition, these checks provide to the CA an indication of the quality of specific verifiers. Of the 29 countries that reported, only the Czech Republic responded that there were no checks by the CA. Germany had not completed verification upon reporting, but reported expected results for CA checks as requested by the questionnaire. Twenty-six countries checked the completeness of all verified emissions reports, Spain almost all (95%).

Eighteen countries cross-checked 100% of the reports with allocation data, whilst Spain and the United Kingdom checked 73% and 38%, respectively. Of those not cross-checking with allocation data, 3 countries reported that they cross-checked 100% of the reports with other data (GHG reports and verification reports). Other countries cross-checked reports with E-PRTR data, analysing historical data trends, and IED permits. Nineteen countries checked that 100% of the reports were consistent with the monitoring plan, with another 8 countries checking between 10 and 91% of reports in this way. Eleven countries applied a detailed analysis to 100% of reports, whilst a further 9 countries analysed between 10 and 70%. Hungary, Liechtenstein, Luxemburg, the Netherlands and Romania conducted all of these tests on all of their verified emissions reports.”

Source: <http://www.eea.europa.eu/publications/application-of-the-eu-emissions/download>

3.3.7 CONSIDERATIONS ON PENALTIES

The Directive itself already imposes penalties upon operators of installations who do not surrender sufficient allowances by 30 April of each year to cover their emissions during the preceding year. This

⁷⁰ Further information on the EA may be accessed at: <http://www.european-accreditation.org/information/eu-ets-objective-1-january-2013>

⁷¹ http://ec.europa.eu/clima/policies/ets/monitoring/documentation_en.htm

penalty is EUR 100 for each tonne of carbon dioxide equivalent emitted for which an allowance is not surrendered by the deadline, with the obligation to surrender an allowance for each excess emission still carried forward to the subsequent year. The Directive also provides for the publication of the names of those operators who are in breach of the requirement to surrender sufficient allowances as per Article 12.

National penalties are applicable to infringements of national provisions, other than those mentioned above.

Examples from Member States – Sweden: Compliance and sanctions

In Sweden the Energy Authority (Energimyndigheten) administers the Swedish Emissions System (Svenskt UtsläppsrättsSystem), pursuant to which operators have to notify their annual emissions by 31 March and surrender an equivalent share of emission allowances by 30 April each year. The Swedish Environmental Protection Agency (Naturvårdsverket) is the national administrator for the Union registry and decides on sanctions in case of non-compliance.

The sanction system is the following:

- Operators which have not surrendered the correct amount of allowances are subjects to a fine with a fee based on the difference between the verified emissions and the actual number of allowances surrendered, plus a delay fee. This fine is handled by Naturvårdsverket, the Swedish Environmental Protection Agency.
- In case of late return of the emission allowances for the emissions of the preceding year, a fee will be charged based on every additional tonne beyond the emission allowance. The fee amounts to 100 EUR per additional tonne CO₂ pursuant to 8 Chapter, 6 para. of Act (2004:1199) on trading with emission allowances.
- Pursuant to 8 Chapter, 6 para. of Act (2004:1199) on trading with emission allowances the EPA must publish the name of the non-complying operators.
- In case of non-compliance of airplane operators to surrender the emission allowances by 30 April 2013 for emissions in 2012, the same sanctions will be imposed as for stationary installations. In addition, if an airplane operator oversees its responsibilities pursuant to the Act 2004:1199, the same ban on further operation can be applied.

In Sweden a penalty of 20,000 SEK applies in case of late or missed submission of an annual emission report, or in case of an annual emission report not verified.

Source: <http://www.swedishepa.se/> and

http://ec.europa.eu/clima/policies/ets/monitoring/docs/report_4th_ets_mrav_compliance_en.pdf

Examples from Member States – Malta: Compliance and sanctions

Under Maltese legislation, Directive 2003/87/EC is transposed by Legal Notice 140 of 2005, the European EU Greenhouse Gas Emissions Trading Scheme Regulations, issued under the Environment Protection Act, 2001. In line with the Directive, local legislation provides for penalties per unit allowance if emissions are not completely accounted for by surrendered allowances. In Malta, the EU ETS Directive had to be transposed at the end of 2012. Legal Notice 274 of 2006 sets out fees to be paid by account holders: a one-time fee for the opening of an account and an annual fee for maintaining the registry account.

The competent authority for implementation of the scheme is the Malta Environment and Planning Authority, which is responsible for the permitting of installations. It approves monitoring and reporting plans and receives and reviews the submitted annual verified emission reports. It keeps open communications with operators of installations to ensure that the implementation by operators of the requirements of the Directive is as smooth and as accurate as possible, with the aim of avoiding any unnecessary misunderstandings or breaches of legislation. To facilitate the work of operators, templates have also been developed for the submission of permit applications and monitoring and reporting plans. Once annual reports are reviewed and accepted, an official written decision is sent to the operators, upon receipt of which the operators can input their installations' verified emissions in the registry system and surrender the equivalent quantity of allowances.

Examples from Member States – Slovakia: Compliance and sanctions

“The following sanctions can be imposed: (...)

- Fine up to €16,600 on an operator if the operator:
 - Fails to submit an application for a permit in the set time limit
 - Fails to comply with the requirements on monitoring GHG emissions or the submission of emission reports as laid down in the permit
 - Fails to notify the information on changes of permit or MP
 - Fails to submit an emission report and VR to the District Office by 15 March
 - Fails to submit an AER, VR and verification protocol to the registry administrator by 30 April
 - Undertake transfers of GHG emission allowances after 31 March if the emission report is not verified as correct within the set time limit
 - Fails to submit activity level data report or NER application.
- Naming and shaming of operators who have breached the requirement to surrender emission allowances equivalent to the emissions reported.

The sanction is imposed within three years of the day that the breach of the obligation is discovered, but no later than five years as of the day on which the breach of the obligation has occurred.”

Source: http://ec.europa.eu/clima/policies/ets/monitoring/docs/report_4th_ets_mrav_compliance_en.pdf

3.4. COSTS AND FEES

The implementation of the EU ETS requires relatively significant administrative capacity. The number and level of training of required staff is relatively high, both in the national ministries which make some of the higher level decisions (e.g. related to opt-outs, derogations for the electricity sector, etc.) and also for the Competent Authority, which carries out all tasks related to compliance and enforcement.

It has been estimated that the administrative cost of implementing the ETS at EU level is EUR 35 million annually.⁷² Converted to cost per value of allowance, this is less than 1% even with the currently low allowance prices. This means that there is significant potential to recoup all costs of implementation through various administrative fees levied at installations, which will not increase costs to installations significantly, but will enable public administrations short on resources to create the necessary capacities to implement the scheme.

However, studies have also shown for small installations the transaction costs can sometimes exceed the value of the allowances. This highlights the need to make special provisions for small installations, including e.g. in relation to simplified monitoring rules.

Table. Implementation costs

1	Administrative Costs for the Competent Authority
1.1	Permitting: The competent authority receives applications for greenhouse gas emissions permits, accompanied by monitoring and reporting plans as per the provisions set out in the legislation. These are assessed, discussed with the operators as required, and endorsed through the issuance of a permit. This process may be time-consuming; it may require significant levels of resources, especially where there are a large number of installations involved; and it requires specific expertise to properly assess the information supplied, in particular information related to the monitoring plan. It also requires careful coordination and synergies with other permitting requirements and processes set out in other EU legislation, e.g. the Industrial Emissions Directive (2010/75/EU) and the Carbon Capture and Storage Directive (2009/31/EC). Costs of permitting include the costs related to amending and revoking permits.
1.2	Checking compliance and enforcement: The Competent Authority needs to ensure that installations are in compliance with rules while the scheme is operating. This includes spot checks of the verified emission reports as well as on-site checks of installations. Fees should be set so as to cover these costs to the Competent Authority.
1.3	Registry: The competent authority must supervise the issuance, transfer, surrendering and cancellation of allowances in the Union Registry. Article 111 of the Registry Regulation allows national administrators to charge account holders fees for accounts administered by them. The Regulation requires that these fees be set at a reasonable level. National administrators also have to inform the European Commission about the level of the fees. The level of fees differs by Member State.
1.4	Auction Platform: the competent authority will incur some costs for participation in the EU Auctioning Platform in terms of the processes with auctioning, procurement and overseeing compliance. Where the candidate country chooses to construe its own platform additional costs are expected.
2	Costs to the Operator

⁷² http://ec.europa.eu/clima/policies/ets/revision/docs/review_of_eu_ets_en.pdf

2.1	<p>Administrative costs related to compliance: Compliance costs faced by operators relate to the following categories of activities:</p> <ul style="list-style-type: none"> ▪ Monitoring of GHG emissions, ▪ Reporting of GHG emissions, ▪ Verification of GHG emission reports. <p>One should bear in mind that, in many cases, monitoring and reporting requirements under the Directive may already be part of the routine running of the establishments concerned, under the IED, the Large Combustion Plants Directive, and the Waste Incineration Directive etc.</p> <p>Adherence to the guidelines developed by the Commission will render reporting and monitoring more streamlined and cost-efficient. The monitoring methodologies referred to have an increased cost-efficiency that benefits both operators and competent authorities.</p> <p>“A study of German installations showed that overall annual transaction costs ranged from about 0.03 €/t CO₂ (installation emitting 1 Mt CO₂) to 0.76 €/t CO₂ (installation emitting 10 kt CO₂). MRV activities account for roughly 69 % of these overall costs. For installations located in the UK, a study found that average transaction costs of about 0.1 €/t CO₂ are incurred by operators, with about three quarters of those costs arising from MRV activities. An Irish study concluded that the average installation faced transaction costs of 0.08 €/t CO₂ in Phase I.”⁷³</p> <p>Generally, costs per tonne of emissions is higher for small installations than for large installations, although total costs will be higher for large installations.</p>
2.2	<p>Trading-related costs: There will be costs relating to the purchase of allowances, whereas minor costs will be incurred by operators (e.g. aviation operators) that acquire most of their allowances for free. Furthermore, the Directive provides for penalty fees per unit allowance if emissions are not all accounted for by surrendered allowances. There are no fees permitted in respect of transactions of allowances. Penalty fees will also be imposed in case of late surrender of preceding year's allowances.</p> <p>It has been estimated that the annual cost to achieve Kyoto targets is EUR 2.9 to 3.7 billion (< 0.1% of GDP in the EU) (without EU ETS: EUR 6.8 billion). This shows that this Directive aims to reduce greenhouse gases in a cost-effective manner. The result will be lower compliance costs for installations in the scheme. It is estimated that annual compliance costs in the period 2008 to 2012 for all covered installations in the enlarged EU will be reduced by more than 20%. This figure is likely to increase, at least temporarily, for the third trading period.</p>

Different Member States charge very different fees to cover their administrative costs. This is demonstrated by an overview of fees for operator holding accounts which are shown in the table below. Therefore, accession countries have considerable freedom in determining the level of fees. They should consider the ability of installations (including small installations where transaction costs per

⁷³ http://ec.europa.eu/clima/policies/ets/revision/docs/review_of_eu_ets_en.pdf

tonne of CO₂ are already high) to pay the fees. They should also consider their own resource needs in order to be able to cover their administrative expenses.

Country	Opening fee / one-off fee (in EUR)	Minimum annual fee (in EUR)	Maximum annual fee (in EUR)
Austria		250 *	11 733 *
Belgium		542.83	
Bulgaria		102.25	
Croatia	97	97	
Cyprus	0	0	
Czech Republic	43	86 € + 0.007 €/t CO ₂	
Denmark		515 € + 0.02 € per allowance	
Estonia	0	0	
Finland		250 *	3 500 *
France	600 *	360 € + 0.0104 €/t CO ₂ **	
Germany	0	0	
Greece		100	300
Hungary	0	90	2 733
Ireland	350		
Italy			
Country	Opening fee / one-off fee (in EUR)	Minimum annual fee (in EUR)	Maximum annual fee (in EUR)
Latvia	0 / 638 *	127.6 **	988.9 **
Lithuania	87	145	
Luxembourg	0	0	
Malta	1 164.59 – 3 494.06 *	232.94 € per 100 000 allowances **	
Netherlands		0	
Poland	100	25	
Portugal		866.6	
Romania	200	100 € + 0.000596 € per allowance *	
Slovakia		350 € + 0.015 € per verified emission	
Slovenia	100.15	100.15	
Spain	500	150	12 000
Sweden	0	0	
United Kingdom			
Iceland	415	370	

Source: http://ec.europa.eu/clima/policies/ets/revision/docs/review_of_eu_ets_en.pdf

ANNEX – GUIDANCE DOCUMENTS AND TEMPLATES

Guidance related to the scope of the ETS

- Guidance on interpretation of Annex I of the Directive
http://ec.europa.eu/clima/policies/ets/docs/guidance_interpretation_en.pdf
- Guidance paper to identify electricity generators
http://ec.europa.eu/clima/policies/ets/docs/guidance_electricity_generators_en.pdf

Guidance and templates related to allocation of allowances

- Q&A on NIMs and the cross-sectoral correction factor
http://ec.europa.eu/clima/policies/ets/cap/allocation/docs/faq_nim_cscf_en.pdf
- Guidance document on the optional application of Article 10c of Directive 2003/87/EC
[http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52011XC0331\(01\)](http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52011XC0331(01))
- Q&A on the harmonised free allocation methodology
http://ec.europa.eu/clima/policies/ets/cap/allocation/docs/faq_en.pdf
- Recommended template for the application for transitional free allocation under Article 10c(5)
http://ec.europa.eu/clima/policies/ets/cap/auctioning/docs/template_en.zip
- General guidance to the allocation methodology
http://ec.europa.eu/clima/policies/ets/cap/allocation/docs/gd1_general_guidance_en.pdf
- Guidance on allocation methodologies
http://ec.europa.eu/clima/policies/ets/cap/allocation/docs/gd2_allocation_methodologies_en.pdf
- Data collection guidance
http://ec.europa.eu/clima/policies/ets/cap/allocation/docs/gd3_data_collection_en.pdf
- Verification of NIMs Baseline Data Reports and Methodology Reports Verification of NIMs Baseline Data
http://ec.europa.eu/clima/policies/ets/cap/allocation/docs/gd4_nims_verification_guidance_en.pdf
- Guidance on carbon leakage
http://ec.europa.eu/clima/policies/ets/cap/allocation/docs/gd5_carbon_leakage_en.pdf
- Cross-boundary heat flows
http://ec.europa.eu/clima/policies/ets/cap/allocation/docs/gd6_cross_boundary_heat_flows_en.pdf
- Waste gases and process emissions sub-installation
http://ec.europa.eu/clima/policies/ets/cap/allocation/docs/gd8_waste_gases_en.pdf
- Sector-specific guidance
http://ec.europa.eu/clima/policies/ets/cap/allocation/docs/gd9_sector_specific_guidance_en.pdf
- Data collection template
http://ec.europa.eu/clima/policies/ets/cap/allocation/docs/template_en.xls
- Methodology report template

http://ec.europa.eu/clima/policies/ets/cap/allocation/docs/nims_meth_report_en.pdf

- Guidance document on New Entrants and closures updated with Annex I
http://ec.europa.eu/clima/policies/ets/cap/allocation/docs/gd7_new_entrants_and_closures_en.pdf

Guidance documents and templates in relation to Monitoring and Reporting

- The Monitoring and Reporting Regulation – General guidance for installations
http://ec.europa.eu/clima/policies/ets/monitoring/docs/gd1_guidance_installations_en.pdf
- Template - Monitoring plan for the emissions of stationary installations
http://ec.europa.eu/clima/policies/ets/monitoring/docs/t1_mp_installations_en.xls
- Template - Annual emissions report of stationary source installations
http://ec.europa.eu/clima/policies/ets/monitoring/docs/t4_aer_installations_update_2015_en.xls
- Exemplar checklist for assessing installation monitoring plans
http://ec.europa.eu/clima/policies/ets/monitoring/docs/mp_checklist_en.pdf
- Exemplar monitoring plan
http://ec.europa.eu/clima/policies/ets/monitoring/docs/t1_mp_installations_example_en.xls
- The Monitoring and Reporting Regulation – General guidance for aircraft operators
http://ec.europa.eu/clima/policies/ets/monitoring/docs/gd2_guidance_aircraft_en.pdf
- Template - Monitoring plan for the emissions of aircraft operators
http://ec.europa.eu/clima/policies/ets/monitoring/docs/t2_mp_aircraft_en.xls
- Template - Monitoring plan for the tonne-kilometre data of aircraft operators
http://ec.europa.eu/clima/policies/ets/monitoring/docs/t2_mp_aircraft_tkm_en.xls

Guidance documents on Accreditation and Verification

- The Accreditation and Verification Regulation - Explanatory Guidance Document
http://ec.europa.eu/clima/policies/ets/monitoring/docs/exp_guidance_1_en.pdf
- Quick guide on the role of the verifier and the Competent Authority
http://ec.europa.eu/clima/policies/ets/monitoring/docs/quick_guide_verifier_ca_en.pdf
- Quick guide on verification for operators and aircraft operator
http://ec.europa.eu/clima/policies/ets/monitoring/docs/quick_guide_verification_operators_aircraft_op_en.pdf
- Guidance document - Key guidance note on the scope of verification
http://ec.europa.eu/clima/policies/ets/monitoring/docs/kgn_1_scope_verification_en.pdf
- Guidance document - Key guidance note on risk analysis
http://ec.europa.eu/clima/policies/ets/monitoring/docs/kgn_2_verifiers_risks_en.pdf
- Guidance document - Key guidance note on process analysis
http://ec.europa.eu/clima/policies/ets/monitoring/docs/kgn_3_process_analysis_en.pdf
- Guidance document - Key guidance note on sampling
http://ec.europa.eu/clima/policies/ets/monitoring/docs/kgn_4_sampling_en.pdf
- Guidance document - Key guidance note II.6 on the verification report
http://ec.europa.eu/clima/policies/ets/monitoring/docs/kgn_6_verification_report_en.pdf
- Verification report template

http://ec.europa.eu/clima/policies/ets/monitoring/docs/avr_verification_report_en.xls

- Classification of outstanding items in the verification report
http://ec.europa.eu/clima/policies/ets/monitoring/docs/avr_classification_reporting_issues_en.pdf
- Guidance document - Key guidance note on competence of verifiers
http://ec.europa.eu/clima/policies/ets/monitoring/docs/kgn_7_competence_en.pdf
- Guidance document - Key guidance note on certification
http://ec.europa.eu/clima/policies/ets/monitoring/docs/kgn_11_certification_en.pdf
- The Accreditation and Verification Regulation - Verification Guidance for EU ETS Aviation
http://ec.europa.eu/clima/policies/ets/monitoring/docs/gd_iii_aviation_verification_guidance_en.pdf
- Guidance document – The Monitoring and Reporting Regulation and Accreditation and Verification Regulation – Continuous Emissions Monitoring Systems (CEMS)
http://ec.europa.eu/clima/policies/ets/monitoring/docs/gd7_cems_en.pdf
- Guidelines on state aid measures in the context of the ETS [http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52012XC0605\(01\)&from=EN](http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52012XC0605(01)&from=EN)

DECISION ON EFFORT SHARING OF GREENHOUSE GAS EMISSION REDUCTIONS

Official Title: Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020 (OJ L 140, 5.6.2009).⁷⁴

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⁷⁴ <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009D0406&from=EN>

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1. SUMMARY OF AIMS AND PROVISIONS

The objective of the Effort Sharing Decision (ESD) is to control those Member State greenhouse gas emissions that do not fall under the EU ETS, i.e. all emissions from combustion that come from units smaller than 20 MW (mostly residential heating), transport, agriculture, waste and many other smaller sectors. For the whole of the EU, the ESD covers 55% of all GHG emissions, but the share of ESD emissions could vary significantly by Member State (depending on the Member State's emissions profile).

As under the ETS, the ESD does not contain measures that reduce emissions directly. It merely sets up an emissions cap and creates a mechanism for compliance and reporting. Unlike the ETS, however, the ESD does not regulate individuals, only Member States. It is up to the Member States to ensure that the ESD limits are met. There are Community-level measures (e.g. on building energy performance, or car emissions) and Member State measures for the reduction of GHG emissions in the ESD, but these fall outside the scope of the ESD Decision itself.

<i>ETS and ESD: differences and similarities</i>		
	ETS	ESD
<i>Who is participating?</i>	Emitters and other economic actors	Only Member States
<i>What sectors are covered?</i>	Energy generation over 20 MW, Cement and lime, metallurgy, Chemicals, oil refining, paper, glass, etc.	All other emissions not under ETS (except LULUCF, international shipping and aviation)
<i>What is capped?</i>	EU-cap only, no MS-level target	MS-level targets add up to EU-cap
<i>Who is required to comply?</i>	Compliance by operators	Compliance by MS
<i>What is the compliance period?</i>	Annual compliance for operators	Annual compliance for MS
<i>What type of units are used for compliance?</i>	EU Allowances (EUA), Certified Emission Reductions (CER) from the Clean Development Mechanism, Emission Reduction Units (ERU) from the Joint Implementation Mechanism	Annual Emissions Allocations (AEA), CER, ERU

1.1 MEMBER STATE TARGETS

The core of the decision is a set of emission reduction targets that Member States need to achieve by 2020 compared to 2005 emission levels. Taken together, the individual Member State targets add up to a 10% reduction compared with 2005 levels for the ESD sectors of the entire EU. Together with a 21% cuts in emissions covered under the EU ETS, this 10% cut accomplishes the overall emission reduction goal of the climate and energy package, namely a 20% cut below 1990 levels by 2020.

The Member States greenhouse gas emission limits are set out in Annex II of the ESD Decision. The targets were calculated with a formula based on GDP/capita, thus giving less wealthy Member States the possibility to increase their emissions compared to 2005 (as their relative higher economic growth is likely to be accompanied by higher emissions). Hence, while Germany has to reduce its emissions by 14% until 2020, Bulgaria is allowed a 20% increase (see figure below). While Annex II sets out the reduction level to be achieved by 2020, there is a mechanism set out in Art. 3 (2-3) for calculating annual emission targets. With this mechanism, an emissions trajectory is set out for each Member State for the period between 2013 and 2020.

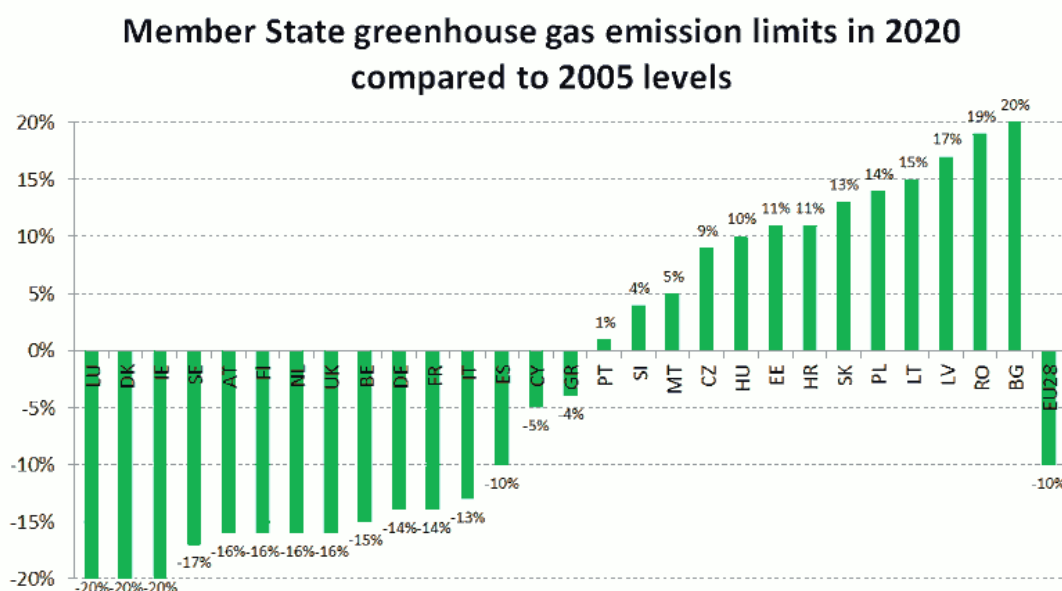


FIGURE: 2020 ESD TARGETS BY MEMBER STATE

1.2 COMPLIANCE AND FLEXIBILITIES

The ESD is similar to the Kyoto Protocol (KP), however in that the targets are expressed in the form of annual emission allocations (AEAs) that are held on separate accounts for each Member State, as regulated by the Registries Regulation. Compliance is done through a process similar to that of the KP. Unlike under the KP however, Member States are required to comply annually with their emissions targets and not only once in the period.

In order to help Member States in reaching their annual compliance obligations, the ESD contains several flexibilities under Articles 3 and 5. In the following, we shall describe each flexibility in turn (note that these flexibilities may be combined.)

1. Carry-forward

This means that a Member State can re-book a maximum of 5% of its AEAs from the next year to the preceding year (e.g. from 2014 to 2013). This in essence permits a Member State to postpone the purchasing of AEAs or credits until the end of the period.

2. Carry-over

This means that a Member State can re-book its unused AEAs from a given year to the next year until 2020.

3. Trading between Member States.

A Member State may transfer some of its annual AEAs to other Member States. The transferred amount can be the entire surplus of AEAs (i.e. those not needed for compliance), but even if there is no surplus, 5% of AEAs may still be transferred. The receiving Member State may use these AEAs to meet its compliance obligations. The ESD is silent on the financial aspects of such transfers, but presumably there would be payments made, similar to the Assigned Amount Unit (AAU)-sales under the KP.

4. Use of credits from project activities

In addition to their allocated AEAs, Member States may also use other greenhouse gas reduction credits, primarily CERs, but also some temporary and Long-term CERs (tCERs and ICERs). The amount of credits that may be used equal to 3% of the Member State's total GHG emissions in 2005. Unused credit use quotas may be transferred to other Member States, or to subsequent years. Furthermore, some (wealthier) Member States under certain macroeconomic conditions are allowed to make use of an additional 1% of credits.

1.3 CORRECTIVE ACTION

For the event that a Member State fails to comply with its target, the ESD contains enforcement provisions under Article 7 that are called "*corrective action*". Under these rules the amount of AEAs that were not surrendered are deducted from next year's allocation with an additional 8% penalty. Furthermore, the Member State will not be allowed to transfer AEAs or credit quotas out of its account. Finally, a corrective action plan is to be drawn up by the Member State in which the Member State explains how and in what timeframe does it plan to implement measures that would bring it in compliance with its annual targets under the ESD. The Commission may issue an opinion on the plan, but the ESD Decision is silent on what the consequences of any, of such an opinion may be.

1.4 RECORDING COMPLIANCE AND TRANSACTIONS

To keep track of AEAs allocated to Member States, their compliance, and the use of flexibilities, i.e the transfers of AEAs and credit use quotas, the ESD makes use of the Community Registry system established for the EU ETS and for the participation in the Kyoto Protocol. The Community Registry system is operated by the European Commission on behalf of the Member States and is regulated by

the Registries Regulation⁷⁵. (see more about the Registries Regulation under Chapter 3) There are ESD accounts that belong to Member States, and they may start transfers towards the accounts of other Member States. The legality of these transactions (i.e. that they stay within the approved limits etc.) is checked by the transaction log also operated by the European Commission. Transactions which are not in line with the requirements will be automatically rejected by the transaction log. Unlike under the KP registries system and under the EU ETS, compliance transactions are carried out automatically, and similarly, corrective actions are also done automatically. Thus a Member State only needs to use its account if it wishes to do a transfer of AEAs or credit quotas.

1.5 REPORTING

There is no separate reporting mechanism set out for the ESD, it is to be done under the Monitoring Mechanism of the EU. (Note that the ESD is referring to Decision 280/2004/EC, which was since repealed and replaced in 2013 by the Monitoring Mechanism Regulation (MMR)⁷⁶. For more on the MMR, see Chapter 2. The new MMR fully incorporates the monitoring requirements set out under Art 6 of the ESD, and thus there is no need to discuss them here in detail. It should suffice to say here that Member States are required to report not only their emissions and credit use, but also on existing and planned national policies aiming to reduce their emissions under the ESD and their national projections of these emissions. The Commission has the right to evaluate whether the reported policies are sufficient to meet the Member States' obligations under the ESD. When doing this, the reductions due to Community policies and measures also need to be taken into account.

⁷⁵ Commission Regulation (EU) No 389/2013 of 2 May 2013 establishing a Union Registry pursuant to Directive 2003/87/EC of the European Parliament and of the Council, Decisions No 280/2004/EC and No 406/2009/EC of the European Parliament and of the Council and repealing Commission Regulations (EU) No 920/2010 and No 1193/2011 Text with EEA relevance

⁷⁶ Regulation (EU) No 525/2013 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

2. PRINCIPAL OBLIGATIONS

2.1 PLANNING AND PREPARATION

The ESD is applicable for the period between 2013 and 2020, with no indication in the text on what is to happen afterwards. However, it is expected that the ESD will be extended for the period after 2020, and in a largely similar structure. Read more about this under 2.3 below. The table below shows the key preparatory actions that should be undertaken before accession.

<i>Planning and Preparation</i>
Make an assessment of the human and financial resources needed to implement the Decision and assessment of its implementation in connection with the implementation of internationally registered emission reduction actions (under the Paris Agreement)
Make long-term projections for the emissions in the ESD-sector; identify key areas of emissions growth, and areas with the cheapest reduction potential
Development of emission reduction measures and programs in the effort sharing sectors
Set up coordination mechanisms to ensure synergies with implementation of key legislation relevant to this Decision, e.g. energy efficiency legislation, provisions on land-use, agriculture, transportation.

The ESD application for accession countries runs parallel to the implementation and strengthening of their INDCs. The ESD sectors are sectors where emission reduction with significant co-benefits can be realized with large scale programs, especially on the field of building energy efficiency. Such measures are also helpful for implementing energy efficiency.

2.2 THE CURRENT STATE OF IMPLEMENTATION IN THE SECTORS UNDER THE EFFORT SHARING DECISION

As the EU ETS, the ESD suffers from targets which were set shortly before the 2008 financial crisis and foresaw much larger economic growth than what eventually took place. As a result according to the EEA's latest report⁷⁷ on the EU's progress towards its climate policy targets, overall EU ESD emissions

⁷⁷ Source: Trends and projections in Europe 2015 — Tracking progress towards Europe's climate and energy targets, (European Environmental Agency, 2015) (<http://www.eea.europa.eu/publications/trends-and-projections-in-europe-2015>)

are expected to have decreased by 12,7% between 2005 and 2014. The EEA's forecasts show that the overall EU ESD target will be overachieved in 2020 with a surplus of about 1 500 million AEAs (ie. 1 500 million tonnes of CO₂e).

All Member States are on track to meet all their annual targets between 2013 and 2020. Only Austria, Belgium, Ireland and Luxemburg are expected to fail to meet their targets and thus to resort to purchases of AEAs or credit entitlements from other Member States. Note that these are all small Member States, and amount to very little overall demand for AEAs under the ESD. Furthermore, even these Member States are mostly not very far from their targets, so even if they do not introduce additional measures for reducing ESD emissions, they may avoid buying AEAs or credits until the end of the period through carrying forward 5% of their allocations.

This situation is witnessed in the trading record so far: 2015 was the year when 2013 emissions were already available and therefore there would have been a reason to start transactions. So far however, no transactions are recorded⁷⁸ in the EU Transaction Log⁷⁹.

At this point it should be noted that unlike in the ETS, there is no banking after 2020 for the next period in the ESD, so, unless the ESD Decision is expressly amended, the surpluses will not be carried over into the next period. This is because under Article 3 (3) of the ESD, it is quite clear that carrying over unused allowances can only be done until 2020.

2.3 ONGOING REVIEW OF THE EFFORT SHARING DECISION

The ESD system is currently under revision: The ESD Decision itself requires that an implementation report is presented by the Commission on the ESD in 2016, and the review of the ESD currently ongoing fits into the preparations for the new Climate and Energy Framework to be established for the period between 2020 and 2030. This framework will encompass the ETS, the ESD and the renewables and energy efficiency policies.

The outlines of the ESD system after 2020 are known from the Council Conclusions of 23/24 October 2014⁸⁰, which states that:

1. The overall EU target for 2030 will be 40% compared to 1990, and the ESD sector will have a target of 30% compared to 2005.
2. The ESD targets will be set on the basis of relative GDP per capita of the Member States, and fairness and solidarity will remain the guiding principle. However, targets for wealthier Member States will be adjusted *"to reflect cost-effectiveness in a fair and balanced manner"*
3. The target values will be between 0% and -40%, i.e. no Member State will have a positive target.
4. *"The availability and use of existing flexibility instruments within the non-ETS sectors will be significantly enhanced in order to ensure cost-effectiveness"*. It is not clear yet how this is to be

⁷⁸ According to Annex XIV of the Registries Regulation, all ESD transfers should be public within 24 hours of completion

⁷⁹ <http://ec.europa.eu/environment/ets/welcome.do?languageCode=en>

⁸⁰ http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/145397.pdf

achieved, but it is clear that if some Member States will have tighter ESD-targets than in 2013-2020 period, they will more often have recourse to flexibility instruments.

The detailed Commission draft of the new ESD Decision is expected in 2016.

2.4 ACCESSION PROCESS

Since the adoption of the ESD decision in 2009, there was only one accession to the EU, of Croatia in 2013. In the ESD, Croatia was simply added to the list of Member States with a GHG target of +11% until 2020. No special or transition rules were established to introduce the ESD in Croatia. The EU's most recent association agreements signed in 2014 (with Ukraine⁸¹ and Moldova⁸²) and others, do not mention the ESD either. This implies that no lengthy preparatory activities are needed before accession with regard to its implementation.

Of course, when accession is agreed, there will be a need to calculate the target for the accession country. For this, there is a need for 2005 per capita GHG emissions (which can be discovered in the reports submitted to the UNFCCC Secretariat), and the share of the ETS sector within the total economy. ETS sector emissions data may or may not be available upon accession: the newer Association Agreements (e.g. with Moldova) do require that the ETS Monitoring system is established within a few years of signing. Older Association Agreements (e.g. with Serbia) typically do not contain any reference to the EU ETS, and thus will not result in ETS sector emissions data before accession. In these cases, proxy data will have to be used. The right proxy data would be chosen on an ad-hoc basis as a result of the accession negotiations.

2.5 NATIONAL IMPLEMENTATION REQUIREMENTS

The ESD Decision itself is not particularly resource-intensive with respect to its direct implementation requirements. As a Council and Parliament Decision, the ESD is applicable directly to Member States, and thus does not require any domestic transposition measures. The monitoring system is to be implemented as part of the MMR (see Chapter 2), the management of the Member State ESD account can involve no more than the occasional transfer or other flexibility action every now and then. However, without knowing the ESD target of a country, it is difficult to estimate the indirect requirements of the ESD, i.e. those that are related to reducing ESD emissions and to selling any surplus AEAs.

On the basis the fairly lenient targets applicable to CEE Member States and the target given to Croatia in 2013, it can be expected that countries joining before 2020 will not be given a target that will cause

⁸¹ <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2014:161:FULL&from=EN>

⁸² <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014D0492&rid=1>

much difficulty to comply with. The target for 2030 can be more of a challenge, especially as according to the Council conclusions quoted earlier, no target can be higher than 0% compared to 2005.

For want of a better approximation, it is best to assume for any Accession Country that its target for 2030 will be 0%, i.e. its ESD emissions in 2030 will have to equal those in 2005. In order to establish whether any policy measures will be needed to meet this, there is a need to forecast ESD emissions until 2030, estimate the impact of possible additional EU policies that will need to be implemented, and if projected 2030 emissions are still higher than those in 2005, national mitigation measures will need to be planned. By contrast, if 2030 emissions are expected to be significantly below 2005 emissions, then an Accession Country might consider developing a strategy or policy for selling its surplus AEAs.

2.6 EU-LEVEL AND NATIONAL POLICIES TO REDUCE EMISSIONS IN THE ESD SECTOR

There is a broad range of measures that are aiming at reducing GHG-emissions in the ESD sector, spread around many sectors. Discussing each policy in detail is beyond the scope of this book and does fall under other sectoral policies or acquis transposition exercises. Here we will provide an overview of the most important policies that contribute to ESD emission reduction:

2.6.1 BUILDING ENERGY USE

According to the EEA report⁸³ the most significant emission reductions until 2020 are to take place in building energy efficiency. This is explained by the i) large share of total energy use related to the heating and hot water supply of buildings (which are responsible for 40% of the EU's energy consumption, although some of the related emissions fall under the ETS); and ii) by the many cost-effective saving opportunities that are available in the building stock. The key EU policies that help reduce the energy consumption of buildings are the following:

1. The Energy Performance of Buildings Directive (EPBD) of 2010⁸⁴ requires that all buildings sold or rented should have an energy performance certificate. This will gradually result in a real estate market that can reward better performing buildings, thus giving incentives to refurbishment and low-energy building. It also requires that by the end of 2020, all new buildings must be nearly zero energy buildings, and building renovations are to be carried out to cost-effective minimum energy performance requirements.

⁸³ see Footnote no. 77

⁸⁴ Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings (http://eur-lex.europa.eu/legal-content/EN/ALL/;ELX_SESSIONID=FZMjThLLzfxmmMCQGp2Y1s2d3Tjwtd8QS3pqdkhXZbwqGwlgY9KN!2064651424?uri=CELEX:32010L0031)

2. The Energy Efficiency Directive of 2012⁸⁵ requires that every year at least 3% of buildings owned and occupied by floor area by Member State governments should be renovated to an energy efficient level, and that new government buildings should all be highly energy efficient.
3. The Ecodesign Regulations of 2013⁸⁶ on space heaters and water heaters establish high energy efficiency performance requirements for domestic heating and warm water appliances sold after 2015.

The building stock has a very low turnover-rate, about half of the buildings in the EU are more than 50 years old, and major renovations also do not happen very frequently. Therefore it is expected that as the above measures gradually reach ever more buildings, emission reductions will continue in this sector even after 2020. For most accession countries, this sector has the most cost-effective emission reduction potential. What is more, these measures are very effective in making people's lives better, as they reduce energy costs, increase the value of buildings and make dwellings more comfortable.

2.6.2 TRANSPORT

Transport is the second largest sector in terms of emissions (accounting for almost a quarter of all EU emissions) and almost all of this falls under the ESD. Unlike other sectors, the share of transport has increased since 1990, and only started to decrease since 2007 (probably due to the financial crisis.) Transport remains the area where it is the most difficult and most costly to reduce emissions. The EEA estimates⁸⁷ that existing EU measures will only achieve a 0.7% decrease in transport emissions until 2020.

Over 90% of these emissions come from road transport, and therefore EU policy measures focus on road vehicle emissions. The most important measures are:

1. The Regulation on CO₂-targets for cars of 2014⁸⁸ requires that by 2021 the fleet average to be achieved by all new cars is 95 grams of CO₂/km, which is equal to about 4,1 l/100 km for petrol and 3,6 l/100 km for diesel cars. The target for 2015 was 130 grams but this was already achieved in 2014. The limits are set up in a way that heavier cars are allowed higher emissions than lighter cars.

⁸⁵ Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC Text with EEA relevance (<http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1399375464230&uri=CELEX:32012L0027>)

⁸⁶ Commission Regulation (EU) No 813/2013 of 2 August 2013 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for space heaters and combination heaters Text with EEA relevance (<http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32013R0813>); and

Commission Regulation (EU) No 814/2013 of 2 August 2013 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for water heaters and hot water storage tanks Text with EEA relevance (<http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32013R0814>)

⁸⁷ See Footnote no: 77

⁸⁸ Regulation (EU) No 333/2014 of the European Parliament and of the Council of 11 March 2014 amending Regulation (EC) No 443/2009 to define the modalities for reaching the 2020 target to reduce CO₂ emissions from new passenger cars. (http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2014.103.01.0015.01.ENG)

2. A similar Regulation on CO₂-targets for vans also of 2014⁸⁹ requires them to reach an average of 147 grams of CO₂/km by 2020, down from the 2014 average of 169 g CO₂/km
3. The car-labelling Directive⁹⁰ of 1999 requires that a label on fuel economy is displayed for all cars offered for sale or advertised
4. The Fuel Quality Directive⁹¹ of 2009 (FQD) aims to reduce the GHG intensity of vehicle fuels by 6% by 2020 through the admixture of biofuels, the reduction of flaring and venting, the use of less carbon intense fuels and electrification. The FQD was also used in its earlier versions to reduce sulphur content, and also regulates the sustainability of biofuels.

As the 2014 Council Conclusions specifically instructed the Commission to “further examine instruments and measures for a comprehensive and technology neutral approach for the promotion of emissions reduction and energy efficiency in transport, for electric transportation and for renewable energy sources in transport also after 2020”⁹², it can be expected that the reduction of transport emissions will play an increasingly relevant role in the EU’s climate policy, leading to further measures in technological improvements, eco-driving, electrification, etc. This is only natural, as with the relatively faster decline of emissions in another sectors, the share of transport emissions keeps increasing. The Council also recalled that transport could potentially be included in the EU ETS.

2.6.3 AGRICULTURE

Agriculture was responsible for about 10% of the EU’s greenhouse gas emissions in 2012. Agricultural emissions are steadily and slowly decreasing since 1990. Half of these emissions come from the N₂O releases from the use of fertilisers, and a third is a result of methane releases from the digestion of ruminant animals (e.g. cows and sheep).

Emissions are expected to drop further in the future, partly as a result of the Community’s policies aimed at reducing GHG emissions from agriculture: Under the Common Agricultural Policy (CAP) farmers are required to meet a range of environmental criteria in order to receive funding. There are additional incentives, so-called “green-payments” for implementing crop diversification, ecological focus areas and permanent grassland. Furthermore, the CAPs rural development objectives also support the transition towards a low-carbon economy.

Although emissions related to land use, land use change and forestry (LULUCF) do not fall under the ESD, the 2014 Council Conclusions specifically stated that “*Policy on how to include Land Use, Land Use*

⁸⁹ Regulation (EU) No 253/2014 of the European Parliament and of the Council of 26 February 2014 amending Regulation (EU) No 510/2011 to define the modalities for reaching the 2020 target to reduce CO₂ emissions from new light commercial vehicles Text with EEA relevance (http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2014.084.01.0038.01.ENG)

⁹⁰ DIRECTIVE 1999/94/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 13 December 1999 relating to the availability of consumer information on fuel economy and CO₂ emissions in respect of the marketing of new passenger cars (http://ec.europa.eu/clima/policies/transport/vehicles/labelling/docs/directive_en.pdf)

⁹¹ Directive 2009/30/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 98/70/EC as regards the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and reduce greenhouse gas emissions and amending Council Directive 1999/32/EC as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC (Text with EEA relevance) (<http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009L0030>)

⁹² See footnote no. 80

*Change and Forestry into the 2030 greenhouse gas mitigation framework will be established as soon as technical conditions allow and in any case before 2020*⁹³. The Council also noted that the potential for reducing emissions in agriculture is limited and intimated that afforestation could be a good way to help this sector to contribute to emission reductions. It remains to be seen what role LULUCF emissions will play in the ESD system after 2020.

2.6.4 WASTE

The waste sector covered about 3% of EU GHG emissions in 2012, and these emissions show a steady decline, both through the reduction of waste going to landfills, and through the capture of methane generated in landfills through anaerobic fermentation. Waste legislation is part of the environmental acquis and GHG reduction is but one objective among a range of environmental objectives pursued. The most important EU measures on waste are:

1. The Landfill Directive⁹⁴ of 1999 requires that the amount of waste going to landfills is minimised (preferring recycling and incineration instead) and the methane produced by landfills is captured and used for energy generation or flared (in order to convert it to CO₂, which is a less potent GHG than methane)
2. The Waste Framework Directive⁹⁵ of 2008 creates a legal framework for treating waste in the EU, and among many other things, it establishes a recycling target of 50% for household waste by 2020, which will further reduce waste-related GHG emissions

2.6.5 F-GASES

The industrial process emissions under the ESD are mainly comprised of F-Gases. F-gases are responsible only for about 2% of all GHG emissions in the EU, but emissions in this sector are rising strongly. They are also very powerful GHG, with each ton equal to up to 23 000 tons of CO₂. They can also have lifetimes of thousands of years.

The three groups of F-gases are hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆), with HFCs being the most significant. HFCs are used as refrigerants, coolants in air-conditioning, as solvents, or fire extinguishers. PFCs and SF₆ are special use industrial gases, mainly occurring in the electronics sector.

⁹³ See footnote no. 80

⁹⁴ Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste (<http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31999L0031>)

⁹⁵ Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (Text with EEA relevance) (<http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008L0098>)

Replacing the earlier Regulation from 2006, a new F-gas Regulation⁹⁶ was adopted in 2014 with the objective of cutting the EU's F-gas emissions by two-thirds compared to 2014.

⁹⁶ Regulation (EU) No 517/2014 of the European Parliament and of the Council of 16 April 2014 on fluorinated greenhouse gases and repealing Regulation (EC) No 842/2006 Text with EEA relevance (http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2014.150.01.0195.01.ENG)

3. IMPLEMENTATION CONSIDERATIONS

3.1 KEY TASKS

Most of the ESD implementation actions are either part of other policies (MMR, sectoral policies), or are done by the European Commission (account management, compliance actions and corrective actions.) The methodology for target setting is known, and will have to be adapted to the Accession Country as part of the accession negotiations (see under 2.3). Before the accession date is set, countries should focus on allocating AEA management obligations within the administration, and the setting up of a regular forecasting and strategy process for the ESD sector.

If accession takes place before 2020, it is unlikely that any target calculated for new Member State would be as tough as to require real policy action (considering that even most current Member States do not need to take any action either for their compliance.) Of course, parts of the *acquis* resulting in GHG emissions reductions for the ESD sector would still need to be implemented. (see under 2.4)

If accession takes place after 2020, the new Member State's obligations will be guided by an ESD Decision that has not yet been adopted.

<u>Regulatory actions for implementation</u>
Allocate responsibility within the administration for ensuring compliance with ESD targets
Create a mechanism for the regular forecasting of ESD emissions, and the a regularly updated strategy for emissions reductions
Set up government fiscal rules on buying and selling AEAs and on the use of revenues

3.2 PHASING CONSIDERATIONS

As indicated before, most of the activities that will contribute to the targets set out under the ESD fall under other sectoral policies. With the date of accession not yet set, the key task for an accession country is to have a long-term (i.e. up to 2030) vision of how its greenhouse gas emissions are expected to evolve, and whether it may need to adopt emission reduction measures in the ESD sector that are additional to those mandated by the EU *acquis*.

At this stage no additional capacity needs to be developed for the ESD in Accession Countries (bearing in mind that ESD monitoring requirements are covered under the MMR.)

3.3 IMPLEMENTATION LESSONS FROM MEMBER STATES

Examples from Member States

Czech Republic: Green Savings Programme (Zelena Usporam)

The Czech Republic runs the Green Savings (Zelena Usporam) programme since 2009, and its main aim is to support residential energy efficiency and renewable energy investments through non-refundable grants. The programme has been renewed several times, and is funded either from the sales of AAUs or EUAs, or national funds. This subsidy is typically about 60% of the total project costs, and all types of residential buildings may apply. The reductions claimed in the supported projects are monitored for 15 years.

So far, the programme has achieved CO₂ reductions of almost 800 000 tons/year, and although most of the projects aimed at energy efficiency, it appears that renewable projects were capable of reducing more GHG emissions per EUR spent. The programme also resulted in significant energy savings and the creation of about 10 000 jobs.

The Green Savings programme is a good example of a domestic measure that can reduce GHG emissions in the ESD sector in a cost-effective way, and also result in better living conditions and lower energy bills for the public.

Sources:

https://cs.wikipedia.org/wiki/Zelen%C3%A1_%C3%BAspor%C3%A1m

<http://www.novazelenausporam.cz/en/>

3.4 COSTS

The direct implementation tasks related to the ESD are linked to two parts of the implementation. Planning and implementation of policies for emission reduction measures in key non-ETS sectors are the major part of the costs, but they likely bring co-benefits along emission reduction. The most notable of such measures is the building energy efficiency increase, which is also in line with relevant EU policies (see Chapter 1). Such measures are also serving the implementation of international emission reduction commitments in connection with the Paris climate agreement of 2015. It is a general rule that delay in mitigation action will increase its costs and also concentrates the cost to shorter duration of time, resulting in higher costs per annum for the economy, society and the state budget as well.

Another part of the costs are connected to the monitoring of emission reduction performance of the country. It is connected to both international requirements (like Biannual Update Reports) as well as EU requirements under the MMR.

THE CARBON CAPTURE AND STORAGE DIRECTIVE

Official Title: Directive 2009/31/EC of the European Parliament and of the Council of 23 April 2009 on the geological storage of carbon dioxide and amending Council Directive 85/337/EEC, European Parliament and Council Directives 2000/60/EC, 2001/80/EC, 2004/35/EC, 2006/12/EC, 2008/1/EC and Regulation (EC) No 1013/2006.

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1. SUMMARY OF MAIN AIMS AND PROVISIONS

Carbon capture and geological storage (CCS) is a technique reducing CO₂ emissions and thus mitigating climate change by trapping carbon dioxide emitted from large point sources such as power plants, stripping it of associated substances, compressing it, and transporting it to a suitable storage site where it is injected into the ground (“sequestration in geological formations”) with the aim of isolating it from the atmosphere for good.

The major application for carbon capture and storage (CCS) is in power generation from fossil fuels, principally coal and gas, and CO₂-intensive industries such as cement, iron and steel, petrochemicals, oil and gas processing.

CO₂ can be stored in geological formations including oil and gas reservoirs, unmineable coal seams, and deep saline reservoirs. The 2005 Special Report on CCS by the Intergovernmental Panel on Climate Change concluded that appropriately selected and managed geological reservoirs are 'very likely' to retain over 99% of the sequestered CO₂ for longer than 100 years and 'likely' to retain 99% of it for longer than 1000 years.

CCS is considered to be one of the options available to reduce direct emissions from the EU's energy and carbon-intensive industrial processes on the scale needed to reach the objectives of the EU's 2030 climate and energy policy framework.

The Carbon Capture and Storage Directive, which was adopted in April 2009 as one component of the EU's 2020 climate and energy package, establishes a legal framework to ensure that the practice of CCS is done safely in terms of health and environment.

It focuses on the storage part of the CCS chain through the entire lifetime of the site, and it links into and strengthens provisions on capture regulated in the Industrial Emissions Directive⁹⁷ and transport of CO₂ regulated in the Environmental Impact Assessment Directive⁹⁸.

Scope of application:

- Territory, exclusive economic zones and continental shelves of the Member States;
- Not applicable to research projects < 100 kilo tonnes;
- Storage in the water column is not permitted.

It is important to note that the CCS Directive enables CCS but it does not make it mandatory in the Member States to provide for CCS. Hence, Member States (and candidate countries) can decide not to allow CCS in their territory. However, new combustion plants with a rated electrical output of 300 megawatts or more may only be permitted if: 1) the availability of suitable storage sites and technical and economic feasibility of transport networks and retrofit for capture have been assessed; and 2) if

⁹⁷ Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control)

⁹⁸ Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment (as amended by Directive 2014/52/EU)

the assessment is positive, sufficient space for capture and compression has been reserved on the site. The main components of the Directive comprise:

1. Site selection and exploration

- Crucial to ensure storage integrity and security;
- Potential storage sites have to be assessed pursuant to criteria listed in Annex I and may only be selected if there is no significant risk of leakage or negative impacts on human health or environment;
- Member States decide on exploration procedures;
- Exploration permit has to be issued to protect holder against conflicting uses of the site during validity.

2. Storage permits

- No storage without storage permit;
- In the granting of the storage permit, priority should be given to the holder of the exploration permit over competitors;
- The Directive specifies detailed provisions on application, conditions and contents of the storage permit;
- Permit applications and draft storage permits have to be submitted to the Commission for review with the assistance of an independent scientific panel of technical experts. The Commission may issue a non-binding opinion within 4 months from which Member States can deviate with sound justification. The aim of this exercise is to ensure consistency in implementation of the requirements of the CCS Directive across the EU and also to help enhance public confidence in CCS.

3. Acceptance of CO₂ streams

- CO₂ streams shall consist overwhelmingly of CO₂;
- Other substances must be limited to levels that do not adversely affect the security of the transport network or storage and do not pose a significant risk to the environment or human health;
- CO₂ streams have to be verified by operator prior to injection.

4. Monitoring and reporting

- Operator has to regularly monitor storage site (including injection facilities) and report results at least once a year to the competent authority;
- Monitoring takes place on the basis of a comprehensive monitoring plan to be established by the operator pursuant to the criteria listed in Annex II and agreed by the competent authority;
- Inspections at least once a year until the first three years after closure of the site, then every five years until transfer of responsibility.

5. Leakages

- Operator has to immediately notify competent authority and take necessary corrective measures to prevent or stop the release of CO₂ from the storage complex;
- If operator does not take the necessary measures, the competent authority takes the measures itself and recovers the costs incurred from the operator;

- Environmental Liability Directive may apply to local environmental damage (Water, soil, protected species/ habitats);
- Emissions Trading Directive (EU-ETS Directive): 1) captured and stored CO₂ emissions are recognised as not emitted under the EU-ETS, 2) in case of a leakage, the operator has to hand in ETS allowances.

6. Closure, post-closure obligations and transfer of responsibility

- Permanent closure is possible if conditions in permit are met or upon decision by the competent authority;
- The operator remains responsible for storage site after closure (sealing the storage site, removing injection facilities, monitoring, reporting, corrective measures, surrender of allowances in case of leakages, preventive and remedial actions) until the transfer of responsibility to the competent authority;
- Transfer of responsibility to the competent authority is possible if: 1) all available evidence indicates complete containment of CO₂ 2) a minimum period determined by the competent authority (generally 20 years) has elapsed, 3) a financial contribution for the post-transfer period has been provided; 4) the storage site has been sealed and the injection facilities have been removed;
- The Commission may review and issue an opinion on draft decisions of transfer (as for draft permits);
- Monitoring may be reduced after transfer to a level allowing detection of leakages or significant irregularities

7. Financial security, financial contribution, third-party access

- Financial security by the operator is needed to ensure that requirements pursuant to the CCS Directive and the EU ETS Directive can be met (including closure and post-closure);
- Financial security constitute a proof of availability together with permit application;
- The financial security is adjusted over time and released upon transfer of responsibility to the competent authority;
- Financial contribution (post-transfer) is to be provided by operator before transfer of responsibility corresponds at least to the costs of monitoring for 30 years;
- Third party access is based on the principle of open and equitable access to CO₂ transport network and storage sites;
- Third party access limits include lack of storage capacity, lack of connection;
- Third party access also involves dispute settlement arrangements, including for cross-border disputes.

The CCS Directive has led to the amendment of a number of EU legislation and international legal measures to remove legal barriers:

- The Water Framework Directive (2000/60/EC) to allow storage of CO₂ in saline aquifers;
- Environmental Liability Directive (2004/35/CE) to include operation of CO₂ storage sites
- Waste Framework Directive to exclude CO₂ captured and transported for the purpose of geological storage from the scope of application;

- Waste Shipment Regulation to remove CO₂ for the purposes of storage pursuant to from the scope of application;
- 2006 Amendment of the London Protocol (1996) to the London Convention (1972) on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter;
- 2007 Amendment of the OSPAR Convention (1992) for the Protection of the Marine Environment of the North-East Atlantic.
- EIA Directive to cover storage sites, as well as capture and transport of CO₂ streams for the purpose of geological storage;
- the Industrial Emissions Directive (IED) to include the capture of CO₂ streams for the purpose of geological storage.

It is worth noting that for the exchange of information and best practices the Commission has set up an Information Exchange Group of experts from Member States. The Commission has also prepared a set of four guidance documents (GD) for the competent authorities and relevant stakeholders to provide an overall methodological approach to implementation of the key provisions of the CCS Directive:

- GD1: CO₂ life-cycle risk management framework;
- GD2: site characterisation/ CO₂ stream composition/ monitoring/corrective measures;
- GD3: criteria for transfer of responsibility to Competent Authority;
- GD4: financial security (Art. 19) and financial mechanism (Art. 20);

Previously, the EU's 'NER300' programme made available 300 million allowances for CCS and innovative renewable energy technologies. Building on this experience, the European Council has concluded that 400 million allowances in 2021 to 2030 should be dedicated for setting up an innovation fund to support demonstration projects of innovative renewable energy technologies, carbon capture and storage (CCS) as well as low carbon innovation in industrial sectors. This will lead to changes in the EU ETS Directive and in secondary legislation.

When the CCS Directive was agreed in 2009 there was a clear expectation that as of 2015 there would be up to 12 large scale CCS plants operating in Europe. This has not been the case and to date there are only two large scale CCS plants operating in Europe, probably because the low price of CO₂ emissions achieved in the ETS has rendered CCS unattractive for developers. Given the lack of practical experience and thus a firm basis for the determination of improvement options, it is assumed that the Directive will not be reopened for significant changes in at least the next five years.

2. PRINCIPAL OBLIGATIONS OF MEMBER STATES

2.1 PLANNING AND PREPARATION

The following requirements have to be considered as per CCS Directive:

- Plan the implementation well in advance first deciding on whether CCS will be allowed in the territory (Art. 4).
- Designate the competent authority or authorities responsible for fulfilling the duties under this Directive and put into place suitable coordination measures.
- Plan the necessary changes to the existing legislation to ensure consistency with the provisions of the CCS Directive, e.g. Waste Directive, Environmental Liability Directive, Water Framework Directive, EIA Directive.
- For CCS storage, ensure that CCS is applied in the territory of the Member States, their exclusive economic zones and on their continental shelves within the meaning of the United Nations Convention on the Law of the Sea (Unclos) but not to areas beyond these zones, to the water column nor to geological storage of CO₂, with a total intended storage below 100 kilotonnes, undertaken for research, development or testing of new products and processes. Selection of storage sites in parts or the whole of a Member State's territory should be done according to the requirements of the Directive. (Arts. 2 and 4)
- Plan the transposition in detail embracing all the definitions, concepts and principles. (Article 3)
- Ensure that a suitable dispute settlement arrangement exists with an independent authority to arrange for the settling of disputes relating to access to transport networks and to storage sites. (Art. 22)
- Introduce or adjust the existing penalty system for environmental offences, to ensure effective, proportionate and dissuasive enforcement in case of non-compliance with the provisions of the CCS Directive. (Art. 28)
- The competent authority shall establish and maintain a register for the storage permits granted and a permanent register for closed sites and surrounding storage complexes. (Art. 25)
- Ensure that information regarding CCS is made available in accordance with other applicable EU legislation, e.g. EIA Directive, Public Access to Environmental Information Directive and Public Participation Directive. (Art. 26)
- Put into place transboundary cooperation mechanism and bodies in terms of ensuring cooperation with neighbouring Member States in cases of transboundary transport of CO₂, transboundary storage sites or transboundary storage complexes. (Art. 24)

2.2 REGULATION

General requirements

The issuance of a permit for new combustion plants with a rated electrical output of 300 megawatts or more may only be permitted if: 1) the availability of suitable storage sites and technical and economic feasibility of transport networks and retrofit for capture have been assessed; and 2) if the

assessment is positive, sufficient space for capture and compression has been reserved on the site. (CCS Directive, Art. 9(a) and Directive 2010/75/EU on industrial emissions (integrated pollution prevention and control)).

Selection of storage site

When selecting an appropriate storage site ensure that:

- A geological formation shall only be selected as a storage site, if under the proposed conditions of use there is no significant risk of leakage, and if no significant environmental or health risks exist. (Art. 4)
- The suitability of a geological formation for use as a storage site shall be determined through a characterisation and assessment of the potential storage complex and surrounding area pursuant to the criteria specified in Annex I, with an assessment carried out according to best practices at the time of the assessment;

Such an assessment can be carried out by allowing exploration on the basis of an exploration permit according to Article 5 of the CCS Directive. (Art. 4)

Exploration permit

Ensure that exploration for the purpose of generating the information necessary for selection of storage sites only takes place with an exploration permit. In this regard the following key elements have to be considered:

- This permit may include monitoring of injection tests;
- All entities possessing the necessary capacities have access to permit procedure with permits granted or refused on the basis of objective, published and non-discriminatory criteria;
- Its duration should not be longer than the time necessary to carry out the exploration, with a possibility for extension where the duration of the permit is not sufficient for completing exploration and permit conditions are followed
- Permits are granted in respect of a limited volume area;
- Only exploration is carried out in the complex during the validity of the permit. (Art. 5)

Storage permit

Ensure that no storage site is operated without a storage permit, covering maximum one operator for each storage site, with storage as the sole permissible activity. Also ensure that the permit procedure is based on non-discriminatory, published and transparent criteria and that priority is given to the holder of the exploration permit for that site, provided that the following criteria are met: 1) the exploration of that site is completed, 2) any condition set in the exploration permit has been complied with 3) the application for a storage permit is made during the period of validity of the exploration permit (Art. 6).

Ensure that applications to the competent authority for storage permits include the details set out in Art. 7 (e.g. identification of operator, evidence of technical competence, characterisation and assessment of the site, total quantity of CO₂ to be injected or stored, description of preventive measures, corrective measures plan, a monitoring plan, a post-closure plan and information required by EIA, as well as evidence of financial security). (Art. 7)

Ensure that all conditions referred to in Art. 7 are met before issuing the storage permit, e.g. that all relevant legal requirements are met, the operator is financially sound and technically competent and that the operator ensures technical development and training of all staff, specific measures in case operator operates more than one storage site in the same hydraulic unit and that the Commission's opinion is being taken into account in the permit. (Art. 8)

Ensure that the storage permit has the minimum content set out in Art. 9 (e.g. identification of the operator, location and delimitation of the storage site and complex, requirements for storage operation, quantity of authorised amount of CO₂ for storage, pressure limits, injection rates, composition of the CO₂ stream, the approved monitoring plan, measures in case of leakages, conditions for closure and the post-closure plan as well as the requirements regarding financial security. (Art. 9)

The competent authority (CA) shall take into account the Commission's opinion in the final permit decision and in case it deviates from its opinion, state the reasons for deviating from it. (Art. 10)

The storage permit shall be subject to review by the CA after five years first time and then every 10 years thereafter. However, review or amendments may be needed earlier in cases of changes planned in the operation, non-compliance, leakages or significant irregularities. In such cases CA might have to withdraw the permit and decide either to issue a new permit or to close the site pursuant to Article 17(1)(c). The CA temporarily takes over responsibility until a decision is made regarding operations. (Art. 11)

CA should assess whether leakages and significant irregularities are such as to necessitate surrender of greenhouse gas allowances under the ETS Directive and remedial action under the Environmental Liability Directive.

CO₂ streams

Comply with the criteria for CO₂ streams for geological storage:

- A CO₂ stream needs to consist “overwhelmingly of carbon dioxide”;
- No waste or other matter may be added to the CO₂ stream for the purpose of disposing this waste or other matter underground;
- In addition to CO₂, there are two other types of matter that may be present in the CO₂ stream: (a) incidental substances that are associated with the source i.e., the CO₂ source, which is dependent on the used feedstock and the industrial process), capture or injection process; (b) trace substances that may be added to assist in monitoring and verification of CO₂ migration. (Art. 12)

Corrective measures

CA should ensure that:

- The operator prepares a corrective measures plan which is submitted as part of the storage permit application;
- The operator of the storage site immediately notifies the CA in the event of leakage or significant irregularities and takes the necessary corrective measures including measures to protect human health. The operator shall also notify the competent authority pursuant to the ETS Directive;
- The corrective measures referred to above shall be taken as a minimum on the basis of a corrective

measures plan submitted to and approved by the CA;

- In case the operator fails to take the necessary corrective measures, these measures are taken by the CA, and that the operator has to cover these costs by drawing on the financial security pursuant to Article 19. (Art. 16, CCS Directive).

Closure and post-closure

The CA shall ensure that:

- closure is carried out pursuant to Art. 17, e.g. in line with permit conditions, after authorisation of the CA or if the CA decides to withdraw the storage permit.
- also after closure, the operator is responsible for monitoring, reporting and corrective measures as well as for surrendering of greenhouse gas allowances under the ETS Directive and for potential site remediation under the Environmental Liability Directive. The operator is also responsible for activities associated with closure such as removing facilities and sealing the site. These measures should be undertaken pursuant to the post-closure plan.

Article 18 of the CCS Directive states that when a storage site has been closed as per the conditions in the Article 17(a) and (b)1, i.e. that the conditions of the storage permit have been met or that the substantiated request for closure by the operator has been authorised by the CA), the responsibility for all legal obligations can be transferred to the CA of the Member State subject to several conditions noted in Article 18(1):

- All available evidence indicates that the stored CO₂ will be completely and permanently contained;
- A minimum period after closure, to be determined by the CA has elapsed;
- This minimum period shall be no shorter than 20 years, unless the CA is convinced that the first condition above is fulfilled;
- The financial obligations under Article 20 have been fulfilled;
- The site has been sealed and the injection facilities have been removed;
- The operator submits a transfer report, documenting that the stored CO₂ will be completely and permanently contained by demonstrating at least the three items noted in Article 18(2).

Draft decisions and available reports used for the draft decision shall be submitted to the Commission. Within four months after receiving the draft decision of approval, the Commission may issue a non-binding opinion. Once the CA is satisfied that there all conditions referred to in Article 18(1) are met, it shall adopt the final decision of approval of transfer of responsibility and notify the operator and the Commission thereof. (Art. 18)

In case of a withdrawal of the storage permit based on the CA's decision due to non-compliance of the operator (Article 17(1)(c)), Article 18(8) notes that the transfer of responsibility is deemed to take place if and when all evidence indicates that the stored CO₂ is completely and permanently contained, and after the site has been sealed and the injection facilities have been removed. In this case the financial security shall remain valid and effective until transfer of responsibility and the obligations under Article 20 have been fulfilled (see Article 19(3)(b)(ii)).

Routine and non-routine inspections of all storage complexes should be regularly inspected to check compliance and the effects on the environment and on human health should be monitored.

Inspections should:

- Include visits to the surface installations;
- Check injection and monitoring operations;
- Check records;
- Ensure that the routine inspections are at intervals of at least once a year until three years after closure and every five years after transfer of responsibility;
- Ensure non-routine inspections if the CA learns about leakages or significant irregularities.

Financial guarantees

The CCS Directive prescribes two financial guarantees: 1) financial security for the period until the transfer of responsibility, and 2) financial contribution ('financial mechanism') for the period after the transfer of responsibility.

1. The CA shall ensure that operators present sufficient financial security as part of the application of the storage permit, ensuring that all obligations under the CCS Directive, the ETS Directive and the Environmental Liability Directive can be met and that this financial security is periodically adjusted to the assessed risks and estimated costs of all obligations and that it is valid during the whole life-span of a storage project. (Art. 19)
The financial security shall be periodically adjusted to take account of changes to the assessed risk of leakage and the estimated costs of all obligations arising under the permit issued pursuant to this Directive as well as any obligations arising from inclusion of the storage site under the ETS Directive. (Art. 19)
2. The CA shall ensure that the operator makes a financial contribution available to the competent authority before the transfer of responsibility takes place, in line with Annex I and cover the cost of monitoring for a period of 30 years.

Third Party access

The CA has to ensure that measures are taken to ensure that potential users are able to obtain access to transport networks and to storage sites for the purposes of geological storage of the produced and captured CO₂. Refusal to grant access has to be supported with duly substantiated reasons. (Art. 21)

2.3 MONITORING AND ENFORCEMENT

The operator is obliged to carry out monitoring of the injection facilities, the storage complex and surrounding environment, comprising the elements set out in Art. 13 (e.g. detecting irregularities, comparing the actual situation with the model, detecting migration of CO₂, detecting leakages of CO₂, assessing effectiveness of corrective measures).

The CA ensures that operators are establishing a monitoring plan as a basis of the on-going monitoring respecting the conditions set out in Annex II including its updates that need to be approved by the CA. Monitoring should also take into account monitoring carried out under the ETS Directive. (Art. 13)

2.4 REPORTING

Member States must communicate to the Commission the text of the main provisions of national law which they adopt in relation to the CCS Directive.

Every three years the Member States shall submit to the Commission a report on the implementation of this Directive, including the register referred to in Article 25(1)(b) (first reporting occasion for the existing Member States was 30 June 2011).

The Commission shall be notified about the penalty provisions introduced applicable to cases of non-compliance with the CCS Directive and the Commission shall be notified again in case these provisions get amended. (Art. 28)

The CA ensures that storage permits are communicated to the Commission within one month of receiving a permit application, along with other relevant material to be taken into account by the CA in making decision on the storage permit. (Art. 10)

The periodicity shall be determined by which the operator has to report to the CA comprising monitoring results, information on monitoring technology, information on the injected CO₂ streams, proofs of putting into place and maintenance of the financial security. (Art. 14)

Where leakages are detected the operator has to notify the competent authority.

CA must prepare a report on the results of the inspections carried out by them and outline follow-up action. This report must be communicated to the operator and be publicly available. (Art. 15)

The CA shall also ensure that report for the transfer of responsibility is sent to the Commission within one month of receipt along with materials based on which the CA prepares a draft decision on whether or not to approve the transfer of responsibility. (Art. 18(4))

2.5 ADDITIONAL LEGAL INSTRUMENTS

The implementation of this decision should be considered in conjunction with other EC and multilateral legislation. Examples of other related legislation in the climate change sector:

- United Nations Framework Convention on Climate Change;
- Council Decision 94/69/EC of 15 December 1993 concerning the conclusion of the United Nations Framework Convention on Climate Change (OJ L33, 07.02.1994);
- Kyoto Protocol to the United Nations Framework Convention on Climate Change;
- Adoption of the Paris Agreement; 2015 Marrakech Accords;
- Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emissions allowance trading within the European Community amending Council Directive 96/61/EC;
- Council Decision 2002/358/EC of 25 April 2002 concerning approval on behalf of the EU of the Kyoto Protocol and the UNFCCC and joint fulfilment of their commitments;
- Regulation (EU) No 525/2013 of the European Parliament and of the Council of 21 May 2013 on a

mechanism for monitoring and reporting greenhouse gas emissions and for reporting other information at national and Union level relevant to climate change

- Commission Regulation (EU) No 389/2013 of 2 May 2013 establishing a Union Registry pursuant to Directive 2003/87/EC of the European Parliament and of the Council, Decisions No 280/2004/EC and No 406/2009/EC of the European Parliament and of the Council and repealing Commission Regulations (EU) No 920/2010 and No 1193/2011
- Commission Decision 2014/746/EU of 27 October 2014 determining, pursuant to Directive 2003/87/EC of the European Parliament and of the Council, a list of sectors and subsectors which are deemed to be exposed to a significant risk of carbon leakage, for the period 2015 to 2019 Commission Decision 2006/944/EC determining respective emission levels allocated to the Community and each of its Member States under the Kyoto Protocol pursuant to Decision 2002/358/EC (OJ L358, 16.12.2006);
- Commission Regulation (EU) No 1031/2010 of 12 November 2010 on the timing, administration and other aspects of auctioning of greenhouse gas emission allowances pursuant to Directive 2003/87/EC of the European Parliament and the Council establishing a scheme for greenhouse gas emission allowances trading within the Community Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020;
- Directive 2009/30/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 98/70/EC as regards the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and reduce greenhouse gas emissions and amending Council Directive 1999/32/EC as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC.

Other legislation:

- IED (2010/75/EU): regulates and requires a permit for CCS operations;
- EIA-Directive 2011/92/EU regulates storage to a certain extent but mainly relate to transport;
- Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste;
- 2003/33/EC: Council Decision of 19 December 2002 establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to the Directive 1999/31/EC;
- Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy;
- Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for Community action in the field of marine environmental policy;
- Directive 2004/35/CE of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage as amended by Directives 2006/21/EC and 2009/31/EC;
- Directive 2006/21/EC of the European Parliament and of the Council of 15 March 2006 on the management of waste from extractive industries.

3. IMPLEMENTATION

3.1 KEY TASKS

The key tasks involved in implementing these decisions are summarised in the checklist below.

Table: Key implementation tasks

1	Planning and Preparation
1.1	Consider whether the geological storage of CO ₂ in the Member State's territory will be allowed at all and in what areas.
1.2	Plan the transposition process (which will be limited in case it is decided that CCS will not be allowed).
1.3	Identify any logistical, administrative and regulatory barriers preventing a smooth transposition and implementation of the CCS Directive.
1.4	Designate competent authorities for the implementation of the CCS Directive, comprising permit issuing, monitoring, providing guidance and consultation.
1.5	Prepare the necessary legal changes to existing national legislation transposing certain affected EU legislation, e.g. the EIA Directive, Waste Directive, Environmental Liability Directive, Water Framework Directive, Industrial Emissions Directive and Mining Waste Directive.
1.6	Take steps to engage the public to obtain acceptance for CCS activities, as backing of general public is crucial.
1.7	Put into place an inspection system to check compliance with the CCS Directive and effects on the environment and human health.
1.8	Introduce or ameliorate the existing penalty system for environmental offences to ensure effective, dissuasive and proportionate penalties in case of non-compliance.
1.9	Devise permitting system for exploration permits and storage permits ensuring coordination and certain integration with permit and approval procedure under other relevant legislation, e.g. IED, the EIA Directive and Industrial Emissions Directive. For instance, new combustion plants with a rated electrical output of 300 megawatts or more may only be permitted if: 1) the availability of suitable storage sites and technical and economic feasibility of transport networks and retrofit for capture have been assessed; and 2) if the assessment positive, if sufficient space for capture and compression has been reserved on the site.
1.10	Plan a reporting system to ensure for regular reporting for operators towards the Competent Authority and reporting by the Member State/ CA towards the Commission.
1.11	Put into place provisions and procedures to safeguard access to environmental information and public participation as laid down in the EIA Directive, Public Access to Environmental Information Directive and the Public Participation Directive.

1.12	Put in place the register systems, inventories, software programmes needed to carry out assessment, characterisation, permit issuing etc.
1.13	In close cooperation with financial bodies, develop a financial security system to allow for long-term financial security for the CCS activities prior to, during and post-operation.
1.14	Establish mechanism, forum and procedure for transboundary issues and communication in case of projects affecting more than one Member State or in case of leakages or other unplanned events that affect a neighbouring Member State.
1.15	Identify relevant data sources including public and private entities and other appropriate sources such as reports and sectoral studies. Also identify other means for the collection of data and information such as surveys and questionnaires.
1.16	Organise meetings with stakeholders and public authorities to delineate duties and facilitate compliance, and to discuss the legal obligations involved. Set up the necessary administrative and procedural arrangements to ensure co-ordination between entities, including any legislation or data provision agreements required to ensure submission of data and information.
1.17	Competent authorities should assess capacity-building requirements to establish the systems and procedures for collecting data, carrying out assessments, ensuring monitoring, be prepared to take corrective measures in case of passivity of the operator, assess and process information and data received, build inventories of acceptable and non-suitable storage sites, compile reports and ensure cooperation with the operators, Commission and neighbouring Member States.
1.18	Develop models and scenarios to be taken into account when considering potential storage complexes and surrounding area.
1.19	Implementation should be coordinated with ETS Directive; e.g. <ul style="list-style-type: none"> ▪ Captured and stored CO₂ emissions are recognised as not emitted under the ETS; ▪ In case of a leakage, the operator has to hand in ETS allowances.
2	REGULATION
2.1	Ensure that storage sites are closed if the allowed amount of CO ₂ has been stored.
2.2	<p>PHASE 1: SELECTION OF STORAGE SITES AND ISSUING OF EXPLORATION PERMITS, pursuant to Annex I on criteria for the characterisation and assessment of the potential storage complex and surrounding area referred to in Art. 4(3)</p> <p>Step 1: Data collection;</p> <p>Step 2: Building the three-dimensional static geological earth model;</p> <p>Step 3: Characterisation of the storage dynamic behaviour, sensitivity characterisation and risk assessment.</p> <p>Member States which intend to allow geological storage of CO₂ in their territory undertake an assessment of the storage capacity available in parts or in the whole of their territory. Such an assessment can be carried out by allowing exploration on the basis of an exploration permit according to Art. 5 of the CCS Directive.</p>

2.3	<p>PHASE 2: STORAGE PERMITS</p> <ul style="list-style-type: none"> ▪ Ensure no storage of CCS without storage permit; ▪ Comply with provisions on application, conditions and contents of the storage permit set out in the Directive; ▪ Draft storage permits and permit applications have to be submitted to the Commission for review with the assistance of an independent scientific panel of technical experts. Commission may issue an opinion within 4 months; ▪ Member States can deviate from the Commission's opinion with sound justification.
2.4	<p>PHASE 3: ACCEPTANCE OF CO₂ STREAMS</p> <ul style="list-style-type: none"> ▪ CO₂ streams shall consist overwhelmingly of CO₂; ▪ Other substances must be limited to levels that do not adversely affect the security of the transport network or storage; ▪ CO₂ streams have to be verified by operator prior to injection.
2.5	<p>PHASE 4: MONITORING AND REPORTING</p> <ul style="list-style-type: none"> ▪ Operator has to regularly monitor storage site and report results at least once a year to the competent authority; ▪ Monitoring takes place on the basis of a comprehensive monitoring plan to be established by the operator pursuant to the criteria listed in Annex II and agreed by the competent authority; ▪ Inspections once a year in the first three years after closure, then every five years until transfer of responsibility.
2.6	<p>PHASE 5: LEAKAGES</p> <ul style="list-style-type: none"> ▪ Operator has to immediately notify competent authority and take necessary corrective measures; ▪ If operator does not take the necessary measures, the competent authority takes the measures itself and recovers the costs incurred from the operator; ▪ Environmental Liability Directive for local environmental damage (Water, soil, protected species/ habitats); ▪ Emissions Trading Directive for climate damage: 1) captured and stored CO₂ emissions are recognised as not emitted under the ETS, 2) in case of a leakage, the operator has to hand in ETS allowances.
2.7	<p>PHASE 6: CLOSURE, POST-CLOSURE OBLIGATIONS AND TRANSFER OF RESPONSIBILITY</p> <ul style="list-style-type: none"> ▪ Permanent closure is possible if conditions in permit are met or upon decision by the competent authority; ▪ The operator remains responsible for storage site after closure (monitoring, corrective measures etc.); ▪ Transfer of responsibility to the competent authority is possible if: 1) all available evidence indicates complete containment of CO₂, a minimum period determined by the authority (generally 20 years) has elapsed, 3) a financial contribution for the post-transfer period has been provided; 4) the storage site is sealed and the injection facilities have been removed; ▪ The Commission may review and issue an opinion on draft decisions of transfer (as for draft

	<p>permits);</p> <ul style="list-style-type: none"> Monitoring may be reduced after transfer.
2.8	<p>PHASE 7: FINANCIAL SECURITY, FINANCIAL CONTRIBUTION and THIRD-PARTY ACCESS Financial security is needed to ensure that requirements pursuant to the CCS Directive and the ETS Directive can be met (including closure and post-closure)</p> <ul style="list-style-type: none"> Financial security constitute a proof of availability together with permit application; The financial security is adjusted over time and released upon transfer of responsibility to the competent authority; Financial contribution (post-transfer) is to be provided by operator before transfer of responsibility, corresponding at least to the costs of monitoring for 30 years; Third party access is based on the principle of open and equitable access to CO₂ transport network and storage sites; Third party access can be limited by e.g. lack of storage capacity or connection, national climate policies; Third party access also involves dispute settlement arrangements, including for cross-border disputes.
2.9	<p>Subject the storage sites to planned and non-planned inspections to check compliance and effects on environment and human health.</p>
2.10	<p>Impose penalties on non-compliance and ensure remediation in terms of leakages in line with the Environmental Liability Directive.</p>
3	Capacity Building
3.1	<p>Competent authorities must be endowed with the necessary capacity to fulfil, within the appropriate timeframes, at the expected level of quality and on a permanent basis, reporting requirements to the Commission.</p>
3.2	<p>Provide for the training and continued development of officials responsible for the assessments, monitoring but also IT experts involved in modelling and evaluations comprising developing methodologies and software systems.</p>
3.3	<p>Prepare and publish complementary information to the EU, national CCS legislation and the Commission guidelines, as necessary, explaining the duties of the national entity responsible for ensuring compliance with the requirements under CCS Directive.</p>
3.4	<p>Provide technical training to officers in public authorities involved in:</p> <ul style="list-style-type: none"> Collecting information and submitting data, especially in regard to the initial assessment for checking the suitability of the storage area and its vicinity; Ensuring quality control of data submitted from the CCS operators and other sectors involved.
4	Reporting
4.1	<p>Inform the Commission of the text of the main provisions of national law adopted in the field covered by this Directive.</p>
4.2	<p>Submit report on corrective measures plans describing the results and effectiveness of the</p>

	measures used.
4.3	Where leakages are detected the operator has to notify the competent authority.
4.4	<p>Ensure coordination and consistency with reporting obligations under the ETS Directive and Decision on Greenhouse Gas Emission Monitoring Mechanism which requires Member States to report to the Commission every second year the following elements for the assessment of projected progress:</p> <ul style="list-style-type: none"> ▪ Information on national policies and measures that limit and/or reduce greenhouse gas emissions by sources or enhance removals by sinks (on a sectoral basis for each greenhouse gas); ▪ National projections of greenhouse gas emissions by sources and their removals by sinks (as a minimum for the year 2020), on a sectoral basis for each gas; ▪ Information on measures being taken or planned for the implementation of relevant EU legislation and policies; ▪ Information on institutional and financial arrangements, information on the use of joint implementation, the Clean Development Mechanism and international emissions trading, pursuant to Articles 6, 12 and 17 of the Kyoto Protocol, to meet the quantified emission limitation or reduction commitments.
4.5	<p>Ensure coordination with reporting requirements under the ETS Directive:</p> <ul style="list-style-type: none"> ▪ Captured and stored CO₂ emissions are recognised as not emitted under the ETS; ▪ In case of a leakage, the operator has to hand in ETS allowances.

3.2 PHASING CONSIDERATION

The extent to which the implementation is smooth and timely often depends on political climate, national context, economic situation, geological conditions, and the state of public awareness and acceptance of CCS. Some factors to take into account when planning implementation include the following:

- Strong economic incentives exist for industrial operators to prefer low-emission technologies. Hence, the CCS Directive can help the Member States and the Candidate Countries alike to meet their greenhouse gas emission obligations in a way that if carefully planned could have less adverse impact on economic growth;
- The EU Emissions Trading Directive and the CCS Directive both provide a strong legal backbone to facilitate the development of CCS, allowing both private and public money to be invested in order to build large-scale projects. The CCS Directive in combination with the ETS Directive help (i) boost research and innovation, (ii) accelerate the deployment of technology and (iii) define clear targets to combine political and commercial objectives. Candidate countries which plan to allow CCS in their territory, having particular optimal geological, storage and other conditions for CCS, could take strategic and promotional measures to promote PPP constellations and further research and investments into CCS technology;
- The CCS Directive in particular addresses the risk management associated with this technology,

such as the removal of barriers to CCS in existing national legislation, the Regulation of the long-term liability for CCS storage sites and the improvement of communication about CCS to the public and stakeholders. Member States and candidate countries should therefore, early in the planning process, strive to enhance energies, remove conflicting legal provisions, enhance synergies and coordination with the ETS and to carry out an extensive consultation process involving the main actors, stakeholders and the general public. Experience shows however that this type of geological activity is likely to meet much resistance by the general public as is the case with geological storage of dangerous substances, such as nuclear waste and mining residues;

- The scientific basis for CCS is evolving, as more information is gained through the on-going global research and development efforts. Thus, the scientific knowledge-base on issues such as mapping technologies for evaluating storage locations, injection technologies, monitoring technologies, significance of various components in a CO₂ stream, and application of corrective measures will improve over time. Candidate countries should seek experience from existing Member States and the Commission regarding CCS projects, networks, funding opportunities and cooperation frameworks.

4. IMPLEMENTATION GUIDANCE

Geological storage of CO₂ is at an early stage of practical development. It is based largely on well-established petroleum geology, reservoir engineering practices, and oilfield technology developed over the last 100 years. Currently, there is a limited experience in identifying, characterizing, and injecting CO₂ for the purpose of geological storage in underground formations from pilot, demonstration, and a small number of commercial projects. The scientific basis for CCS is evolving, as more information is gained through the on-going global research and development efforts. Thus, the scientific knowledge-base on issues such as mapping technologies for evaluating storage locations, injection technologies, monitoring technologies, significance of various components in a CO₂ stream, and application of corrective measures will improve over time.

The DG CLIMA has established an Information Exchange Group in order to organise an exchange of information between the competent authorities of the Member States and promote a coherent implementation of the CCS Directive throughout the European Union.

DG CLIMA has also produced a set of Guidance Documents ⁹⁹ (available at: http://ec.europa.eu/clima/policies/lowcarbon/ccs/implementation/documentation_en.htm) to assist stakeholders achieving a coherent implementation of the CCS Directive throughout the EU.

1. Guidance Document 1 (GD1): CO₂ Storage Life Cycle Risk Management:

GD1 lays out the overarching framework and nomenclature for the entire life cycle of geological storage activities including its phases, main activities and major regulatory milestones

2. Guidance Document 2 (GD2): Characterisation of the Storage Complex, CO₂ Stream Composition, Monitoring and Corrective Measures:

GD2 builds on GD1 and provides guidance on: site selection, composition of the CO₂ stream, monitoring and corrective measures.

3. Guidance Document 3 (GD3): Criteria for Transfer of Responsibility to the Competent Authority

GD3 addresses the issue of transfer of responsibility for all legal obligations from a site operator to the CA(s). Article 18 of the CCS Directive specifies the conditions under which all legal obligations can be transferred to the CA of the Member State

4. Guidance Document 4 (GD4): Financial Security (Art. 19) and Financial Mechanism (Art. 20)

GD4 is to provide guidance on Article 19 financial security and Article 20 financial mechanism.

Pursuant to the structure of the CCS Directive and the related 4 Commission guidance documents, a CCS project can be divided into 6 core phases:

- Phase 1: assessment;
 - Phase 2: characterisation;
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⁹⁹ The guidance does not represent an official position of the Commission and is not legally binding. Final judgments concerning the interpretation of the CCS Directive can only be made by the European Court of Justice

- Phase 3: development;
- Phase 4: operation;
- Phase 5: post closure/pre transfer;
- Phase 6: post transfer.

However, all of these phases have elements relating to planning, regulation, monitoring, capacity building and reporting. Hence, the presentation of this implementation guidance will not necessarily follow this 6 phase approach.

Examples of CCS projects:

Large-scale projects in Europe

Project Name	Location	Project Lifecycle Stage	Operation Date	Industry
Caledonia Clean Energy Project	United Kingdom	Evaluate	2022	Power Generation
Don Valley Power Project	United Kingdom	Define	2020	Power Generation
Rotterdam Opslag en Afvang Demonstratieproject (ROAD)	Netherlands	Define	2019-20	Power Generation
Sleipner CO2 Storage Project	Norway	Operate	1996	Natural Gas Processing
Snøhvit CO2 Storage Project	Norway	Operate	2008	Natural Gas Processing
Teesside Collective Project	United Kingdom	Evaluate	2020's	Various
White Rose CCS Project	United Kingdom	Define	2020-21	Power Generation

Notable pilot and demonstration CCS projects in Europe:

- France - C2A2 Field Pilot – Le Havre
- France – Lacq CCS Pilot Project
- Germany – Ketzin Pilot Project
- Germany – Schwarze Pumpe Oxyfuel Pilot Plant
- Germany - Wilhelmshaven CO2 Capture Pilot Plant

- Italy – Brindisi CO₂ Capture Pilot Plant
- Netherlands - Buggenum Carbon Capture (CO₂ Catch-up) Pilot Project
- Norway - CO₂ Capture Test Facility at Norcem Brevik, Test Step 1
- Norway – Technology Centre Mongstad (TCM)
- Spain – CO₂ Capture, Transport & Storage Technology Development Plant (TDP)
- Spain – ELCOGAS Pre-combustion Carbon Capture Pilot Project: Puertollano
- Sweden - Karlshamn Field Pilot
- United Kingdom - Aberthaw Pilot Carbon Capture Facility
- United Kingdom - Ferrybridge Carbon Capture Pilot (CCPilot100+) Project
- United Kingdom - UKCCSRC Pilot-scale Advanced Capture Technology (PACT)
- United Kingdom - Renfrew Oxyfuel (Oxycoal 2) Project

Source: www.globalccsinstitute.com/projects

Examples of networks, organisation, clusters, partnership dealing with CO₂ capture and storage:

- CO₂ Capture Project (CCP)

This project is a partnership of major energy companies working together to advance CCS technologies, which was formed in 2000. The CCP has undertaken more than 150 projects to increase the science, economics and engineering applications of CO₂ capture and storage. The group has been working closely with government organizations - including the US Department of Energy, the European Commission and more than 60 academic bodies and global research institutes.

More information at: <http://www.co2captureproject.com/>

- CO₂Europe (supported by the EU's 7th Framework Programme)

This project aims at preparing for large-scale, Europe-wide infrastructure for the transport and injection of CO₂ from zero-emission plants. The project will prepare for the optimum transition from initial small-scale, local initiatives towards large-scale CO₂ transport and storage expected to start around 2020, involving key stakeholders in the field of carbon capture, transport and storage. This transition, as well as the development of CO₂ infrastructure will be studied by developing the business case. The project will give rise to a roadmap for a larger scale CO₂ transport infrastructure from year 2020. The roadmap will be defined for all levels considered in the project, ranging from technical to organizational, financial and societal.

More information at: <http://www.co2europipe.eu/>

- CGS Europe (supported by EU's 7th Framework Programme)

CO₂ Geological Storage (CGS) Europe is the pan-European coordination action on CO₂ geological storage. CGS Europe pools together the expertise of the key research institutes in the area of CO₂ geological storage in EU Member States and Associated Countries. It sets up coordination and integration mechanisms between the CO₂GeoNet Association - the European Network of Excellence on the Geological Storage of CO₂ - and 23 other participants, thus covering most of Europe. It provides an independent platform and reference source where national, European and international experts, institutes and regulators can access the up-to-date results of CO₂ storage-related studies, share experiences and good practices, discuss the implementation of Regulations, identify research needs to face upcoming challenges, and build new projects.

More information at: <http://www.zeroemissionsplatform.eu/links.html>.

- European Carbon Dioxide Capture and Storage (CCS) Demonstration Project Network

The network was launched in autumn 2009 to enhance co-ordination between the earliest players involved in European CCS demonstration projects (as of end-2015, one out of the four projects is in operation) . The European CCS Demonstration Project Network will foster knowledge sharing amongst the CCS demonstration

projects and leverage this new body of knowledge to raise public understanding of the potential of CCS. More information available at: <http://www.ccsnetwork.eu/>

- The Carbon Sequestration Leadership Forum (CSLF)

Ministerial-level international climate change initiative that is focused on the development of improved cost-effective technologies for the separation and capture of carbon dioxide (CO₂) for its transport and long-term safe storage. More information at: <http://www.cslforum.org/>

- The Global Carbon Capture and Storage Institute

Advocates for CCS as one of many options required to reduce greenhouse gas emissions. It shares information from its international Membership, while building capacity to ensure that CCS can become a widely used technology as quickly as possible. The Institute brings together projects, policy-makers and researchers in an effort to overcome challenges facing CCS. It creates channels through which to learn from each other, ensuring a smooth and rapid roll-out of CCS technology. More information at: <http://www.globalccsinstitute.com/institute>.

Example of funding programmes:

- The EU's NER300

This funding programme is the world's largest to support projects for Carbon Capture and Storage (CCS) and innovative technologies to tap renewable energy sources (RES). NER300 is so named because it is funded from the sale of 300 million emission allowances held in the New Entrants Reserve (NER) of the EU Emissions Trading System. More information on open calls at: http://ec.europa.eu/clima/funding/ner300/index_en.htm.

- Innovation Fund 2021-2030

The European Council has concluded that 400 million allowances in 2021 to 2030 should be dedicated for setting up an innovation fund to support demonstration projects of innovative renewable energy technologies, carbon capture and storage (CCS) as well as low carbon innovation in industrial sectors

4.1 PLANNING AND PREPARATION

Firstly, candidate countries should consider and decide, on the basis of geological storage capacities, other local characteristics, existing data and initial stakeholder discussions, whether to allow CCS. If they decide not to, then only some parts of the CCS Directive have to be transposed and implemented (for instance the geological sections do not have to be implemented).

Candidate countries deciding to allow CCS should take the following key measures to ensure sound planning and efficient implementation:

- Engage in wide stakeholder consultation with industry, public authorities, various geological experts, software developers etc. to discuss interest, socio-economic benefits, financial possibilities, knowledge/experience and potential cooperation constellations. The public acceptance is crucial for large-scale CCS projects;
- Take up the CCS implementation and the strategic goals of the potential storage projects in national environmental policies, especially those relating to the EU climate change legislation;
- Check available institutional, administrative, organisational capacities and if need be hire experts, train in-house staff and set up administrative bodies for ensuring high quality services in terms of

data input and verification, modelling and software development;

- Prepare the regulatory network with links to EIA Directive, Environmental Liability Directive, Industrial Emissions Directive, ETS Directive etc. There are many links and overlaps that have to be carefully considered when assessing, operating and closing a CCS project;
- Design a planning approval system comprising all relevant assessments under relevant EU legislation, e.g. the EIA Directive, Mining Directive, Industrial Emissions Directive, the Environmental Liability Directive;
- Devise a system for monitoring and enforcement ensuring measures in case of non-compliance comprising environmental remediation, withdrawal of greenhouse gas emission allowances under the ETS Directive.

Transposition in EU Member States

Member States were requested to comply with the Directive by 25 June 2011 and a large majority have completed transposition. The Commission is working closely with Member States to transpose all necessary provisions of the CCS Directive and is also checking that the transposing measures by the Member States are in conformity with the CCS Directive. Any issues which emerge will be taken up with the concerned Member States (through EU-Pilot letters).

The first implementation report of the Commission, which was adopted in February 2014, was prepared on the basis of Member States' reports submitted between July 2011 and April 2013. The main findings of this report are as follows:

CA: a few Member States chose a single competent authority, most Member States assigned responsibilities to multiple authorities as CCS intersects with a number of different regulatory areas.

Allowing CCS: most Member States do allow geological storage of CO₂, some have reported a decision not to allow it on their territory or part of it due to unsuitability of their geology for CO₂ storage (Finland, Luxembourg, Brussels Capital Region of Belgium). Some other Member States have also not allowed geological storage of CO₂ (Austria, Estonia¹⁰⁰, Ireland, Latvia¹⁰¹, Slovenia, Sweden) or restricted it (Czech Republic - not authorised before 2020), Germany – restrictions on the annual quantity of CO₂ that can be stored).

Suitability of storage site: The Member States which allow CO₂ storage on their territory have implemented the provision on the characterisation and assessment of the potential storage complex and surrounding area (Article 4(3) of the CCS Directive) mostly by incorporating Annex I into their legislation.

Exploration: Some Member States require exploration only in cases where there is too little information to apply directly for a storage permit, others always require exploration permits. With regard to limiting the volume of the explored area, some Member States (e.g. Portugal) limit it directly, while others (e.g. Bulgaria and Hungary) limit only the territory of the surface area, which indirectly determines the maximum exploration volume. Several

¹⁰⁰ absent geological conditions for CO₂ storage (shallow sedimentary basin, no structures, potable water everywhere in aquifers) – Source: 1st CGS EUROPE KNOWLEDGE SHARING WORKSHOP, 6th CO₂GeoNet Open Forum, May 9 2011 – Venice, San Servolo Island. Available at:

<http://www.cgseurope.net/UserFiles/file/1st%20Kickoff%20meeting/Presentations/6-Shogenova.pdf>

¹⁰¹ giving priority to geothermal and natural gas storage use of geological structures. Regulation of Cabinet of Ministers on CO₂ transport networks, access, transboundary cooperation; Source: Ibid.

Member States (e.g. Czech Republic, Spain, France, Italy, Poland and United Kingdom) have already issued exploration permits.

Components of the CO₂ stream: 1) Most Member States include a generic requirement that the stream must consist mostly of CO₂, and that no waste can be added for the purpose of disposing of it, a few Member States impose specific limits for the components. 2) Some Member States require operators to report the composition of the CO₂ stream at regular intervals (e.g. at least once a month in Estonia, and at least every six months in Germany).

Monitoring (Article 13): Most Member States have included in their national legislation the requirements for the monitoring plan to comply both with Annex II to the CCS Directive and with reporting requirements under the ETS Directive. Luxembourg, for example, requires monitoring results to be compared with the behaviour predicted by the 3D dynamic simulation for pressure-volume and saturation.

Reporting by the operator (Article 14): In the majority of the Member States, operators must report to the competent authorities at least once a year, while in many others they have to report more frequently.

Inspections (Article 15): The Member States which allow CO₂ storage on their territory have implemented the provision for carrying out routine inspections at least once a year until three years after closure. Germany is more stringent, prescribing that the routine inspections need to take place once a year even after closure of the site.

Corrective measures (Article 16): The Member States which allow CO₂ storage on their territory have made sure that a corrective measures plan needs to be submitted for approval to the competent authority as part of the storage permit application. A few Member States lay down specific additional requirements in case the operator fails to perform corrective measures, such as fines or permit withdrawal.

Transfer of responsibility: Most Member States require at least 20 years as the minimum period between the closure of the site and the transfer of responsibility, unless the competent authority is persuaded earlier that the stored CO₂ will be completely and permanently contained. A few Member States require longer default periods of 30 or 40 years, while others are prepared to judge exclusively on a case-by-case basis.

Financial security (Article 19): 1) some Member States have adopted additional requirements to the requirements of the Directive and laid down guidelines on specific instruments and calculations of financial security. For instance, Hungary has set a minimum amount of HUF 200 million (around EUR 671 000) for financial security, based on its 1993 Mining Act. 2) Potential financial instruments recommended by some Member States: insurance cover, escrow bank account, bank guarantee, parent company guarantee. (These instruments are recommended also by the Guidance Document of the Commission).

Financial contribution (Article 20): Some Member States lay down additional requirements. For example, Germany requires the operator to save 3 % of the amount saved by the emission rights holder through CO₂ storage, in each year of operation. This amount will be kept in an interest-bearing deposit account with the competent authority, and will be offset with the security before the transfer of responsibility. In the Czech Republic, as another example, the amount of financial contribution must take into account the anticipated cost of monitoring for at least 50 years after the transfer of responsibility to the competent authority before the transfer of responsibility, in order to cover the post-transfer costs.

Sources:

Triple E, Ricardo AEA, TNO (2014) Support to the review of Directive 2009/31/EC on the geological storage of carbon dioxide (CCS Directive)

and

European Commission (2014) Report from the Commission to the European Parliament and the Council on the implementation of Directive 2009/31/EC on the geological storage of carbon dioxide. COM(2014) 99

Common problems of Member States in transposition and implementation

The 1st Awareness Raising Workshop of CGS Europe in April 2011 revealed that the most problematic issues in the transposition process were as follows:

- CCS had not been a part of the official national policy (e.g. Denmark, Slovenia, Sweden, Latvia and Estonia);
- On-going public and political debates (e.g. Germany, Poland, Czech Republic, The Netherlands);
- Insufficient storage capacity (Czech Republic) or absence of storage capacity (Estonia, Finland, Belgium);
- Financial matters (Czech Republic, Latvia, Estonia);
- Change of ministerial structure after elections (Hungary);
- Insufficient public acceptance and perception (e.g. Denmark¹⁰², Germany, Poland, Sweden, Netherlands);
- Complexity in competent authorities because of the complexity of the country, or regional indifferences (e.g. Spain, Belgium);
- Financial security (Czech Republic, Hungary);
- Well abandonment procedure (The Netherlands);
- Criteria for qualification and responsibility transfer to the authorities in the post closure phase, verification and transfer of liability from the operator to public (The Netherlands, France, Croatia, Bulgaria);
- Licensing phase (Croatia, Bulgaria).

Source: 1st CGS EUROPE KNOWLEDGE SHARING WORKSHOP, 6th CO₂GeoNet Open Forum, May 9-11 2011 – Venice, San Servolo Island. Available at:

<http://www.cgseurope.net/UserFiles/file/1st%20Kickoff%20meeting/Presentations/6-Shogenova.pdf>

Examples from Member States: Transposition in the Netherlands

“The CCS Directive has been transposed through the Dutch Mining Act and the Mining Decree and Mining Regulation. It is a literal transposition of the CCS Directive, without any further provisions on matters (e.g., monitoring plan, financial security, financial mechanism, transfer of liability) left by the CCS Directive to the discretion of the Member States. Although this approach is generally considered most suitable as each CCS project has its own specifics that need to be considered, the need of more clarity on sensitive points such as conditions for the transfer of liability before the expiry of the 20 years term is nevertheless acknowledged.”

Source: Global CCS Institute (Oct 2013) The experience of CCS demonstration projects in the European Union with the transposition of the CCS Directive

<http://hub.globalccsinstitute.com/sites/default/files/publications/119721/experience-ccs-demonstration-projects-eu-transposition-ccs-directive-oct-2013.pdf>

Examples from Member States: Transposition in Poland

¹⁰² Denmark: due to absence of public perception it plans to postpone offshore CO₂ storage until 2020 and start with EOR (Enhanced Oil recovery) offshore in the North Sea

Pursuant to legislative proposals from 2010, the legal framework for the activities relating to carbon capture and storage in Poland was designed by the amendment of the existing Geologic and Mining Law. The proposal, as of 2010, does not set out details relating to the form and extent of the required financial security.

The Polish Ministry of the Environment has set out Guidelines for the draft bill on the amendment of the Geologic and Mining Law and some other laws, which help in implementing the CCS Directive (available at: www.mos.gov.pl).

The “competent authority” referred to (in particular see Article 18 of the CCS Directive) will be the Ministry of the Environment acting through National Authority for the Underground Storage Sites of Carbon Dioxide (KAPS CO₂). This authority will be authorised in Poland to take the responsibility in accordance with the Article 18 of the Directive in case of a closure of a storage site – obviously when all legal requirements for the transfer of responsibility will be met. One of these requirements is that, “a minimum period, to be determined by the competent authority has elapsed. This minimum period shall be no shorter than 20 years unless the competent authority is convinced that the criterion referred to in point (a) is complied with before the end of that period.” Some points of the guidelines (in the version from 2010):

- Not possible to shorten the minimum period from 20 years despite of evidence of its safe storage and assent of the competent authority;
- The National Fund for the Nature Conservation and Water Management will collect financial contributions paid by the operators of a CO₂ storage sites as regards financial security;
- The financial security has two components:
 - refundable – covering the costs of the closure of the storage site, the anticipated cost of monitoring for a period of 20 years, and costs of remedial actions (if need be) before the transfer of responsibility
 - non-refundable – covering at least the anticipated cost of monitoring for a period of 30 years after the transfer of responsibility and all other costs borne by the competent authority (KAPS CO₂) after the transfer of responsibility to ensure that the CO₂ is permanently contained in geological storage sites. These costs cover in particular costs of remedial actions and other actions necessary in case the operator does not fulfil its permit obligations.

Source:

<http://www.emissions-euets.com/ccs/902-ccs/31-CCS Directive-government-proposals-for-implementation-in-poland>

Examples from Member States: Transposition in Romania

In Romania, a ministerial working group for implementation of the CCS Directive was set up by Order of the minister of environment and forests no. 323 of 03/10/2010. The working group for implementation of the CCS Directive included representatives such as Ministry of Environment and Forests, Ministry of Economy, Trade and Business, National Agency for Mineral Resources, Romanian Energy Regulatory Authority, MI, Department for European Affairs and of the Institute for Studies and Power Engineering, National Institute for Research – Development of Marine Geology, Geoecology and University of Bucharest – Faculty of Geology and Geophysics.

The GEO no. 64/ 2011 specifies the relevant competent authorities responsible for fulfilling the obligations under the CCS Directive. The main competent authority is the National Agency for Mineral Resources, which is responsible for:

- Selection of storage sites;
- Granting/ updating/ withdrawing exploration permits and storage permits;
- Checking compliance with legal requirements during the operation, closure and post closure periods;

- Reporting and notification to the European Commission;
- Establishing and maintaining a register of granted storage permits;
- Third party access to storage sites (specific procedures will be developed);
- Specific procedures for CO₂ storage activity. Approval of the transfer of responsibility. Checking the operator's financial contribution;
- Complex inspections.

The Ministry of Environment and Forestry is responsible for: coordination of reporting and notification to the Commission (together with the CA).

The ordinance applies to: geological storage of carbon dioxide on the Romanian territory, exclusive economic zone of Romania in the Black Sea and the Black Sea continental shelf for Romania, according to United Nations Convention on the Law of the Sea (UNCLOS), ratified by Romania by Law No. 110/1996 - Article 3 par. (1)

Romania made the following amendments to ensure full compliance with the CCS Directive:

- GD no. 445/2009 on the assessment of the impact on the environment of certain public and private projects (adapting to the EIA Directive);
- Law no. 107/1996 -Water Law with modification and completion by Law no. 310/2004 (adapting to the Water Framework Directive);
- GD. 440/28.04.2010 concerning the establishment of measures to limit air emissions of certain pollutants from large combustion plants (adapting to the Large Combustion Plants Directive¹⁰³);
- GEO no. 68/2007 on environmental liability with regard to the prevention and remedying of environmental damage, as amended and supplemented by Law no. 15/2009 (adapting to the Environmental Liability Directive);
- GEO no. 78/2000 on waste, as amended and supplemented (Law no. 426/2001, Law no. 101/2006, GEO no.61/2006, Law no. 27/2007) (adapting to the Waste Directive);
- GEO no. 152/2005, concerning integrated pollution prevention and control, modified by GEO no. 40/2010 (adapting to the IPPC Directive (which was in effect until 2013)).

Source:

<http://www.iea.org/media/workshops/2012/ccseu/Adriana%20Maria%20Stoica%20and%20Florina%20Sora.pdf>

Examples from Member States: Germany

Previous legal regime:

Large scale industrial production of CO₂ generally was carried out in major industrial installations. These installations were subject to the permitting regime of the Federal Immission Control Act (Gesetz zum Schutz vor schädlichen Umwelteinwirkungen durch Luftverunreinigungen, Geräusche, Erschütterungen und ähnliche Vorgänge – Bundes-Immissionsschutzgesetz – BImSchG). Changes to existing installations comprising equipment to capture and compress CO₂ required a permit review under the immission control law permitting regime.

As the captured CO₂ would most commonly have to be transported to the storage site in pipelines, the legal regime for pipelines was applicable to this part of the CCS process.

¹⁰³ The LCP Directive is repealed and replaced by the Industrial Emissions Directive from 1 January 2016 on.

The applicable legal regime for the actual CO₂ storage depended on how and where the CO₂ should be stored. Federal and state water law was applicable where aquifers were affected. Mining law could apply where CO₂ storage should take place in the context of oil and gas production or using brine caverns.

However, the German mining law had not been drafted with CO₂ storage in mind. Thus, the application of the mining law regime to CCS provided some challenges. For instance, exploratory work for potential CCS storage in salt caverns in the state of Brandenburg used to rely on the mining law regime for brine exploration.

CCS Act:

During the period of the German Parliament of 2005-2009, a bill on CCS Regulation was drafted in response to the EU Directive in 2009. The draft Kohlendioxid-Speicherungsgesetz (Carbon Dioxide Storage Act) was, however, not enacted into law and therefore lapsed at the end of the legislative session.

The Bundestag (Parliament ie. the directly elected representation of the people of Germany) on 7 July 2011 approved the CCS Act allowing for demonstration projects (Gesetz zur Demonstration und Anwendung von Technologien zur Abscheidung, zum Transport und zur dauerhaften Speicherung von Kohlendioxid (ref. nos. 17/5750, 17/6264). However, it was rejected by the Bundesrat (Federal Council that represents the sixteen Länder (federal states) of Germany at the national level) on 23 September 2011.

Opponents of the CCS technology pointed out the possible risks associated with the CCS technology. Due to strong opposition to the technology, two of the states with the most possible storage locations, Schleswig-Holstein and Lower-Saxony, both ruled by coalitions involving the Conservative party CDU, had been lobbying for an opt-out clause. Hence, the 2011 bill contained a clause which gave the federal states the right to designate areas for CCS pilot projects as well as areas in which such projects are not allowed.

After months of political stalemate, the Mediation Committee of the Bundestag and the Bundesrat reached an agreement in June 2012. Since 24 August 2012 the Act on the Demonstration and Use of the Technology for the Capture, Transport and Permanent Storage of CO₂ (Gesetz zur Demonstration und Anwendung von Technologien zur Abscheidung, zum Transport und zur dauerhaften Speicherung von Kohlendioxid – KSpG) applies. It regulates research into, testing of and demonstration projects for permanent storage of CCS in underground layers of rock (cf. Section 1 sent. 2 KSpG).

The compromise had the following provisions:

- A reduction of the maximum storage capacity in Germany compared to the 2011 bill;
- Federal states have the right to designate areas for CCS pilot projects as well as areas in which such projects are not allowed. In taking this decision federal states have to consider the geological particularities of the area and balance them “with other aspects of public concern”;
- Post-closure obligations of the operator a storage site from a period of 10 years to a period of 40 years.

In August 2014, the government of the State of Lower Saxony approved a State CO₂ Storage bill (Niedersächsische Kohlendioxid-Speicherungsgesetz – NKSpG) making use of the above mentioned opt-out clause, which ensured that there would be no permanent CO₂ storage in Lower Saxony. The bill was justified by the statement that large parts of Lower Saxony lacked the geological conditions for safe permanent CO₂ storage, while in other parts of the state significant interests in for example the protection of water and medicinal springs, the wider (cultural) countryside, tourism and mining permits, were conflicting with CO₂ storage. The bill also authorised the Economics Ministry to lay down requirements for public participation prior to planning procedures for the construction, operation and major changes of CO₂ pipelines (another very controversial subject in Germany).

Sources:

<http://www.germanenergyblog.de/?p=9727#more-9727> and <http://www.germanenergyblog.de/?p=16757s>

Examples from Member States: Transposition and competent authorities in Spain

Spain transposed the CCS Directive through Law ('Ley') 40/2010 of 29 December 2010, in advance of the deadline for transposition (25 June 2011). Law 40/2010 largely mirrors the provisions of the Directive, with some minor differences. The implementation was done by means of new legislation rather than trying to adapt the existing mining and other national and regional legislation to the provisions of the CCS Directive. Full transposition required Regulations, rendering Law 40/2010 operational and clarifying some details.

The main competencies for CCS were assigned to the Minister of Industrial Affairs and the Minister for the Environment. Regional authorities ('Comunidades Autónomas') also have selected competencies. Law 40/2010 does not explicitly specify whether a Comunidad Autonoma can prohibit the storage of CO₂ on its territory. However, since all permits for storage of CO₂ are granted by the Minister for Industrial Affairs, it could be presumed that such prohibition is not possible. Law 40/2010 is neutral regarding public participation and access to information concerning CCS, mainly taking the same approach as the CCS Directive, meaning that this is governed by existing legislation.

Source: Prof. Dr. Krämer, L, November 2011, „Case studies on the implementation of Directive 2009/31/EC on the geological storage of carbon dioxide” – United Kingdom. (This case study forms part of the CCLP EU Case Studies Project „The Carbon Capture Legal Programme launched the 'EU Case Studies Project' in January 2010. The project analyses the implementation of Directive 2009/31/EC on the geological storage of carbon dioxide ('CCS Directive')). Available at: <http://www.ucl.ac.uk/cclp/pdf/CCLPEUCaseStudiesProject-Spain.pdf>

4.2 REGULATION

It is useful to take a stepped approach to the implementation and application of the Directive. A large part of the information below is taken from the four Commission guidance documents (*see above for links to the documents*).

4.2.1 PHASE I: SELECTION OF STORAGE SITES AND ISSUING OF EXPLORATION PERMITS

Selecting an appropriate storage site is a crucial first step in improving the viability of a CCS project. A key consideration in site selection is the characterisation and assessment of the potential storage complex and surrounding area, so that risks of environmental and human health impacts can be either avoided or reduced. Poor storage site selection can increase financial and environmental risks enormously, and could set back the eventual CCS deployment, as new potential storage complexes and surrounding areas will have to be screened, selected, and characterised. There are three principal categories for geological storage of CO₂ that are likely to be implemented at the industrial scale: depleted oil and gas fields, enhanced hydrocarbon (oil and gas) recovery (EHR; EOR and EGR), and saline aquifers. The steps in the site selection assessment process include components such as data collection and analysis, 3D geological modelling, dynamic modelling, sensitivity characterisation, and risk assessment. In the selection of storage site, the candidate countries should consult Guidance Document 2 Characterisation of the Storage Complex, CO₂ Stream Composition, Monitoring and Corrective Measures.

The CA may need to consider whether the site and complex characterisation is based on data specifically oriented towards CO₂ storage. Characterisation based primarily on data acquired for the purposes of oil and gas assessment may be incorrectly focussed.

Collection of primary data either through evaluation of existing data or through exploration activities is critical for evaluating the suitability of a particular site and complex.

The main factors in assessing and developing of a potential storage complex and surrounding area should take a holistic approach and consider:

- Geological high integrity;
- Geological safety and security;
- Engineering aspects (e.g. fracking the reservoir to increase injectivity or by use of smart well designs);
- Environmental aspects;
- Commercial aspects (e.g. sites that may from an engineering perspective present some undesirable features (e.g. poor injectivity) when compared with other sites, might be more commercially viable to develop (albeit with more wells or horizontal wells);
- Many models and scenarios will have to be developed and considered for any potential storage complex and surrounding area. Each new observation of the deep surface (by drilling and remote imaging) will update, modify and question each previous consideration and assessment;
- The technical levels of proof, commerciality, and knowledge required to develop different geological sites for the different storage categories will be highly variable. Thus, the competent authority has to consider that the storage permit approval process may need to be flexible, be specific to the site and the storage category, and focus on the specific trapping mechanisms and site development approaches;
- The operators have to be made aware in their consideration of a storage site and storage complex characterisation for an abandoned oil and gas field that the data acquired during exploration and production, and/or at the end of the field life, may not accurately represent the current sub-surface conditions;
- The CA will need to consider whether the proposed operator has carefully taken into account the way in which depleted oil and gas wells have been managed, maintained, completed and abandoned during their life, based on a petroleum field standard of abandonment. The proposed operator and the CA would have to assess whether those standards are compliant with the requirements of the CCS Directive for CO₂ storage;
- The conditions of the abandoned wells should be considered on a case-by-case basis, and if remediation is required, it is important that the potential operator and the CA consider who is responsible for remediation of abandoned wells;
- A CA needs to consider the potential to ensure that at, or near abandonment of oil and gas field developments, appropriate archiving of all relevant data and knowledge occurs in collaboration with the existing operator, so as to be able to have the information available at a future date in case geological storage of CO₂ might be considered at the site. Furthermore, such data will have to be transferred to the CA at the time of transfer of responsibility;
- A CA will need to be vigilant in the re-development of an abandoned field for geological storage, providing careful and diligent overview, especially in the development, remediation and re-entry

of wells;

- CAs may align themselves to projects associated with CO₂ EHR and use that to benefit and improve the assessment approaches and methodologies of storage in other storage categories;
- The CA needs to understand and take account of all possibilities for saline aquifer storage in any region;
- A significant issue with injection into coal is that to maximise access to the best permeability, the likely injection targets will have to be shallow, and potentially within the fresh water groundwater zone (~500m);
- CAs may also need to consider whether there are potential conflict of use issues between coal bed methane operations and CO₂ storage operations due to pressure increase in the reservoir systems that storage operations will produce;
- The operator and the CA should maintain a list of sites dismissed in the site selection process solely because of monitorability;
- The site selection process that an operator performs should be understood by the CA, and should be capable of leading to a transparent and informed decision making process;
- As part of the assessment, an operator will also have to document the potential interactions between the CO₂ storage and other sub-surface uses and potential resource conflicts;
- The CA may need to consider whether the characterisation and assessment of the storage complex and surrounding area are based on data specifically oriented towards CO₂ storage;
- The CA will need to consider the regional impacts of pressure build up both locally and throughout the storage complex when examining the characterisation of the potential complex and surrounding area;
- The operator should document possible conflicts with other competing uses and include this documentation as part of the storage permit application to the CA. There are monitoring practices and best practices that can be implemented to reduce the likelihood of occurrence of such conflicts.

Three-dimensional model

A three-dimensional model represents Step 2 of Annex I to the CCS Directive. Step 2 consists of using the data collected in Step 1 to construct one or more three-dimensional static geological earth models of the potential storage complex, including the caprock and the hydraulically connected areas and fluids. The model should be done using computer reservoir simulators to characterise the complex in terms of:

- Geological structure of the physical trap;
- Geomechanical, geochemical and flow properties of the reservoir overburden (caprock, seals, porous and permeable horizons) and surrounding formations;
- Fracture system characterisation and presence of any human-made pathways;
- Areal and vertical extent of the storage complex;
- Pore space volume (including porosity distribution);
- Baseline fluid distribution;
- Any other relevant characteristics.

Due to interdependency among the different data elements and interim modelling for assessing containment, integrity, injectivity, capacity, and hydrodynamics, the competent authority (CA) will need to have the capability to understand these processes and data types, or have access to expertise that will help them review the site and complex characterisation and selection analysis that an operator will perform.

The modelling and data analysis needs to provide sufficient confidence on the evaluation of containment, injectivity, capacity, integrity, and hydrodynamics of the site and the storage complex.

Corrective measures

Corrective measures are crucial in the risk management of geological storage as they involve activities that can be used to correct significant irregularities or to close leakages in order to prevent or stop the release of CO₂ from the storage complex.

Corrective measures plans must be developed along with site and complex characterisation, modelling, risk assessment and especially monitoring and other risk mitigation measures. Link the corrective measures to financial security and financial mechanism to partly offset the cost of implementing corrective measures.

The operator has to develop and hand in a corrective measures plan as part of the storage permit application. As part of this application, the corrective measures plan has to be approved by the respective CA.

Corrective measures may be used at any stage in the life cycle after storage permit award. It is expected that corrective measures will be used mostly during the operations (injection) phase and post-closure pre-transfer phase. After transfer of responsibility, corrective measures may still be required, although the likelihood is reduced from then on as the CO₂ plume is expected to be stable.

Under normal operating conditions (i.e., storage permit has not been withdrawn), in the event of leakages or significant irregularities, the operator has to immediately notify the CA both under the CCS Directive and the ETS Directive and take the necessary corrective measures, including measures related to the protection of human health. Measures approved in the corrective measures plan shall be taken as a minimum.

The first step is assessing the corrective measures methods and determining the specific corrective measures for an identified risk in any situation. The nature of the significant irregularity or leakage will dictate the method and type of remediation required (IEA GHG, 2007¹⁰⁴). This assessment will also need to factor in the impact on secondary containment zones at the complex. It will also need to review whether there is any evidence for accumulation of CO₂ beyond the storage complex.

The methods and approaches are, therefore, based on relevant experience in other sectors including gas storage, oil and gas industry (e.g. well control incidents) and environmental clean-up and remediation. The status and learning from other sectors have been reviewed and summarised in

¹⁰⁴ IEA Greenhouse Gas R&D Programme (IEA GHG), “CCS Site Characterisation Criteria”, 2009/10, July 2009.

several reports (CSLF, 2009¹⁰⁵; IEA GHG 2007). Any plans and assessments of corrective measures that take place in the future should be based on the experience available at the time, new scientific knowledge, and improvements in best available technology.

Ensure that the initial corrective measures plans are submitted with the storage permit application and form part of the storage permit. While based on site specific risks, the corrective measures included may be somewhat generic at this stage because the location and nature of leakage mechanisms and pathways may not be pinpointed. Nevertheless, it is important that minimum requirements are put in place. The plans need to be immediately operational in case of leakage or significant irregularities. Plans should, if needed to be updated as part of the storage permit review taking into account of new information from injection and monitoring and any leakage or irregularities. Technology and methods used should be based on the best practice available at the time required and take account of new scientific knowledge and improvements in best available technology.

There are several viable techniques based on stopping the pressure increasing in all or part of the reservoir, or reducing the pressure as follows. Some of the potential measures may also successfully contribute to mitigation of potential ground movement or fluid displacement. The main techniques are:

- Limiting CO₂ injection rates and pressure build-up in specific wells or across the site;
- Reducing the reservoir pressure by extracting CO₂ or water from the storage reservoir or complex;
- Extraction of CO₂ at or near an identified leakage point, zone or pathway;
- Sealing regions where leakage occurring such as identified fault or caprock leakage pathways in limited areas by injecting low-permeability materials;
- Increase of pressure in formations upstream of CO₂ leakage, creating a hydraulic barrier;
- Accumulation of CO₂ in groundwater can be remediated by pumping the water to surface and aerating to flash the CO₂.

Corrective measures for dealing with leakage or significant irregularities from wells are generally considered feasible using techniques and practices from the oil and gas industry or gas storage.

Managing injection rates, locations and pressures can be used to manage some of the risks relating to geological leakage pathways and risks.

¹⁰⁵ CSLF Task Force to Examine Risk Assessment Standards and Procedures Phase I Final Report: 2009, CSLF-T-2009-04 October 2009 http://www.cslforum.org/publications/documents/RATF_Phase1FinalReport.pdf

Box

Examples from Member States: Scope of Storage in the UK

As of 2011, the UK implemented the Directive only offshore and enjoyed its right under the Directive not to allow storage onshore. The licensing Regulations provided that the storage permit was granted where the competent authority was satisfied that:

- The storage complex and surrounding area had been sufficiently characterised and assessed in accordance with the criteria set out in Annex I to the Directive and that
- Under the proposed conditions for use of the storage site, there was no significant risk of leakage or of harm to the environment or human health.

Source: Armeni C., November 2011, „Case studies on the implementation of Directive 2009/31/EC on the geological storage of carbon dioxide” – United Kingdom. (This case study forms part of the CCLP EU Case Studies Project „The Carbon Capture Legal Programme launched the 'EU Case Studies Project' in January 2010. The project analyses the implementation of Directive 2009/31/EC on the geological storage of carbon dioxide ('CCS Directive') in selected European jurisdictions - the United Kingdom, Germany, Poland, Romania, Spain and Norway). Available at:

<http://www.ucl.ac.uk/cclp/pdf/CCLPEUCaseStudiesProject-UK.pdf>

4.2.2 PHASE II: STORAGE PERMIT

No storage sites should be approved unless they comply with all relevant EU rules relating to assessment, monitoring etc., which include large scale CCS projects (including installation, operation and substantial change of CO₂-pipelines). Part of the planning approval is an Environmental Impact Assessment (EIA). There might also be links with the Mining Directive and the Industrial Emissions Directive.

Consider in the permit procedure the specifics regarding the data to be submitted ensuring adequate quantity and quality of data, comprising data to be submitted upon transferring the responsibility for the site from the operator to the competent authority.

In order to get a planning approval for a CO₂-pipeline to a CO₂-storage in another EU Member State or for a CO₂-pipeline to an offshore CO₂-storage in the Exclusive Economic Zone (EEZ) or the Continental Shelf of another EU Member State., the CO₂-storage must be installed and operated according to the CCS Directive and other relevant provisions.

The draft storage permits and permit applications have to be submitted to the Commission for review. The Commission may issue an opinion within 4 months. It is possible to deviate from the Commission's opinion with sound justification.

Planning approval might involve the approval of other Member States.

Examples from Member States: Storage permits in the UK

As of 2011, the UK Regulations require both a CO₂ storage licence and a CCS permit.

CO₂ Storage Licence: no storage or associated activity can be undertaken without first obtaining a CO₂ storage licence covering:

- Storage of CO₂ with a view to its permanent disposal;
- Conversion of natural features, such as saline aquifers, for the purpose of permanent storage of CO₂;
- Exploration for the purpose of permanent storage of CO₂;
- Establishment or maintenance of installations for any of these activities.

All phases of CO₂ storage developments (exploration, operation and post-closure) are covered by this framework licence. It also grants an exclusive but time-limited right to apply for the storage permit required by the Directive.

The Secretary of State issues the licence when a relevant activity takes place in UK territorial waters (i.e. England, Wales and Northern Ireland). The Scottish Ministers will issue the licence for CCS activities taking place in the territorial waters adjacent to Scotland. In the event that the activity or the area is located across the two regions, either authority can issue the licence.

Storage Permit: the application for a storage permit must be submitted under the conditions of the licence, after the appraisal term or the initial term has elapsed. The storage permit is defined as 'a consent granted under the licence, authorising the use of a place as a storage site'. The permit is required to construct, maintain and operate the injection and storage facilities. The application must contain all the information required by Article 7 of the Directive, including proof of financial security. Also the conditions of Article 8 of the Directive must be satisfied.

Source: Armeni C., November 2011, „Case studies on the implementation of Directive 2009/31/EC on the geological storage of carbon dioxide” – United Kingdom. Available at: <http://www.ucl.ac.uk/ccip/pdf/CCLPEUCaseStudiesProject-UK.pdf>

4.2.3: PHASE III: ACCEPTANCE OF CO₂ STREAMS

Ensure that operators comply with provisions and criteria regarding allowing CO₂ streams for geological storage, e.g.

- Perform analysis of composition, risk assessment relating to its impact on storage integrity;
- Keep a register of the quantities and properties of the CO₂ streams delivered and injected, including the composition of these streams.

The competent authority must decide on the limits for all incidental and added tracer substances in the CO₂ stream (for instance to limit pipeline corrosion and enhance storage integrity) taking into account at least the following considerations:

- The integrity of neither the storage site nor the relevant transport infrastructure are adversely

affected;

- There is no significant risk to the environment or human health;
- The applicable EU legislation is respected.

In accepting CO₂ streams for storage, the candidate countries have to ensure that concentrations of all incidental and added substances are as small as possible and do not pose a significant risk to the environment or human health or breach EU law. For instance, the concentration should not exceed limit values (including those using Best Available Techniques (BAT)) set out in the IED. In practice, CO₂ streams should be accepted only if their composition is analysed, including corrosive substances, and a risk assessment has been carried out indicating that the levels of incidental and trace substances in the CO₂ stream are acceptable, as defined above. In addition, a register of the quantities and properties of the CO₂ streams delivered and injected, including the composition of these streams, needs to be kept.

The CA needs to critically review the issues related to stream composition impacts on geological storage integrity. Of particular importance are the potential deterioration of well-bore cement and other geochemical changes from acid interactions with the fluids and rocks in the storage formation and heavy metal contamination of deep saline aquifers.

4.2.4 PHASE IV: MONITORING AND REPORTING

- Operator has to regularly monitor storage site and report results at least once a year to the competent authority;
- Monitoring takes place on the basis of a comprehensive monitoring plan to be established by the operator pursuant to the criteria listed in Annex II and agreed by the competent authority;
- Inspections once a year in the first three years after closure, then until transfer of responsibility every five years.

Box

Examples from Member States: Monitoring in the UK

United Kingdom: The UK licensing Regulations transpose Article 13 of the Directive concerning the obligations of the operator to carry out a programme of monitoring, the purpose of such monitoring, the monitoring plan and its approval/modification/update procedure. The plan must be updated in accordance with its Annex II. The Regulations stipulate that authority must approve the plan, but can require modifications to it.

The Regulations do not provide guidance for some undefined concepts (i.e. 'significant adverse effects', 'users of the surrounding biosphere').

Source: Armeni C., November 2011, „Case studies on the implementation of Directive 2009/31/EC on the geological storage of carbon dioxide” – United Kingdom. Available at:

<http://www.ucl.ac.uk/cclp/pdf/CCLPEUCaseStudiesProject-UK.pdf>

4.2.5 PHASE V: LEAKAGES

Operator has to immediately notify competent authority and take necessary corrective measures.

If operator does not take the necessary measures, the competent authority takes the measures itself and recovers the costs incurred from the operator.

Environmental Liability Directive for local environmental damage (Water, soil, protected species/habitats).

Emissions Trading Directive for climate damage: 1) captured and stored CO₂ emissions are recognised as not emitted under the ETS, 2) in case of a leakage, the operator has to hand in ETS allowances.

Ensure that in case of leakages the operator notifies the competent authority and takes necessary corrective measures. In case of failure:

- The competent authority is obliged to take corrective measures;
- Ensure that the operator covers the costs pursuant to EIA Directive.

The CCS Directive requires the use of corrective measures in the case of leakage or significant irregularities.

Corrective measures should be undertaken immediately by the operator, although the CA must step in if the operator does not take the necessary action. (More guidance on corrective measures is available in Guidance Document 2 Characterisation of the Storage Complex, CO₂ Stream Composition, Monitoring and Corrective Measures (*see above*)).

4.2.6 PHASE VI: CLOSURE, POST-CLOSURE OBLIGATIONS AND TRANSFER OF RESPONSIBILITY

Decide on the time duration and conditions for transferring responsibility from the operator to the state, provided that long-term safety is proven. This period should be at least 20 years unless it is proven that the stored CO₂ will be permanently contained. Member States can always decide on longer periods, e.g. 30-40 years before transfer.

Operator has to provide follow-up-care contribution before transfer of responsibility. This contribution has to cover the supposed expense for the determined period of responsibility in terms of costs for monitoring.

Prior to transferring the responsibility, the operator is expected to prepare and submit a transfer report, documenting that the stored CO₂ will be completely and permanently contained by demonstrating at least the following three items:

- The conformity of the actual behaviour of the injected CO₂ with the modelled behaviour;
- The absence of any detectable leakage;
- That the storage site is evolving towards a situation of long-term stability.

Where the CA is sufficiently convinced about complete and permanent containment of the stored CO₂, it shall prepare a draft decision of approval of the transfer of responsibility. Otherwise the CA informs the operator of the reasons for why the transfer will not be granted.

Candidate countries have to define the specific procedures for transferring the responsibility (such as deadlines for the CA to approve particular reports, administrative decisions, etc.) and the operator continues to remain responsible for all legal obligations until the transfer has formally taken place.

Assessments of permanency will be based on models and the validity and reliability of the static and dynamic modelling of the storage complex are critical. A model can be considered as being reliable and valid if the final geological models' backcast predictions are consistent. The CA should review the changes made to the model and the model's projections over the last several years before the transfer to assure that the model has been able to match recent history without undergoing significant changes to its geologic characterization. Credibility of the changes to the model would be lower if there were substantial changes during the late injection period and in the post-closure pre-transfer period.

A key aspect of containment is that there are no detectable leaks from the storage complex, including leakage through geological or man-made structure including leakages from any existing or abandoned wells. This may be assessed by the operator demonstrating that there are no leakages for a continuous 10-year-long period immediately before the time of transfer.

Where a successful corrective measure has taken place, the 'clock' for the ten-year time period would start over from the point in time when the corrective measure has been proven successful. This would allow the CA to have sufficient confidence that the site would not leak again.

Table. Possible Requirements in a Transfer Report (taken from Commission guidance „GD3”)

Evidence for complete and permanent storage	Required documentation from the operator
Conformity with Models	<ol style="list-style-type: none"> 1. For at least a continuous five-year period immediately before the transfer, there has been no need to significantly change the 3D static geological model assumptions for the characteristics of the storage complex during history matching exercises incorporating monitored parameters from monitoring taking place over regular intervals; 2. Results of the backcasting with the final model are within or close to the confidence interval of the monitored parameters over the entire life of the project.
Absence of Any Detectable Leakage	<p>For at least a continuous 10-year period immediately before transfer, show that:</p> <ol style="list-style-type: none"> 1. Integrity of all wells (monitoring and injection) remains in a good shape without any leaks or unexpected deterioration or damage; 2. Regular and periodically monitored data based on the approved monitoring plan indicates that the CO₂ plume has remained within the storage complex, i.e., there are no leakages; 3. Regular and periodic geochemical analyses indicate that all measured and imputed data is consistent with the geochemical modelling.

Evolution towards Long Term Stability	<ol style="list-style-type: none"> 1. Show that the final models run out into the future project an eventual stability of CO₂ plume within the storage complex; 2. The monitored parameters have moved close to the expected stable values, as determined by modelling (e.g., by providing a table or graph of differences between the monitored and stable values); 3. 3) Graphs and tables showing that the rate of change in the monitored parameters is small and declining.
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- The updated post-closure plan must contain details on how a site should be sealed and how injection facilities at the site should be removed;
- The draft Decision of approval of the transfer of responsibility needs to include details on the method that is to be used for determining that the site has been sealed and for the removal of injection facilities, as well as any updated requirements thereof (e.g., transfer of data and any other legal issues). The CA may approve a method suggested by the operator if the CA considers it as suitable for determining that the conditions referred to in Article 18(1)(d) have been met;
- All injection facilities should be removed and the site be sealed to meet the updated requirements by the CA. It can be expected that most of the monitoring facilities will be removed and the surface areas reclaimed. Any well that will not be used for post-transfer monitoring should be plugged and abandoned using appropriate best practices and materials. The Member State can review and use existing abandonment procedures for oil and gas wells;
- The CA could require certain monitoring facilities to be maintained beyond the transfer, in order to continue monitoring beyond transfer or for other nearby storage sites. Such post-transfer monitoring will have to be based on the final risk assessment and would be site specific;
- The CA will be responsible for the operational performance of any post-transfer monitoring. The financial contribution (see GD4) shall cover at least the cost of any such monitoring for a period of 30 years;
- As a consequence of the transfer of responsibility, the operator has to transfer data about the site to the CA. There are no specific provisions for data retention and ownership mentioned in the CCS Directive, and this issue would need to be addressed by the CA in each MS. Some data and analysis will be provided to the CA as part of the regular reporting requirement;
- Once the responsibility is transferred to the CA, it is expected that the operator will transfer to the CA all of the relevant raw data (including core samples, drill cuts, construction material samples, and other key material samples extracted from the site) and documents related to the site. Such transfer is necessary in order for the CA to monitor the site and take corrective measures as needed beyond the transfer of responsibility. Issues regarding proprietary data and ownership of data will need to be resolved by each Member State, and should be outlined in the storage permit.

Examples from Member States: Post closure in the UK

The transfer of responsibility is a key element of the EU CCS regime. The UK Regulations are broadly based upon the provisions of the Directive, but there are few new choices made with respect to the obligations and liabilities resulting from such transfer. First, when the termination notice is served, the authority has the power to require the license holder to provide all records, returns, plans, maps, samples, data and other information that he holds in respect of the storage site. This is significant, facilitating for the authority to use such information to:

- Carry out its obligations (monitoring, corrective measures, surrender of allowances under the ETS

Directive and preventive and remedial action under the ELD);

- Discharge its liabilities; or
- Exercise other functions that the authority considers appropriate.

This provision goes beyond what is required by the Directive, in the context of the operators reporting obligations (Article 14) and disclosure of data about the storage site at the time of transfer of responsibility.

Source: Armeni C., November 2011, „Case studies on the implementation of Directive 2009/31/EC on the geological storage of carbon dioxide” – United Kingdom. Available at: <http://www.ucl.ac.uk/ccip/pdf/CCLPEUCaseStudiesProject-UK.pdf>

4.2.6 PHASE VII: FINANCIAL SECURITY, FINANCIAL CONTRIBUTION AND THIRD PARTY ACCESS

The competent authority must decide about the form and amount of financial security ensuring at least:

- Financial security must cover operator obligations arising under the measures transposing the CCS Directive, the Environmental Liability Directive and the ETS Directive as well as from statutory claim of damages;
- Annual adjustment of financial security;
- Operator has to prove financial security.

Candidate countries should adopt a framework for the transferring of responsibility to the state which:

- Has a minimum period of 20 years before transfer of responsibility to the state but could be longer (e.g. 30-40 years) if need be or less where the competent authority is convinced that the storage safety is proven;
- Ensures a careful assessment linked with a robust financial security system to ensure that the storage site is carefully monitored and taken care of to prevent leakages;
- Guarantees that the operator provides follow-up-care contribution before transfer of responsibility. This contribution has to cover the supposed expense for the determined period of responsibility in terms of costs for monitoring.

Candidate countries have to put into place a liability and enforcement system as there is an absolute liability for Third-Party-Damages for the operator (without evidence of negligence). Hence, if the action, asset or facility is capable of causing the damage, the causality is assumed and there are limited ways of disapproving of the assumption of causality due to „conventional operation“. The operator has to prove in every single case – in addition to „conventional operation“ – that another incident could have caused the damage. The liability regime must take into account the need to respect the liability provisions under the Environmental Liability Directive and the ETS Directive. This liability regime should be clear and transparent and ensure full protection until the operator hands over the site to the competent authority. In case of damage to storage sites, resulting in greenhouse gas leakages, competent authority must ensure that emissions trading allowances are surrendered for any leaked emissions.

The amount of financial contribution would have to be available to the CA before the transfer. The Box below provides specific details about the calculation and payment of the financial contribution.

Examples from Member States: Financial security in Spain

Article 12 of Ley 40/2010 obliges the operator to present, together with his application for a storage permit, a financial security which enables him to meet all obligations set out in the permit and in Law 40/2010, comprising the closure and post-closure obligations and the legal provisions under the ETS Directive. The security must be valid and effective before the storage begins. The form of financial security is established by the Minister for Industrial Affairs (Article 5(1)(d)) taking into consideration the storage capacity of the site, the cost of (saved) greenhouse gas emission allowances, the dismantling of the storage facilities and the closing of storage site (Article 12(3)). In its legislation on environmental liability – Law 26/2007 – transposing the Environmental Liability Directive - Spain has introduced a mandatory financial security of 20 million euros for activities which are covered by that legislation. Article 12(7) of Ley 40/2007 declares that the financial security under Ley 40/2010 shall be additional to that of Ley 26/2007. Law 40/2010 does not provide details, but indicates that the form and content of the security and the procedure to follow will be laid down by way of Regulation. Overall, the Spanish provisions repeat those of Article 19 of Directive 2009/31.

Source: Prof. Dr. Krämer, L, November 2011, „Case studies on the implementation of Directive 2009/31/EC on the geological storage of carbon dioxide” – Spain. Available at: <http://blogs.ucl.ac.uk/law-environment/files/2012/11/Ludwig-Kraemer-CCLP-EU-Case-Studies-Spain-2011.pdf>

Examples from Member States: Pilot projects in Germany and Spain

Germany: A small pilot program for CCS is operated in Ketzin in the federal state of Brandenburg, under the coordination of the GFZ German Research Centre for Geosciences. Vattenfall operates an oxyfuel pilot plant located near its existing lignite fired power plant in Schwarze Pumpe. In 2009 E.ON and Siemens launched a pilot plant that tests post combustion carbon capture at E.ON's hard coal-fired power plant near Hanau. In 2015 Vattenfall wants to start operating a power plant in Jämschwalde (Brandenburg), where CCS technology is implemented for the first time on a power plant scale.

Spain: Two CCS demonstration projects are currently under development: the first in Compostilla, promoted by a consortium between CIUDEN and Endesa (full chain demonstration supported by EU funding) and the second in Puertollano, promoted by Elcogas (only capture). In 2011, Endesa suspended the work for phase II of the Compostilla project, due to the insecurity of the energy market and declared that a final decision would only be taken at the end of 2012.

Sources:

http://www.germanenergyblog.de/?page_id=3061

Prof. Dr. Krämer, L, November 2011, „Case studies on the implementation of Directive 2009/31/EC on the geological storage of carbon dioxide” – Spain. Available at: <http://blogs.ucl.ac.uk/law-environment/files/2012/11/Ludwig-Kraemer-CCLP-EU-Case-Studies-Spain-2011.pdf>

4.3 REPORTING

Candidate countries should try to streamline reporting as much as possible and ensure that the storage permit sets out the reporting requirements also clearly stipulating which is confidential information.

The reporting system should be carefully planned to ensure timely submission of data and information necessary for each phase of the storage project. There should be synergies and certain overlaps with the quantity and quality of data submitted during the first phases (assessment and characterisation), the operation phase and the post closure and transfer of responsibility phase.

4.4 CAPACITY BUILDING

Ensure that there is a sufficient number of trained staff to be able to make an informed and knowledgeable decision on a development plan for storage.

The CA will need to be informed about the processes and data types and have access to expertise (e.g. through an expert technical panel) that will help them review the work that an operator has performed and the development approaches that are contemplated. This expertise is necessary not only for the initial phase (modelling and assessment phases) but also in regard to quality and reliability of data, assessment of the corrective measures plan and on-going monitoring.

4.5 MONITORING AND ENFORCEMENT

Monitoring is one of the key activities to ensure the safety of geological storage as required by the CCS Directive and ETS Directive. It is essential to assess whether injected CO₂ is behaving as expected, whether any migration or leakage occurs, and whether any identified leakage is damaging the environment or human health.

CAs are obliged to ensure that the operator monitors the injection facilities, the storage complex (including where possible the CO₂ plume), and where appropriate the surrounding environment during the operational phase and after closure up until the transfer of responsibility. After that, monitoring is the direct responsibility of the CA, although a reduced level of monitoring activity is required that allows for the detection of leakages or significant irregularities. If they occur, additional monitoring is required to better understand the problem and for the purpose of leakage quantification and emissions reporting, and corrective measures must be implemented.

Monitoring plans should be developed along with site characterisation, modelling and risk assessment, and also relate to the preventive and corrective measures, financial security and financial mechanism. The plans should be risk based and site specific. Regular reporting, inspection and oversight is essential and data should be retained for the life of the project and after transfer. Plans should be regularly

updated and results of monitoring incorporated back into reassessment of the site characterisation, modelling and risk assessment.

Monitoring and corrective measures should be closely interlinked and the corrective measures plans and activities should be developed in a holistic manner along with the risk assessment. The CA should seek to ensure close integration between these measures. Monitoring should be used to assess the effectiveness of corrective measures, and additional monitoring activities may be required in event of any leakage or significant irregularities.

Ensure overall satisfactory compliance as the Commission monitors transposition and implementation closely and takes appropriate measures in case of non-compliance.

5. COSTS

This Directive entails large infrastructural costs for Member States which decide to allow CCS in their territory. On the other hand, some of these costs will be covered by private investors (gas, oil companies and CCS developers). The costs for this Directive is quite different in character than for those related to the EU registry and the EU ETS system as it is largely infrastructural and geological in character.

CCS is a very expensive process. Costs include the initial investment for the CCS plant and related technology, as well as for the transport infrastructure. Costs are also significant for the actual geological and infrastructural excavations and constructions, including costs for materials. In addition, power plants using CCS consume more energy than normal power stations, as a high proportion of energy is used during the capture phase. All these factors could make the construction of CCS power-stations less attractive and potentially prohibitively expensive. The technological developments will eventually reduce the costs associated with CCS technology.

From the public authorities' perspective some of the highest costs are expected to be those in connection with the initial start-up phase with assessments, hiring experts. Costs will also be significant for the operation of the CCS sites and for continuous monitoring. Finally, substantial costs will be incurred by the site operator/owner for the permanent closure having to ensure that certain safety measures are taken as it the case with closure of extraction sites, which will involve costs for ensuring that the site is restored to status quo.

The costs much depend on whether there is already a place a licensing system which could be adapted, whether existing storage places will be used (e.g. for oil and gas), whether new institutions and administrative systems need to be established and how the financial security system will be construed. Also, costs related to the actual implementation of the CCS Directive also depend on whether policies and measures for limiting and/or reducing emissions by sources of greenhouse gases from non ETS sectors are largely dependent on the development of the national economy, the general climate change policy framework at national level. In order to incentivise commercial investment in CCS, governments are attempting to develop ETS. This places a cost on the company for carbon that is emitted, thus creating an incentive for the company to invest in technologies that reduce this cost - such as CCS. How these schemes work varies, but the European Union scheme allows governments to place a limit on what a plant is allowed to emit. Where an operator wishes to emit more than this amount they have to purchase allowances on the open market, if they emit less than the allowed amount then they are able to sell the unused allowance.

To the extent possible, candidate countries should try to obtain financial assistance through existing funding programmes including the EU Framework Programme for Research and Innovation, Horizon 2020.

Table: The most relevant costs to be considered

1	Planning
1.1	Costs for transpositional measures which include amending other cross-sectoral legislation, e.g. national measures transposing EIA Directive, ETS Directive, Industrial Emissions Directive, Environmental Liability Directive.
1.2	Costs for public consultation to ensure a good understanding of CCS projects and their potentials.
1.3	Human and financial resources for developing and implementing a policy and financial framework with concrete measures, milestones, targets and timeline.
1.4	If need be, costs for making adaptations to the national inventory system and a national registry set up under the Greenhouse Gas Emission Monitoring Mechanism Decision and the EU ETS Directive to ensure that these reflect the measures and results incorporate achievements, such as CO ₂ emission gains, under the CCS Directive.
1.5	Costs for devising the storage permit procedure to be incurred by the competent authority.
1.6	Establishing and maintaining a register of granted storage permits.
1.7	Set up a framework for Third Party access to storage sites.
2	Initial investment costs
2.1	Initial investment for the CCS plant and related technology.
2.2	Transport infrastructure.
3	Regulatory costs
3.1	Costs for setting up a reporting system applying to operators towards CA and for submitting information to the Commission. The reporting system should also take into account and to the extent possible be coordinated with reporting obligations under the Greenhouse Gas Emission Monitoring Mechanism Decision, the ETS Directive and the Effort Sharing Decision. The costs for setting up the system will be incurred by the public authorities whereas the actual reporting is shared between the operators and public authorities.
3.2	Costs for putting into place an effective, dissuasive and proportionate sanctioning system also taking into account the sanctions in the Environmental Liability Directive. These costs are incurred by the state authorities.
3.3	Costs for operating the permit procedure.
4	Operational costs
4.1	Costs for risk assessment, characterisation, selection of sites. These costs are mainly for the operator but the public authorities will also cover some costs, especially relating to providing data.
4.2	Costs for corrective measures, which depend on the type of damage or leakage and the measure taken. These costs are almost exclusively for the operators.

4.3	Costs for establishing a monitoring plan, carry out on-going monitoring and for post-closure monitoring which will mainly be covered by the operators.
4.4	Costs for reporting towards the CA, which is covered by the operators and towards the Commission which is shared between CA and operators.

FUEL QUALITY

Directive 98/70/EC relating to the quality of petrol and diesel fuels and amending Council Directive 93/12/EEC (OJ L 350, 28.12.1998), as amended by Directive 2000/71/EC¹⁰⁶, Directive 2003/17/EC¹⁰⁷, Regulation (EC) No. 1882/2003, Directive 2009/30/EC¹⁰⁸, Directive 2011/63/EC¹⁰⁹, Directive 2014/77/EU¹¹⁰ and Directive (EU) 2015/1513¹¹¹

(herein below: FQD (*Please note that in various sources Directive 2009/30/EC, which actually amended Directive 98/70/EC, is referred to as the Fuel Quality Directive*))¹¹²

Commission Decision 2002/159/EC of 18 February 2002 on a common format for the submission of summaries of national fuel quality data¹¹³

Commission Regulation (EU) No 1307/2014 of 8 December 2014 on defining the criteria and geographic ranges of highly biodiverse grassland for the purposes of Article 7b(3)(c) of Directive 98/70/EC of the European Parliament and of the Council relating to the quality of petrol and diesel fuels and Article 17(3)(c) of Directive 2009/28/EC of the European Parliament and of the Council on the promotion of the use of energy from renewable sources¹¹⁴

Council Directive (EU) 2015/652 of 20 April 2015 on laying down calculation methods and reporting requirements pursuant to Directive 98/70/EC of the European Parliament and of the Council relating to the quality of petrol and diesel fuels¹¹⁵

¹⁰⁶ Commission Directive 2000/71/EC of 7 November 2000 to adapt the measuring methods as laid down in Annexes I, II, III and IV to Directive 98/70/EC of the European Parliament and of the Council to technical progress as foreseen in Article 10 of that Directive. (OJ L 287, 14.11.2000)

¹⁰⁷ Directive 2003/17/EC of the European Parliament and of the Council of 3 March 2003 amending Directive 98/70/EC relating to the quality of petrol and diesel fuels. (OJ L 076, 22.03.2003)

¹⁰⁸ Directive 2009/30/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 98/70/EC as regards the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and reduce greenhouse gas emissions and amending Council Directive 1999/32/EC as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC.

¹⁰⁹ Commission Directive 2011/63/EU of 1 June 2011 amending, for the purpose of its adaptation to technical progress, Directive 98/70/EC of the European Parliament and of the Council relating to the quality of petrol and diesel fuels. (OJ L 147, 2.6.2011)

¹¹⁰ Commission Directive 2014/77/EU of 10 June 2014 amending Annexes I and II of Directive 98/70/EC of the European Parliament and of the Council relating to the quality of petrol and diesel fuels (OJ L 170, 11.6.2014)

¹¹¹ Directive (EU) 2015/1513 of the European Parliament and of the Council of 9 September 2015 amending Directive 98/70/EC relating to the quality of petrol and diesel fuels and amending Directive 2009/28/EC on the promotion of the use of energy from renewable sources (OJ L 239, 15.9.2015)

¹¹² Consolidated version of 05 October 2015 available at: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:01998L0070-20151005>

¹¹³ (OJ L 53/30, 23.2.2002)

¹¹⁴ (OJ L 351, 9.12.2014)

¹¹⁵ (OJ L 107, 25.4.2015)

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1. SUMMARY OF MAIN AIMS AND PROVISIONS

Reducing the carbon content of transport fuels is part of the 2020 Climate and Energy package and a key element in decarbonising the transport sector. Besides this endeavour, common fuel quality rules also ensure that air pollutant emissions from vehicles are optimally reduced; a single fuel market is established; and vehicles operate correctly everywhere in the EU. The EU legislative framework, most importantly, Directive 98/70/EC as amended, requires a reduction of the greenhouse gas intensity of the fuels used in vehicles by up to 10% by 2020 compared to 2010 EU-average level of life cycle GHG emissions per unit of energy from fossil fuels – a Low Carbon Fuel Standard –, which can be obtained most importantly through the use of biofuels. Directive 98/70/EC has previously required drastic reductions in the sulphur content of fuels, enabling the deployment of vehicle technologies to reduce greenhouse gas and air pollutant emissions, delivering substantial health and environmental benefits.

Directive 98/70/EC (referred to herein below as the FQD), which formed part of the "Auto-Oil I" package, aims primarily at reducing air pollution caused by road traffic and non-road mobile machinery. The Directive set technical specifications for petrol and diesel fuels that influence the level of atmospheric emissions. Particularly important from the health and environment point of view are the concentrations of lead, sulphur, aromatics and benzene.

It introduced target values involving a substantial reduction in pollutant emissions from motor vehicles after the year 2000. It set the environmental specifications to be applied (with effect from 1 January 2000 and 1 January 2005) regarding fuels for vehicles equipped with positive-ignition engines (petrol) and with compression-ignition engines (diesel).

Firstly, leaded petrol was banned from the market from the year 2000 onwards. Secondly, the Directive provided for progressive improvements in the environmental quality of unleaded petrol and diesel fuel. The environmental requirements laid down are mandatory with effect from the years 2000 and 2005 successively. The requirements covered, in the case of unleaded petrol: octane level, vapour pressure, distillation by evaporation, and aromatics, benzene, olefins, oxygen, oxygenates, sulphur and lead content; and, in the case of diesel fuel: octane level, density, distillation, polycyclic aromatic hydrocarbons and sulphur content.

Member States may impose more stringent standards on fuels marketed on their territory in order to protect the environment or public health in a specific ecologically sensitive area, provided the measures are restricted to those areas and provided that the Commission is duly informed in advance.

Member States must monitor compliance with the environmental requirements for fuels on the basis of common procedures for sampling and testing and report thereon in a common format.

Directive 98/70/EC has been amended several times, most importantly to include a target for GHG emission reductions in 2009, as well as to include sustainable biofuels. Below a summary of the amending legislation:

- **Directive 2000/71/EC of 7 November 2000 to adapt the measuring methods as laid down in Annexes I, II, III and IV to Directive 98/70/EC**

This Directive updated the measuring methods laid down in Annexes I, II, III and IV to Directive 98/70/EC to reflect technical progress. Member States had to ensure that they applied these measuring methods by 1 January 2001 and must also inform the Commission about measures

taken to achieve compliance. Annexes I and III to Directive 2000/71/EC set out the parameters, limits and test methods (EN, EN-ISO or ASTM standards) that must be applied for petrol fuel to be used for vehicles equipped with positive ignition engines, whereas Annexes II and IV set out the corresponding parameters, limits and test methods for vehicles equipped with compression-ignition engines for diesel fuel.

▪ **Directive 2003/17/EC of the European Parliament and of the Council of 3 March 2003 amending Directive 98/70/EC relating to the quality of petrol**

This Directive aimed to "meet new air quality standards and related objectives" through requiring a reduction in the sulphur content of petrol and diesel fuels (especially so as to increase the efficiency of catalytic converters), and to incorporate other requirements in the context of petrol and diesel fuel quality that are not included in the existing Directive annexes. It introduced fiscal incentives through the rapid phase-out of the old standards and a quick transition to the new standards. The Directive ensures that the new sulphur content fuels will be phased into the EU from 1 January 2005 so that new vehicles can be placed on the market, with full introduction as of 2009. It also introduced more stringent requirements regarding the sulphur content of petrol and diesel fuels with the goal of meeting the requirements of EU air quality standards. The Directive includes the following main features:

- Requirement that Member States had to ensure that by 1 January 2005 unleaded petrol and diesel fuel with a sulphur level of maximum 10 mg/kg were marketed within the EU Member States had to ensure that such unleaded petrol was made available throughout the whole territory and complied with specifications in Annexes III and IV;
- By 1 January 2009, it was prohibited to market unleaded petrol and diesel fuels that do not conform to the specifications in Annexes III and IV;
- Requirement that Member States ensure that by 30 January 2003 gas oils intended for use by non-road mobile machinery and agricultural and forestry tractors contain less than 2,000 mg/kg of sulphur; and ensure that the permissible sulphur content of gas oils is reduced to 1,000 mg/kg by 1 January 2008. Member States may introduce more stringent emission limits;
- Member States may introduce more stringent environmental specifications for fuels and gas oils than those set out in the Directive with regard to all or part of the vehicle fleet in order to protect the health of the population in a specific area or to protect a specific ecologically sensitive area (e.g. a Natura 2000 site). This provision is meant to deal with particular pollution hotspots where human health or the environment is severely impacted by pollution from vehicle emissions;
- Introduce a fuel quality monitoring system in line with relevant EU standards as well as a monitoring system to monitor compliance with Articles 3 and 4 with respect to the specifications of petrol and diesel fuels;
- Reporting requirements regarding national fuel quality data and ensuring that this information is made available;
- Specification for measurement methods that need to conform to EN standards (228:1999).

- **Directive 2009/30/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 98/70/EC as regards the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and reduce greenhouse gas emissions and amending Council Directive 1999/32/EC as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC**

This Directive was the one to establish a framework for reducing life cycle greenhouse gas emissions from transport fuels and monitoring thereof.

It sets, in respect of road vehicles and non-road mobile machinery (including inland waterway vessels when not at sea), agricultural and forestry tractors, and recreational craft when not at sea:

- Technical specifications on health and environmental grounds for fuels to be used with positive ignition and compression-ignition engines, taking account of the technical requirements of those engines;
- A target for the reduction of life cycle greenhouse gas emissions.

The Directive also amended Directive 1999/32/EC in terms of the definition of marine fuel. It provides for some limited derogations for EU countries with low ambient summer temperatures, i.e. Denmark, Estonia, Finland, Ireland, Latvia, Lithuania, Sweden and the United Kingdom. The Directive had to be transposed by 31 December 2010 and repealed Council Directive 93/12/EEC relating to the sulphur content of certain liquid fuels.

- **Directive 2011/63/EU amending Directive 98/70/EC relating to the quality of petrol and diesel fuels:**

This Directive amended certain footnotes in Annex I (i.e. footnote 1 requiring the test and analytical methods specified in EN 228:2008, footnote 6 referring to the same standard regarding final boiling point for certain alcohols and ethers), in Annex II (i.e. footnote 1 which requires test and analytical methods specified in EN 590:2009), as well as the entire Annex III.

In addition, Decision 2002/159/EC provides assistance to Member States in submitting summaries of national fuel quality data to the Commission based on a common format, particularly in accordance with Article 8(3) of Directive 98/70/EC as amended.

- **Directive 2014/77/EU amending Annexes I and II of Directive 98/70/EC of the European Parliament and of the Council relating to the quality of petrol and diesel fuels**

This Directive amended the FQD by updating the references to the applicable standards.

- **Directive (EU) 2015/1513 of the European Parliament and of the Council of 9 September 2015 amending Directive 98/70/EC relating to the quality of petrol and diesel fuels and amending Directive 2009/28/EC on the promotion of the use of energy from renewable sources**

This Directive amended the FQD to include provisions to minimise the impacts of indirect land-use change (ILUC).¹¹⁶

It also updated provisions on the calculation of life cycle greenhouse gas emissions from biofuels and the target values for reducing those emissions.

Moreover, it requires voluntary national or international schemes, which provide evidence of compliance with the sustainability criteria for biofuels, to report regularly on their activity.

Other relevant regulations of the framework

▪ **Commission Regulation (EU) No 1307/2014**

This Regulation defines the criteria and geographic ranges of highly biodiverse grassland for the purposes of Article 7b(3)(c) of the FQD.

▪ **Council Directive (EU) 2015/652**

This Directive lays down calculation methods and reporting requirements pursuant to FQD.

Summary of the key elements of the EU legislative framework on fuel quality

1. Suppliers must gradually reduce life cycle GHG emissions per unit of energy from fuel and energy used in road transport and non-road mobile machinery by up to 10 % by 31 December 2020 compared to 2010, which is made up of:
 - A 6% reduction in the greenhouse gas intensity of fuels by 2020, with intermediate indicative target of 4% by 2017;
 - An additional 2% reduction subject to developments in new technologies such as carbon capture and storage (CCS); and
 - A further 2% reduction to come from the purchase of CDM credits.

Suppliers can choose to group together to meet these targets jointly. Providers of electricity for use in road vehicles and suppliers of biofuels for use in aviation may be permitted to contribute to this reduction obligation.

2. Baseline emissions for calculating reductions: the greenhouse gas intensity of fuels is calculated on a life-cycle basis, i.e. emissions from the extraction, processing and distribution of fuels are included. Life-cycle greenhouse gas emission reductions will be calculated from a 2010 baseline of fossil fuel greenhouse gas intensity.
3. Biofuel sustainability: biofuels can only count against the greenhouse gas emission reduction targets if they meet certain sustainability criteria to minimise the undesired impacts from their production.
4. Indirect land use change (ILUC) arising from biofuel use: the greenhouse gas emissions from biofuels should be calculated on a life-cycle basis. Emissions from converting land to agricultural

¹¹⁶ ILUC is the process when the demand for biofuels eventually increases GHG emissions as biofuel production expels food- and feed-production to new lands, converting eg. grasslands and forests (with high carbon stock) into new agricultural land.

use can contribute significantly to the greenhouse gas emissions from biofuel production. It is, thus, important that the emissions from both direct and indirect land use change are included when comparing the greenhouse gas impacts of biofuels to the fossil fuels being replaced.

5. Non-GHG Fuel Quality: setting targets to reduce the GHG intensity of fuels and controlling other elements of fuel quality primarily linked to air pollutant emissions.

2. PRINCIPAL OBLIGATIONS OF MEMBER STATES

2.1 PLANNING

Designate (competent) authority/authorities for the implementation of the Directive including:

- Carrying out overall stakeholder consultation and acting as contact point for providing information and advice;
- Supervision;
- Monitoring;
- Collating and compiling information; reporting to the Commission on national fuel quality data, total volumes of petrol and diesel fuels marketed in their territories, volumes of unleaded, low sulphur fuels marketed in their territories, and the geographical availability of low-sulphur fuels;
- Ensuring that the technology required under the FQD is available and that the EN methodology and analytical standards are applied;
- Overseeing enforcement and penalties.

Consider the use of derogation allowing the placing on the market during the summer period of petrol containing ethanol with a maximum vapour pressure of 60 kPa and in addition the permitted vapour pressure waiver specified in Annex III, on condition that the ethanol used is a biofuel and that the Commission is first notified. For Member States with low ambient summer temperatures (currently Denmark, Estonia, Finland, Ireland, Latvia, Lithuania, Sweden and the United Kingdom), a request may be made to allow, during the summer period, placing on the market of petrol with a maximum vapour pressure of 70 kPa. (Art. 3(4))

Consider whether to permit the marketing of small quantities of leaded petrol to be used exclusively by old vehicles. Such petrol cannot contain more lead than 0,15 g/l. Moreover, such sales can take place exclusively through special interest groups and mustn't constitute more than 0,03 % of total sales. (Art. 3(6))

Decide whether there is a need to introduce even more stringent environmental specifications in regard to a specific agglomeration or ecologically sensitive area where emissions from vehicles constitute a serious and recurrent problem for human health or the environment (Art. 6(1)).

2.2 REGULATION

Prohibit the marketing of leaded petrol in the Member State's territory (Art. 3(1));

Ensure that petrol is not placed on domestic market unless it complies with the specifications set out in Annex I (Art. 3(2)).

Ensure that diesel fuel is not placed on domestic market unless it complies with the specifications set out in Annex II, with the exception of diesel with a fatty acid methyl ester (FAME, biofuel) content greater than 7 %, provided that consumers receive information concerning the biofuel, in particular FAME, content of the diesel fuel. (Art. 4(1))

The Member State may require suppliers to ensure placing on the market petrol with a maximum

oxygen content of 2,7 % and a maximum ethanol content of 5 % if it is considered necessary. Provision of information to consumers concerning the biofuel content of petrol and on the appropriate use of different blends of petrol needs to be ensured. (Art. 3(3));

Ensure compliance with the following requirements for sulphur reduction:

- Ensure that gas oils – intended for use by non-road mobile machinery (including inland waterway vessels), agricultural and forestry tractors and recreational craft – as well as liquid fuels – intended for use by inland waterway vessels and recreational craft – do not have a sulphur content of more than 10 mg/kg (Art. 4(2))
- To accommodate minor contamination in the supply chain, allow such oils to contain up to 20 mg/kg of sulphur at the point of final distribution to end users (Art. 4(2));
- Specific provisions for the introduction of petrol as well as diesel fuel and gas oils with a maximum sulphur content of 10 mg/kg may be made for the outermost regions (currently relevant for France, Portugal and Spain), if the Commission is informed thereof (Art 3(2) and Art 4(3) respectively).

Regarding the maximum distillation point, Member States with severe winter weather may apply a different provision (Art 4(4)).

Ensure that unleaded petrol and diesel fuel with a sulphur level of maximum 10 mg/kg complying with the specifications prescribed by the FQD are made available throughout the whole territory (Art. 5).

A Member State may authorise higher limit values for 6 months after informing and obtaining approval from the Commission in case of exceptional events, resulting in a sudden change in the supply of crude oils or petroleum products, which renders it difficult for the refineries in the Member State to respect the fuel specification requirements of Articles 3 and 4. (Art. 7);

Ensure that suppliers gradually reduce life cycle greenhouse gas emissions per unit of energy from fuel and energy supplied by up to 10 % by 31 December 2020, compared with the fuel baseline standard set out in Annex II of the Council Directive (EU) 2015/652 of 20 April 2015 in accordance with the following reduction schedule:

- 6 % by 31 December 2020, with an option for the intermediate target of 4 % by 31 December 2017 (Art. 7(2));
- An indicative additional target of 2 % by 31 December 2020 to be achieved through one or both of the methods laid down in point (i) and (ii) of Art. 7(2);
- An indicative additional target of 2 % by 31 December 2020 to be achieved through the use of credits purchased through the Clean Development Mechanism of the Kyoto Protocol, under the conditions set out in the EU ETS Directive (2003/87/EC).).

Ensure that life cycle greenhouse gas emissions from biofuels and other fuels and energy is calculated in accordance with Articles 7d and 7a(5) respectively. (Art. 7a(3))

Provide the possibility for suppliers to meet the reduction obligations jointly. (Art. 7(4))

Ensure that biofuels are only taken into account in the greenhouse gas emission savings referred to in Art. 7(a) if they comply with the sustainability criteria as elaborated in paragraphs 1-6 of Art. 7b, namely;

- GHG emission saving is at least 60 % for biofuels produced in installations starting operation after 5 October 2015 and at least 35 % until 31 December 2017 and at least 50 % from 1 January 2018 in the case of installations that were in operation on or before 5 October 2015. The greenhouse gas emission saving from the use of biofuels is calculated in accordance with Article 7d(1);
- Biofuels (that are not produced from waste or residues) must not be made from raw material obtained from land with high biodiversity value (ie. land that in or after January 2008 had the status of primary forest and other wooded land, designated areas or highly biodiverse

grassland¹¹⁷);

- Biofuels (that are not produced from waste or residues) must not be made from raw material obtained from land with high carbon stock (i.e. wetlands, continuously forested areas, and land spanning more than 1 ha with trees higher than 5m and a canopy cover of 10 % - 30 %
- Biofuels (that are not produced from waste or residues) must not be made from raw material obtained from land that was peatland as of January 2008;
- Agricultural raw materials cultivated in the EU used for the production of biofuels shall be obtained taking into account Council Regulation (EC) No 73/2009 of 19 January 2009;

Ensure mutual recognition of biofuels obtained in compliance with Art. 7b (Art 7c(6)).

Ensure appropriate verification from the economic operators regarding compliance with the sustainability criteria for biofuels (both those produced within or outside the EU) when taken into account in greenhouse gas reductions. For that purpose it shall be ensured that economic operators:

- Use a mass balance system as specified in Art. 7c(1);
- Submit reliable information (based on the list of information to be developed by the Commission) and make available to the Member State the data used to develop the information;
- Provide evidence that independent auditing of the information submitted has been undertaken (verifying accuracy, reliability and protection against fraud, evaluating frequency and methodology of sampling, compliance with sustainability criteria and measures taken to consider sustainability criteria and development issues). (Art. 7(c)).

Ensure calculation of life cycle greenhouse gas emissions from biofuels in accordance with Article 7(d) referring to Annex IV (Article 7(d)).

Ensure that:

- Metallic additive methylcyclopentadienyl manganese tricarbonyl (MMT) is maximum 2 mg of manganese per litre;
- A visible and legible label warning about the metallic additive content of fuel is displayed at any point where such fuel is available to consumers (Art 8(a))

2.3 MONITORING

Introduce a fuel quality monitoring system on the basis of the relevant European standards or alternative requirements with equivalent confidence. Monitor compliance of petrol and diesel fuels with the requirements of Articles 3 and 4 based on the analytical methods referred to in Annexes I and II respectively. (Art 8)

Designate the supplier(s) responsible for monitoring (and reporting, as described below) life cycle greenhouse gas emissions per unit of energy from fuel and energy supplied (Art. 7a(1))

Introduce penalties applicable to breaches of the national requirements determined on the basis of the FQD and the related legislative framework, which must be effective, proportionate and dissuasive. (Art. 9a)

¹¹⁷ See also Commission Regulation (EU) No 1307/2014 of 8 December 2014 on defining the criteria and geographic ranges of highly biodiverse grassland for the purposes of Article 7b(3)(c) of Directive 98/70/EC

2.4 REPORTING

Report to the Commission on laws, Regulations and administrative provisions necessary to comply with FQD and the related legislative framework immediately after transposition. (Art. 13)

Ensure that suppliers report annually (subject to verification), to the national competent authority, on the greenhouse gas intensity of fuel and energy supplied ensuring at least information on: the total volume of the fuel and energy supplied and life cycle greenhouse gas emissions per unit of energy (Art. 7a(1)). Such reporting must be carried out according to the requirements prescribed in Art. 3 of Council Directive (EU) 2015/652 and its Annex IV in particular.

In turn, report to the Commission each year by 31 December on data related to Article 7a of the FQD as required by Art. 5 of Council Directive (EU) 2015/652. Such reporting must follow content requirements set out in Annex III and template prescribed in Annex IV of the Council Directive (EU) 2015/652, and be carried out using the ReportNet tools of the European Environment Agency. In more details, the following data must be reported separately for fuel/energy placed on the market by suppliers within a given Member State:

- fuel or energy type;
- volume or quantity of fuel or electricity;
- greenhouse gas intensity;
- upstream emission reductions (UERs) including from flaring and venting;
- origin;
- place of purchase.

Report to the Commission annually on national fuel quality data. The deadline for that is 31 August each year regarding the preceding calendar year (Art. 8(3)). This fuel quality monitoring report must be submitted to the Commission electronically and by hard copy as determined in Section 10 of the Decision 2002/159/EC. The common format thereto is defined in Annex I of Decision 2002/159/EC as follows:

According to Decision 2002/159/EC, the common format for summaries of national fuel quality provides, by way of an annex, ten sections, eight of which require Member States to provide details of national fuel quality data, while the remaining sections inform the Member States of uniform definitions and explanations and the scope of the decision. Member States shall submit information on the following:

- Details of those compiling the fuel quality monitoring report, including contact body, address and the date the report was completed;
- Description of the operation of national fuel quality monitoring systems;
- By way of a completed table based on the required format of the decision, details of the quantities of each grade of petrol and diesel marketed nationally, i.e. regular, unleaded, sulphur free, and so forth;
- A description as to the geographical availability of sulphur-free fuels marketed at the national level;
- A definition of the national "summer period". For the purposes of safety related to vapour pressure and volatility, the vapour pressure during the summer period needs to be at a certain level, depending on the climatic conditions;

- A summary report for petrol quality monitoring data for both nationally defined and parent grades, collected over a given year (January-December) and compiled in a summary table form based on Appendix I and the specified test methods;
- A summary report for diesel fuel quality monitoring data for both nationally defined and parent grades, collected over a given year (January-December) and compiled in summary table form based on Appendix II and the specified test methods;

Provide request and justification for derogation from Articles 3, 4 and 5 regarding taking more stringent environmental measures, in specific areas, where fuels may be marketed only if they comply with more stringent environmental specifications than those provided for in this Directive. The justification has to satisfy the criteria of proportionality and smooth functioning of free movements of persons and goods. (Art. 6(2))

Inform the Commission about the intention to temporarily permit higher limit values for petroleum producers in case of exceptional events resulting in a sudden change in the supply of crude oils or petroleum products. (Art. 7).

Submit to the Commission aggregated information on compliance of biofuels taken into account for the GHG reduction obligation established in Article 7a with sustainability criteria set out in Article 7b. (Art. 7(c))

Submit to the Commission a report (deadline was set for 31 March 2010 in the Directive) on the following:

- a list of areas on the Member State's territory (classified as level 2 in the nomenclature of territorial units for statistics (NUTS) or as a more disaggregated NUTS level in accordance with Regulation (EC) No 1059/2003), where the typical GHG emissions from cultivation of agricultural raw materials can be expected to be lower than or equal to the emissions reported under the heading 'Disaggregated default values for cultivation' in Part D of Annex IV of the FQD
- description of the method and data used to establish the above list. (Article 7(d))

2.5 ADDITIONAL LEGAL INSTRUMENTS

A number of other legislative instruments have relevance to controlling atmospheric emissions from road traffic and must be borne in mind during the implementation of this Directive. These include:

- Ambient Air Quality Directive (2008/50/EC);
- Directive 2009/28/EC on the promotion of the use of energy from renewable sources;
- Regulation (EC) No 715/2007 of the European Parliament and of the Council of 20 June 2007 on type approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information;
- Directive on smoke emissions from diesel engines for use in agricultural or forestry tractors (77/537/EEC), as amended by Directives 82/890/EEC and 97/54/EC);
- Regulation (EC) No 595/2009 of 18 June 2009 on type-approval of motor vehicles and engines with respect to emissions from heavy duty vehicles (Euro VI) and on access to vehicle repair and maintenance information and amending Regulation (EC) No 715/2007 and Directive 2007/46/EC

and repealing Directives 80/1269/EEC, 2005/55/EC and 2005/78/EC Directive on emissions from mobile machinery (97/68/EC, as amended by Commission Directives 2001/63/EC, 2002/88/EC, 2004/ 26/EC, 2010/26/EU, 2011/88/EU and 2012/46/EU);

- Directive 2009/40/EC on roadworthiness tests for motor vehicles and their trailers;
- Directive on VOC emissions from the storage and distribution of petrol (94/63/EC);
- Regulation (EC) 443/2009 setting emission performance standards for new passenger cars ;
- Directive 2009/33/EC on the promotion of clean and energy-efficient road transport vehicles;
- Commission Regulation (EU) 63/2011 on derogation from the specific CO₂ emission targets pursuant to Article 11 of Regulation (EC) 443/2009;
- Regulation (EU) No 725/2011 on approval and certification of innovative technologies for reducing CO₂ emissions from passenger cars;
- Regulation (EU) 510/2011 setting emission performance standards for new light commercial vehicles;
- Reduction of CO₂ emissions from passenger cars (Commission Recommendation 99/125/EC);
- Decision 2010/335/EU on guidelines for the calculation of land carbon stocks for the purpose of Annex V to Directive 2009/28/EC;
- Directive 2014/94/EU of the European Parliament and of the Council of 22 October 2014 on the deployment of alternative fuels infrastructure

3. IMPLEMENTATION

3.1 KEY TASKS

The key tasks involved in implementing this Directive are summarised in the table below. The tasks are arranged under subheadings and organised in chronological order of implementation where possible.

Table: Directive on Quality of Petrol and Diesel Fuels – Key implementation tasks

1	Planning and Assessments
1.1	Designate authorities and other organisations with responsibility for regulating the quality of fuel. Responsibilities would include monitoring fuel quality and collecting and summarising national fuel quality data.
1.2	Put in place a system for assessing the need for more stringent fuel standards for instance in certain areas for environmental reasons.
1.3	Wide stakeholder consultation to ensure efficient cooperation with directly affected parties (e.g. fuel producers, suppliers and retailers as well as car producers) and ensure that they are well informed about the requirements and the priority issues.
1.4	Plan the implementation and consider to what extent any of the derogations will be used.
1.5	Design a programme for the phase-in of reduced-sulphur fuels including the biofuels.
1.6	Plan training of staff implementing technical requirements as well as custom officers and others involved in the import, marketing, labelling and storage of fuels.
1.7	Design/designate a laboratory/laboratories responsible for determining and evaluating methods of measurement and fuel quality.
1.8	Plan an incentive system (e.g. financial incentives such as rebates, cheaper parking and increased access to inner areas of the city which might be affected by road charges) for enhanced use of biofuels.
1.9	Put in place an efficient system of mutual recognition of compliant fuels including biofuels.
2	Regulations and Enforcement
2.1	<p>Identify necessary steps and put in place a regulatory system to ensure that:</p> <ul style="list-style-type: none"> ▪ The marketing of leaded petrol is prohibited, taking into account situations allowing the marketing of small quantities of such petrol for certain old vehicles; ▪ Unleaded petrol and diesel fuel can only be marketed if it meets the standards set in the Directive, e.g. the maximum sulphur levels, maximum oxygen content, maximum ethanol content including the environmental and other specifications set out in Annex I, II and III. The system should take into account situations where it may be necessary to allow the marketing of unleaded fuel and diesel fuel with a sulphur content that does not comply with the

	<p>Directive's requirements within the transitional periods set in the Directive;</p> <ul style="list-style-type: none"> ▪ Biofuels comply with the specifics set out and consumers informed about the content of biofuels in fuels and the appropriate use of different blends of petrol.
2.2	Put in place a regulatory system to cover exceptional circumstances when it may be difficult for refineries to meet relevant fuel specifications. The system should specify higher limits on fuel components, time limits and a notification system.
2.3	Establish a system for greenhouse gas emission reductions which take into account biofuels in line with the specifications set out, including the sustainability criteria for biofuels, the calculation methods, specification regarding their composition and the place of origin.
2.4	Set up an enforcement system to deal with non-compliance with national provisions transposing the requirements of the Directive. This should include penalties to deal with breaches of the provisions.
2.5	Update the petrol and diesel quality specifications and test methods
2.6	<p>Establish an efficient regulatory and monitoring system to ensure compliance with:</p> <ul style="list-style-type: none"> ▪ Fuel specifications set out in Art 3 and 4, including sulphur reduction ▪ The timetable to gradually reduce life cycle greenhouse gas emissions per unit of energy from fuel and energy supplied by up to 10 % by 31 December 2020, compared with the fuel baseline standard.
2.7	Employ the right methodologies for testing and assessment regarding metallic additives.
2.8	Provide for the possibility of a group of suppliers to meet some of the provisions of the Directive jointly such as meeting the reduction targets for greenhouse gas emissions from fuels.
2.9	Ensure correct labelling of compliant fuels indicating their content such as biofuel or metallic additive content.
2.10	Use the designated methods for calculating life cycle greenhouse gas emissions from fuels including biofuels.
2.11	<p>Ensure adequate verification regarding information and data coming from economic operators including verification of compliance with sustainability criteria to be taken into account in greenhouse gas reductions:</p> <ul style="list-style-type: none"> ▪ To ensure that an adequate standard of independent auditing of the information submitted is arranged for, by the operator and to ensure the operator provides evidence that this has been done.
3	Monitoring
3.1	Set up a system and procedure for monitoring compliance with fuel quality requirements. This would include designating and supervising public and/or private sector laboratories to carry out analysis of fuel samples.
3.2	Monitor compliance including establish a fuel quality monitoring system, in accordance with the requirements of Articles 3 and 4, in respect of petrol and diesel fuels based on the analytical methods of Annex I and II respectively.

3.3	Ensure that operators of installations provide data to the competent authority.
3.4	Ensure that testing methods are consistent nationwide.
3.5	Ensure that the Directive is implemented at the correct stages and that the correct fuels are on the market.
3.6	Monitor the geographic availability of fuels.
3.7	Ensure that sulphur reductions are demonstrated to the satisfaction of the competent authorities and that compliance is verified in accordance with the standards laid down, otherwise issue a penalty.
4	Reporting
4.1	Establish a system to collect national fuel quality data (database or other system). This should include a system to summarise derogations and a method to produce annual reports.
4.2	Submit to the Commission a report, each year by 31 August: with national fuel quality data for the preceding calendar year, consistent with Decision 2002/159/EC
4.3	Ensure that suppliers report annually (subject to verification), to the national competent authority, on the greenhouse gas intensity of fuel and energy supplied ensuring information set out in the Directive and Council Directive (EU) 2015/652.
4.4	Report to the Commission each year by 31 December on data related to Article 7a of the FQD as required by Council Directive (EU) 2015/652.
4.5	Submit to the Commission a report, including a list of those areas on their territory classified as level 2 in the nomenclature of territorial units for statistics (NUTS) or as a more disaggregated NUTS level in accordance with Regulation (EC) No 1059/2003 containing all details set out in Art. 7(d), including description of the method and data used to establish that list. (Article 7(d), Directive 2009/30/EC).
4.6	Where relevant, co-operate with industry and the local authorities to obtain information about the difficulties in applying the fuel specifications in case of supply problems, and about the desire to request derogations.
4.7	Inform the Commission of difficulties in applying the fuel specifications in case of supply difficulties.
4.8	Where relevant, submit to the Commission requests for derogations from the requirements of the Directive or to apply more stringent specifications than required under the Directive.

3.2 PHASING CONSIDERATIONS

Experience within Member States suggests that the most demanding and time-consuming task associated with implementing this Directive is the setting up of an efficient system to monitor the quality of fuels on the market and to supervise the greenhouse gas emission reduction scheme, which also include the contribution of biofuels. The planning and setting up of monitoring systems, inspection and verification and procedures for ensuring sufficient information and labelling need to be commenced during the initial phase of implementation. Depending on the existing institutional structure, the

transposition of legislation may be required before a new structure can be introduced, since it may be necessary to establish the new institutions through legislation.

Legal transposition of the technical specifications for fuels set out in the FQD should not be time-consuming or difficult, since in most candidate countries there already exist legislation dealing with the quality of fuel, especially the lead content of petrol.

Several of the initial phases have already been implemented in the Member States, which have resulted in ample experience and good practices that can be used by the candidate countries.

4. IMPLEMENTATION GUIDANCE

The means for implementing the requirements of the Directive will depend upon the particular needs and the institutional and administrative structures and resources of each country. This section gives suggestions for implementation.

In general, DG CLIMA has ample, useful information on fuel quality and related legislation on CO₂ emissions from transport sector, comprising Directive 2009/28/EC on the promotion of the use of energy from renewable sources. In particular, information on consultations and documents relating to specific aspects of the FQD are available at: http://ec.europa.eu/clima/policies/transport/fuel/documentation_en.htm. In addition, information on the fuel quality monitoring can also be obtained at: <http://ec.europa.eu/environment/air/transport/fuel.htm>.

There are a number of international projects and industry associations that will be useful for the candidate countries to either participate in or follow closely for guidance and insight into the key implementation issues regarding the Fuel Quality Directive including its coordination with the Energy Directive particularly regarding sustainability criteria for biofuels.

Examples of projects, networks and associations include:

Refurec (Renewable fuels regulators club)

Refurec is an informal network of Governmental institutions responsible for regulating biofuels. The club tackles issues relating to the biofuels market in the EU and beyond and most importantly, members share information, knowledge and experience concerning the implementation of the FQD and the Renewable Energy Directive.

CA-RES II

This is a collaboration between national authorities transposing and implementing the Renewable Energy Directive (2009/28/EC) or bodies nominated by national authorities. Participating countries exchange experience and best practices, participate in a cross-learning process and develop common approaches. The project is organised around 7 core themes, one of which is renewables in transport.

BioGrace I

BioGrace is a project that has developed a voluntary international scheme approved by the European Commission (See Art.7c). Although the 2 periods of the project have closed, the outputs can well support the implementation of the FQD and the Renewable Energy Directive in national laws as they have. In relation to the former one, they have developed an Excel-based GHG calculation tool for biofuel production pathways. In addition to the excel-based GHG calculation tool, a list of standard values, a list of additional standard values, a set of calculation rules and a user manual were made. Together they allow economic operators to make actual calculations.

The European Biofuels Technology Platform (EBTP)

The EBTP was established in 2006 and brings together the knowledge and expertise of stakeholders from industry, biomass resources providers, research & technology development organisations and NGOs in a public private partnership. It is managed by a Steering Committee and supported by a

Secretariat, with the European Commission being an active observer. Stakeholders can register and share access to key contacts, internal and external reports, events, opinions and expertise on biofuels Research, Demonstration and Deployment. The main aim of it is to contribute to the development of cost-competitive world-class biofuels value chains and the creation of a healthy biofuels industry, and to accelerate the sustainable deployment of biofuels in the European Union, through a process of guidance, prioritisation and promotion of research, technology development and demonstration.

The European Biodiesel Board (EBB)

EBB is a non-profit organisation established in January 1997, aiming to promote the use of biodiesel in the European Union, at the same time, grouping the major EU biodiesel producers. EBB promotes scientific, technological, economic, legal and research activities, collects, analyses and disseminates information, studies problems confronted by the biodiesel industry and suggests solutions at economic, political, legal, institutional and technical levels¹¹⁸

CEN (European Committee for Standardisation)

In relation to the FQD, this organisation is responsible among others for the development of European Standards for automotive fuels and a fuel quality monitoring system. They were mandated to revise the standard EN 590 to increase the concentration of FAME and FAEE to 10% v/v.

In March 2015, CEN decided to develop European standard(s) on fuel labelling for marketed liquid and gaseous fuels, including petroleum-derived fuel blends, synthetic fuels, biofuels, natural gas, liquid petroleum gas or hydrogen. The work to be carried out will primarily support the implementation of Article 7 of the Directive on the deployment of alternative fuels infrastructure (2014/94/EU).

ISO

ISO 13065:2015 specifies principles, criteria and indicators for the bioenergy supply chain to facilitate assessment of environmental, social and economic aspects of sustainability.

Metallic additives

For information, the Commission's work in developing a general guidance document for the environmental and health risk assessment of metallic fuel additives has so far been supported by the following report: 'Development of a risk assessment for health and environment from the use of metallic additives and a test methodology for that purpose. Final report. European Commission, DG CLIMA. 11th February 2013'.

Available at: http://ec.europa.eu/clima/policies/transport/fuel/docs/bio_report_en.pdf

¹¹⁸For more information on EBB: <http://www.ebb-eu.org/index.php>

4.1 PLANNING

Designate one or several competent authority(ies) with the responsibility to monitor fuel quality, ensure compliance with the methodology, compile national fuel quality data, consult and cooperate with stakeholders including directly affected economic operators and to ensure reporting from the economic operators towards the competent authority and from competent authority to the Commission.

Create a centralised database or methodology for collecting and collating the national fuel quality data.

Nominate a laboratory (or technicians) responsible for developing the recommended testing methods and implementing them.

The candidate countries are advised to take into account available reports and guidance produced by the Commission.

Example from Member States regarding implication for non-road mobile machinery and in particular inland water vessels: UK

Directive 2009/30/EC contains mandatory requirements on the composition and content of petrol, diesel & gas oil for use in Non-Road Mobile Machinery (NRMM). From 1 January 2011 gas oil for use in Inland Waterway vessels and Recreational Craft must not exceed 10mg/kg sulphur content (essentially “sulphur free”).

The UK Department for Transport (DfT) implemented these requirements by amending Motor Fuel (Composition & Content) Regulations. These Regulations made it an offence for fuel suppliers to supply fuel for use in inland waterway vessels, when not at sea, or recreational craft, if the fuel does not comply with the sulphur content limits. Throughout the consultation process, the consulted oil companies indicated that they either expected to comply by supplying road diesel, marked with an excise marker as it leaves fuel distribution terminals, or by supplying a dedicated sulphur free gas oil grade.

Regarding the impact of the amended Regulations, DfT concluded that dedicated sulphur free gas oil was not expected to pose significant issues for Inland Waterway users. However, it was foreseen that in some older vessels, seals in fuel pumps which had not been rebuilt within the last 10 years may need replacing.

However, using road diesel, which contains up to 7% biodiesel, requires some special handling requirements as biodiesel has poorer long term stability than fossil diesel, e.g.

- The recommended fuel turnover rate is between 6 and 12 months
- Water should be removed from fuel storage tanks and vessel tanks to prevent bacterial outbreaks
- A one-off replacement of fuel filters for biofuel is recommended after 2-3 tankfuls

(More information available at: <http://www.dft.gov.uk/pgr/roads/environment/off-road-equipment/>)

Summary report of responses to the consultation document of DfT on the national implementation of Articles 7a-7e of the EU Fuel Quality Directive can be obtained at: <http://www.dft.gov.uk/consultations/dft-2011-04>

4.2 REGULATION

- National Regulations to transpose this Directive would usually be part of Regulations on specifications for motor fuels.
- The ministry with primary responsibility for administering national legislation relevant to this Directive could either be the ministry responsible for energy matters or the ministry responsible for environmental matters. However, because the aim of the Directive is air quality control, whichever ministry has primary responsibility must co-operate closely with the ministry for environment and other ministries such as the ministry of transport, and customs and excise officials who may be under the ministry of trade and industry. Such co-operation will be necessary both in developing the relevant national legislation as well as in establishing other measures to implement the requirements of the Directive. Especially with the enhanced use of biofuels in the EU and the possibility to use them to reach greenhouse gas emission reduction targets, it will be necessary to coordinate planning and implementation with the relevant ministries such as the Ministry of Agriculture, Ministry of Environment, Ministry of Enterprise, etc.
- Countries should conduct discussions on implementation options, (e.g. providing possibility to meet some of the greenhouse gas reduction obligations jointly with other fuel suppliers), with representatives of the oil, gas and biofuel (which also includes producers of agricultural crops and waste) industries as well as other interested parties in order to avoid compliance problems.
- Create a list of stakeholders (e.g. petrol, diesel and biofuel producers, suppliers and retailers) and notify them of data collection requirements, particularly those related to quantities of fuel marketed and the geographic availability of sulphur-free fuels.

4.3 MONITORING AND ENFORCEMENT

- The FQD does not set out any detailed requirements for the fuel quality monitoring system except that it has to comply with the relevant European standards or provide equivalent confidence. The Member States are free to choose the method of implementing the monitoring requirement as long as the surveillance system effectively ensures that the quality of petrol, diesel and bio fuels placed on the market complies with the specifications set out in the Directive.
- Ensure that the correct measuring, testing and calculation methods, as well as other technical specifications are used.
- The authorities/organisations set up to carry out monitoring functions must have the necessary administrative powers and technical, human and financial resources for sampling and testing. Testing laboratories are crucial tools for the implementation of the monitoring task.
- In order to achieve compliance, both local production and appropriate retail sector monitoring should be targeted. This can be supplemented with random spot testing of imports through border checks and at the retail pump site. The choice of authorities responsible for monitoring depends greatly on each country's national conditions (size, characteristics of fuel market etc.). This monitoring and spot checks should also check compliance with labelling and packaging requirements.
- Economic incentives can be used to encourage the marketing of petrol, diesel fuels and biofuels that comply with the requirements of the Directive. For example, the price of low-sulphur fuel

- could be lower than that of high- sulphur grade fuel.
- Introduce economic incentives for increasing the proportion of biofuels in the greenhouse emission reduction schemes.
- Ensure that data are regularly and consistently collated, updated and reported on.

Examples of a Member State regarding supervisory authority for compliance control: Sweden

The Swedish Energy Agency has been designated supervisory authority for the compliance of Act (2010:598) concerning sustainability criteria for biofuels and bio liquids. The Swedish Energy Agency has a responsibility to ensure that the legal framework is followed by affected actors. The Swedish Energy Agency has the right to decide on binding Regulations and general guidelines as well as on deciding on a default fine if relevant actors fail to comply with their legal obligations.

Source for more information on the Swedish Energy Agency:

<http://www.energimyndigheten.se/en/About-us/Mission/Instruments/Sustainability-criteria-for-biofuels-and-bioliquids/Role-and-responsibilities-/>

Examples of Practice from Member States: Belgium

In Belgium the regime of fuel quality surveillance includes a public fund. The importers and producers of fuel must pay a levy of BEF 10 (EUR 0.4) into the fund for every 1,000 litres of fuel imported/produced. The fund wholly finances the system of monitoring fuel quality on the Member State's market. The Ministry of Economic Affairs administers the fund, and it was set up as a means of encouraging co-operation between the state authorities and the oil industry. The board of the fund, which gives advice on fuel monitoring issues, consists of eight members: four representing the ministry and four coming from industry.

Ministry officials do practical surveillance work. The officials perform random sampling so that each week 200 samples are taken from 100 different service stations). At each station targeted the authorities take samples of diesel fuel and of one type of petrol. The computer picks out the stations to be spot-checked each week. The authorities perform sampling all year around, five days a week.

After taking the samples the officials take them to private appointed laboratories), which have 24 hours to analyse the sample. If the analyses of the laboratory indicate problems with regard to the quality of fuel, the sample is taken to another laboratory in order to be double-checked. This laboratory again has 24 hours to finalise the analyses. If the sample is confirmed to be non- compliant with the fuel quality requirements, the government officials contact the service station in question as well as the oil company that provided the fuel to the station. At this stage the companies involved have 24 hours to carry out the measures required by the monitoring officials to ensure conformity with the fuel requirements. If the required measures have not been undertaken within the period of 24 hours, the government officials go and seal the pump.

5. COSTS

The main types of costs arising from the implementation of this Directive are given in the checklist below. A large part of the expenses will be incurred by the economic operators, especially the fuel suppliers who have to ensure compliance with fuel quality standards, monitoring and reporting requirements.

Table: Checklist of the Types of Cost Incurred to Implement the Directive

1	<p>Initial set up costs:</p> <ul style="list-style-type: none"> ▪ establishment of competent authorities; ▪ devising systems and procedures; ▪ provisions for training; ▪ preparation of technical guidance regarding monitoring, labelling and information obligations.
2	<p>Capital expenditure:</p> <ul style="list-style-type: none"> ▪ fuel sulphur analyser; ▪ fuel lead analyser; ▪ laboratory for analysing fuel samples which also include biofuels, which gradually will have a greater place in the greenhouse gas emission reduction scheme.
3	<p>On-going running costs:</p> <ul style="list-style-type: none"> ▪ fuel sampling equipment (kits); ▪ labour costs for sampling activity; ▪ labour costs for fuel analysis; ▪ operating costs for analyser; ▪ labour costs for processing data and reporting to the Commission; ▪ costs for updating to new EU standards, e.g. calculation and assessment methods.

THE REGULATIONS ON OZONE DEPLETING SUBSTANCES

Official Title:

Regulation (EC) No. 1005/2009 of the European Parliament and of the Council of 16 September 2009 on substances that deplete the ozone layer. ("ODR") (*OJ L 286, 31.10.2009*), as amended by:

- Commission Regulation (EU) No 744/2010 of 18 August 2010
- Commission Regulation (EU) No 1087/2013 of 4 November 2013
- Commission Regulation (EU) No 1088/2013 of 4 November 2013

Commission Regulation (EU) No 291/2011 of 24 March 2011 on essential uses of controlled substances other than hydrochlorofluorocarbons for laboratory and analytical purposes in the Union under Regulation (EC) No 1005/2009 of the European Parliament and of the Council on substances that deplete the ozone layer (*OJ L 79, 25.3.2011*).

Commission Regulation (EU) No 537/2011 of 1 June 2011 on the mechanism for the allocation of quantities of controlled substances allowed for laboratory and analytical uses in the Union under Regulation (EC) No 1005/2009 (*OJ L 147, 2.6.2011*).

Commission Decision 2010/372/EU on the use of controlled substances as process agents under Article 8(4) of Regulation (EC) No. 1005/2009 (*OJ L 169, 3.7.2010*).

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1. SUMMARY OF MAIN AIMS AND PROVISIONS

The European Union has a strong commitment to protect the ozone layer. To facilitate its recovery, the EU has implemented legislation that goes beyond its obligations under international agreements. The consumption of ozone depleting substances, as far as controlled under the Montreal Protocol, has already been reduced to zero since 2010, ten years before the international target of 2020.

To protect the ozone layer, the international community has established the Vienna Convention and the Montreal Protocol on substances that deplete the ozone layer in 1987. The European Union and its Member States are at the forefront of ozone layer protection with a policy that often goes beyond the requirements of the Montreal Protocol.

Furthermore, EU has put in controls for any use of ozone depleting substances that are not considered as consumption under the Montreal Protocol, such as uses of ODS as feedstock in the chemical industry. In particular the EU has banned the use of the toxic methyl bromide for any kind of fumigation.

The EU legislation acted as a driver for the development of innovative technologies such as alternatives for methyl bromide alternatives, new blowing agents for insulation foam, CFC-free metered dose inhalers for the treatment of asthma, and the creation of innovative fire fighting systems on board ships and airplanes which do not use halons.

Internationally consumption of ozone depleting substances has reduced by 95%. Much remains to be done on international level to ensure the continuous recovery of the ozone layer and to reduce the impact of ODS on climate change such as:

- The recovery of ODS existing in equipment and buildings;
- Ensuring that climate friendly alternatives are used to replace ODS;
- The continuous use of ODS worldwide is further reduced and that the existing measures are properly implemented;
- The prevention of illegal trade.

Regulation (EC) No 2037/2000 the production and placing on the market of chlorofluorocarbons (CFCs), other fully halogenated chlorofluorocarbons, halons, carbon tetrachloride, 1,1,1-trichloroethane, hydrobromofluorocarbons, bromochloromethane and methyl bromide have been phased out and the placing on the market of those substances and of products and equipment containing those substances is thus prohibited. Until 1 January 2010 it was permitted to use virgin as well as recycled and reclaimed (H)CFCs in existing RAC systems¹¹⁹. It is now also appropriate to progressively generalise the ban on the use of those substances for the maintenance or servicing of such equipment.

¹¹⁹ 'RAC-systems' cover three different types of stationary systems:

- Refrigeration systems: Equipment to cool products or storage spaces below ambient temperature, e.g. retail refrigerated displays, cold stores, etc.
- Air-conditioning systems: Equipment to cool buildings to a comfortable ambient temperature, ranging from small units to cool a single room to large chillers that cool whole building
- Heat pumps: Heating devices that use a refrigeration machine to extract energy from a waste heat source and deliver useful heat.

A major review was undertaken of 2037/2000 Regulation, which amongst others resulted in a study in 2007 (Review of the implementation of Regulation (EC) No 2037/2000 on substances that deplete the ozone layer)¹²⁰ on its implementation. Due to the numerous amendments of Regulation (EC) No 2037/2000, it was recast in Regulation (EC) No. ODR/2009 in the interests of clarity. Hence the 2009 Regulation repealed and replaced Regulation 2037/2000 and its many amendments¹²¹ with effect from 1 January 2010.

Regulation (EC) 1005/2009 on substances that deplete the ozone layer (“ODR”) came into force on 1 January 2010 and replaced the previous Ozone Regulation EC 2037/2000. This Regulation lays down rules on the production, import, export, placing on the market, use, recovery, recycling, reclamation and destruction of substances that deplete the ozone layer, on the reporting of information related to those substances and on the import, export, placing on the market and use of products and equipment containing or relying on those substances.

In view of the responsibilities of the Union under Decision X/14 of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer, Article 8(4) of ODR limits the use of controlled substances as process agents to 1,083 metric tonnes per year within the EU and limits the emissions from process agent uses to 17 metric tonnes per year within the EU.

Under the Regulation the production, import and export of ozone depleting substances is subject to licensing. These activities, as well as the destruction of ODS, feedstock uses and process agent uses, are also subject to annual reporting. Furthermore, the use of ODS for laboratory and analytical uses (including the placing on the market for such uses) is subject to registration. For these purposes the European Commission operates electronic databases.

Furthermore, the Regulation addresses:

- The phase out of CFCs (chlorofluorocarbons) and virgin HCFCs (Hydrochlorofluorocarbons) and – Article 5 and Article 11.5

After 1 January 2010 all CFCs and virgin HCFCs cannot be used for all sizes of RAC systems. By way of derogation from Article 5, until 31 December 2019, hydrochlorofluorocarbons may be placed on the market for repackaging and subsequent export. Any undertaking carrying out the repackaging and subsequent export of HCFCs shall register with the Commission, indicating the controlled substances concerned, their estimated annual demand and the suppliers of those substances, and shall update this information when changes occur.

¹²⁰ Review of the implementation of Regulation (EC) No 2037/2000 on substances that deplete the ozone layer, summary report prepared for the European Commission by Milieu Ltd. and Ecosphere Lda development, December 2007. Available at: http://ec.europa.eu/dgs/environment/pdf/summary_report.pdf. The Summary Report of the review is based on two more detailed reports: the Regulatory Options Report and the Impact Assessment Report

¹²¹ Regulation (EC) No. 2038/2000 of the European Parliament and of the Council of 28 September 2000 (OJ L 244 25 29.9.2000), Commission Decision 2003/160/EC of 7 March 2003 (OJ L 65 29 8.3.2003), Regulation (EC) No. 1804/2003 of the European Parliament and of the Council of 22 September 2003 (OJ L 265 1 16.10.2003), Commission Decision 2004/232/EC of 3 March 2004 (OJ L 71 28 10.3.2004), Commission Regulation (EC) No. 2077/2004 of 3 December 2004 (OJ L 359 28 4.12.2004), Commission Regulation (EC) No. 29/2006 of 10 January 2006 (OJ L 6 27 11.1.2006), Regulation (EC) No. 1366/2006 of the European Parliament and of the Council of 6 September 2006 (OJ L 264 12 25.9.2006), Commission Regulation (EC) No. 1784/2006 of 4 December 2006 (OJ L 337 3 5.12.2006), Council Regulation (EC) No. 1791/2006 of 20 November 2006 (OJ L 363 1 20.12.2006), Commission Regulation (EC) No. 899/2007 of 27 July 2007 (OJ L 196 24 28.7.2007)

- The phase out of recycled and reclaimed HCFCs – Article 11.4 and 11.5

After 31 December 2014 the use of recycled and reclaimed HCFCs cannot be used for maintenance and servicing for all sizes of RAC systems. The ban on the “use” of HCFCs specifically means use for servicing and maintenance. It will remain legal to continue using RAC equipment containing HCFCs beyond the phase-out dates providing they do not require maintenance that involves the servicing and maintenance of the HCFCs in the system.

- The licensing and authorisation of production of certain controlled substances: The Regulation prohibits production, import, export, placing on the market and use of the ozone depleting substances listed in Annex I to the Regulation. There are certain exemptions to the prohibitions. Most of them are subject to licensing, authorisation or registration. They include:
 - production of controlled substances other than HCFCs for essential laboratory and analytical uses (Art 10.6);
 - use of controlled substances other than HCFCs for essential laboratory and analytical uses (Art 10.6);
 - placing on the market of HCFC for re-packaging (Art 11.5);
 - import of controlled substances and of products and equipment containing or relying on those substances (Art 15);
 - Export of controlled substances and of products and equipment containing or relying on those substances (Art 17).

Please note that it is the Commission that issues the above licenses of controlled substances or products and equipment containing or relying on controlled substances and informs the Competent Authority of the Member State on that license (Art 18).

The competent authority (or authorities) implement the requirements of the Regulation, particularly on particular authorisations, the control of imports and exports of controlled substances to and from Member States, third countries, states not party to the Montreal Protocol and the candidate countries, submissions of notifications and requests for temporary derogations for certain uses to the Commission. (ODR, Articles 10(7) and 10(8), 11(6), 11(8), 12(3), 13(4), 14(2), 17(3), 22(5), 23(3), 23(4), Art 26, Art 28 and Art 29). Reference on the detailed obligations of Member States are mentioned in paragraph 2.2

- The prevention/minimisation of (H)CFC leakage (Article 23.1 and 23.2)

Undertakings should take all practical precautionary measures to prevent and minimise any emissions of (H)CFCs. The leak checking requirements for stationary RAC systems now mirror those for F-gases.

- Record keeping (Articles 11.7 and 23.3)

The record keeping requirements will depend on whether mobile or stationary equipment is operated and on the controlled substance (refrigerant) charge in that equipment.

- Article 11.7 (first paragraph): Applicable from 2010 for stationary and mobile systems with 3 kg or more. When recycled or reclaimed HCFC refrigerants are added to either a mobile or a stationary system containing 3 kg or more a record needs to be kept to show what refrigerant has been added, in what quantity and who (name of person or company) did this servicing or maintenance;

- Article 11.7 (second paragraph): Applicable from 2010 for all stationary and mobile systems, irrespective of refrigerant charge. When recycled or reclaimed HCFC refrigerants are added to a system a record needs to be kept which should show who supplied the reclaimed HCFCs and of the source of recycled HCFCs;
- Article 23.3: Applicable from 2010 for all stationary systems with 3 kg or more. For all stationary systems containing 3 kg or more a record needs to be kept. This record should show the quantity and type of controlled substance added and the quantity recovered during maintenance, servicing and final disposal of the equipment. Records also need to show other relevant information including the identification of the company or technician performing the maintenance or servicing, as well as the dates and results of the leakage checks carried out.
- Labelling – Article 11.6: Applicable from 2010 for all systems containing HCFC refrigerant. When recycled or reclaimed HCFCs are added to RAC equipment it should then be labelled.
- Gas recovery – Article 22.1: Applicable from 2010 for all sizes of RAC systems containing ODS refrigerant (controlled substances). If an ODS refrigerant needs to be removed from a system (e.g. to gain access to part of a system for maintenance or during system decommissioning at the end of life) it must be properly recovered by certified personnel. After recovery the refrigerant can be reused or sent for reclamation, recycling or destruction.
- Use of appropriate trained personnel (Articles 22.5 and 23.4): Applicable from 2010 for all sizes of RAC systems containing ODS refrigerant (controlled substances). Personnel carrying out leak checking, gas recovery or other refrigerant handling activities, such as plant maintenance, must have a suitable refrigerant handling qualification.
- The ban of non-refillable containers (Article 5.2): Applicable from 2010. The use of non-refillable containers for transporting or storing ODS refrigerants (controlled substances) is banned.
- The Competent Authority is advised to keep track of and record all above licenses in order to be able to perform its obligatory tasks in relation to reporting, inspection and enforcement (Art 26, Art 28 and Art 29).

Commission Regulation (EU) No 744/2010 of 18 August 2010 is amending ODR with regard to the critical uses of halons. Regulation 744/2010 concerns halon 1301, halon 1211 and halon 2402 (listed as controlled substances in Group III of Annex I to ODR), whose production in the EU is banned since 1994 but their use is permitted for certain critical uses as set out in Annex VI to ODR. Pursuant to scientific and technical studies increasingly there are technically and financially feasible alternatives to halons in fire extinguishing equipment and thus the Annex of Regulation 744/2010 (replaces Annex VI of ODR) and establishes for each application more ambitious cut-off dates after which the use of halons for new equipment and new facilities would not be a critical use and the installation of a halon extinguisher or fire protection system would therefore not be permitted.

Two subsequent amendments of ODR, carried out through Commission Regulations No 1087/2013 of 4 November 2013 and No 1088/2013 of 4 November 2013 resulted in minor changes. The first Regulation abolished the requirement for Member State reporting on methyl bromide after it was completely phased out in 2010, while the second simplified export-import licensing for critical equipment used in aircraft that uses halons.

In addition, three implementing Regulations to ODR were adopted:

- **Commission Regulation (EU) No 291/2011** of 24 March 2011 on essential uses of controlled substances other than HCFCs for laboratory and analytical purposes in the Union under ODR: This

Regulation sets out an annex with permitted and non-permitted essential uses of controlled substances (except for HCFCs). The Regulation extends the list of non-permitted uses;

- **Commission Regulation (EU) No 537/2011** of 1 June 2011 on the mechanism for the allocation of quantities of controlled substances allowed for laboratory and analytical uses in the Union under ODR: This Regulation sets out a 3 phase mechanism for determining the quantity for allocation for „new” companies (i.e. had no production or import in years 2007-2009). The allocation mechanism ensures that all undertakings requesting a new quota receives an appropriate share of the quantities to be allocated;
- **Commission Decision 2010/372/EU** (last updated on 10 October 2013 by Commission Implementing Decision (2014/8/EU) on the use of controlled substances as process agents under Article 8(4) of Regulation (EC) No. 1005/2009: This Decision implements Article 8(4) of the ODR in terms of setting out a list of eight companies and associated quantities of substances. This list is based upon reports submitted by Member States and adjusted to ensure that the Union stays within the total limits of using controlled substances. The allocation of the make-up quota should be based on the average needs in the years 2005 to 2008. The Decision allows for the transfer of quota between undertakings listed in the Annex to increase the flexibility for undertakings to respond to changing market needs but must cease with the decommissioning of the installation for which it was granted.

2. PRINCIPAL OBLIGATIONS OF MEMBER STATES

2.1 PLANNING

Firstly, Member States and candidate countries are advised to **assess which sectors and activities would be affected** by these Regulations. The Regulations are of particular interest to all organisations, which produce, recover, recycle, reclaim, use, destroy or trade in ozone-depleting substances (ODS) or which operate refrigeration, air-conditioning or heat pump equipment, or fire protection systems which contain ODS.

The Regulations will also be of interest to associations and members of associations which manufacture, install, service or recover ODS from commercial or domestic equipment which contain or rely on ODS, to producers of ODS, to those responsible for offshore oil and gas installations, and to enforcement authorities.

Companies in the stationary refrigerant and air conditioning sectors should be aware that the EC Regulations include a provision covering the phase-out of hydrochlorofluorocarbons (HCFCs) usage. The use of virgin HCFC to service and maintain existing refrigeration and air conditioning has been banned since 1 January 2010.

Companies involved in the fire protection systems and fire extinguisher sector should be aware that Halons are strictly monitored. The critical uses for halons are set out in Commission Regulation (EC) 744/2010, outlined above.

There are legal obligations for companies and qualification requirements for personnel working in the industry sectors as well as other requirements relating to:

- Recovery of ODS from equipment during maintenance, servicing and at end of life;
- Leakage checking of equipment;
- Reporting of annual ODS import, export, production and destruction figures;
- Provide information on annual critical uses of halons figures and illegal trade for monitoring and annual reporting by the Competent Authority;
- Labelling of ODS and equipment containing ODS (and inclusion of information in instruction manuals);
- Placing on the market prohibitions for ODS in various products and equipment.

In order to ensure cost-efficient implementation and enforcement, above sectors need to **receive sufficient information about the legal and administrative requirements** and awareness of the workings of these Regulations needs to be enhanced. In this context, the workers in installations performing certain activities also have to be informed about the **obligation to acquire the necessary qualifications**.

On the basis of the ODR and the ancillary Regulations, Member States mainly have obligations to administer, monitor and ensure the compliance of industry with the requirements. The planning tasks include the following:

- Appoint a **competent authority** (or authorities) to implement the requirements of the Regulation, particularly on particular authorisations, the control of imports and exports of controlled substances to and from Member States, third countries, states not party to the Montreal Protocol and the candidate countries, submissions of notifications and requests for temporary derogations for certain uses to the Commission. (ODR, Articles 10(7) and 10(8), 11(6), 11(8), 12(3), 13(4), 14(2), 17(3), 22(5), 23(3), 23(4), Art 26, Art 28 and Art 29);
- Establish **penalties** for non-compliance with the requirements of the Regulation, which had to be notified to the Commission by 30 June 2011 at the latest as well as any amendments affecting the penalties. Also note that the illegal import, export of ODS or products containing these are considered a criminal offence pursuant to the Environmental Crimes Directive (Art. 29, ODR, Art. 3(f), Directive 2008/99/EC);
- Take measures to **promote recovery, recycling, reclamation and destruction of controlled substances**. (Art. 22(5) of ODR);
- Lay down the **minimum training requirements for personnel** involved in recovery, recycling, reclamation and destruction of controlled substance (Art. 22(5) of ODR), as well as leakage control of RAC equipment (Art. 23(4) of ODR). Note also the training and qualification requirements for personnel responsible for maintaining equipment containing those substances in order to prevent leakage of regulated substances stemming from the F-Gas Regulations);
- Establish **inspection systems** which targets compliance of undertakings following a risk-based approach, including inspections on imports and exports of controlled substances as well as of products and equipment containing or relying on those substances. In addition monitoring and inspection systems are to be set up for recovering, for the purposes of recycling, reclamation or ecologically acceptable destruction of controlled substances contained in (Art. 22 of ODR):
 - Refrigeration and air-conditioning equipment and heat pumps;
 - Equipment containing solvents;
 - Fire protection equipment and fire extinguishers.

Note that it is also important to take into account the certification and training requirements for personnel handling recycling, reclamation and destruction of F-Gases under F-Gas Regulations and the WEEE Directive regarding electrical and electronic equipment containing controlled substances.

The guidance set out in Recommendation 2001/331/EC on environmental inspections should also be taken into account¹²² (Art. 28 of ODR).

- Establish systems to allow for companies having received annual use quotas to **transfer quotas** amongst the companies after prior notification to the Commission (Decision 2010/372);
- The Commission has established a system to ensure that **new quotas for the production and use** of controlled substances for laboratory and analytical purposes comply with the allocation mechanism set out in Regulation 537/2011;
- Put into place **safety mechanisms** to ensure that the list of non-essential uses of controlled substances (other than HCFCs) are not allowed (Regulation 291/2011);

¹²² Recommendation 2001/331/EC of the European Parliament and of the Council of 4 April 2001 providing for minimum criteria for environmental inspections in the Member States.

- Set up a system to ensure that halons may only be placed on the market by undertakings authorised by the competent authority **to store halons** for critical uses as set out in Annex VI. (Art 13(1)).

2.2 REGULATION

2.2.1 OBLIGATIONS OF THE COMMERCIAL, INDUSTRIAL AND PUBLIC SECTOR ORGANISATIONS (UNDERTAKINGS)

The commercial, industrial and public sector organisations, which produce, recover, recycle, reclaim, use, destroy or trade in ozone-depleting substances (ODS) or which operate refrigeration, air-conditioning or heat pump equipment, or fire protection systems, which contain ODS (as indicated in paragraph 2.1 above) are responsible for taking several measures under the Regulations.

There are legal obligations for above sectors and qualification requirements for personnel working in these sectors. Hereunder the most important provisions applicable to the sectors are outlined:

- Ensure compliance with the prohibition of the production, placing on the market and use of controlled substances, **with the following exemptions, most of which are subject to licensing**:
 - controlled substances may be produced, placed on the market and used as feedstock, provided that the labelling clearly indicates that the substance may only be used as feedstock also taking into account possible labelling requirements under Directive 67/548/EEC, Directive 1999/45/EC and Regulation No 1272/2008 and further labelling requirements of the Commission (Arts. 5, 7 of ODR);
 - production, placing on the market, and use of controlled substances for essential laboratory and analytical uses where Commission allows production and import for certain uses set out in the annex to Regulation 291/2011 within regulated quantities, within a certain time period and for certain listed users. Such uses provide that registration and licensing is ensured in accordance with Article 10 and Article 11.2.
 - Regulation 537/2011 sets out the allocation mechanism applying to producers or importers who have not received a production or import licence for 2007-2009. The marketing and distribution must be in accordance with the requirements of Annex V.
 - containers with controlled substances to be used for these uses must be labelled clearly indicating that the substance may only be used for laboratory and analytical uses also taking into account possible labelling requirements under Directive 67/548/EEC, Directive 1999/45/EC and Regulation No 1272/2008 and further future labelling requirements of the Commission. Such labels must be in accordance with the form and content to be decided by the Commission.
 - in accordance with Article 11(1), virgin HCFCs may be produced provided that:
 - the calculated level of its production of HCFCs in each 12-month period until 31 December 2013 does not exceed 35 % of the calculated level of its production of HCFCs in 1997;

- the calculated level of its production of HCFCs in the period from 1 January 2014 to 31 December 2014 and in each 12-month period thereafter until 31 December 2016 does not exceed 14 % of the calculated level of its production of HCFCs in 1997;
 - the calculated level of its production of HCFCs in the period from 1 January 2017 to 31 December 2017 and in each 12-month period thereafter until 31 December 2019 does not exceed 7 % of the calculated level of its production of HCFCs in 1997;
 - it produces no HCFCs after 31 December 2019.
- **reclaimed HCFCs** may be placed on the market and used for the maintenance or servicing of existing refrigeration, air-conditioning and heat pump equipment **until 31 December 2014**, provided that the container is labelled with an indication that the substance has been reclaimed and with information on the batch number and name and address of the reclamation facility. (Article 11(3))
 - **recycled HCFCs** may be used for the maintenance or servicing of existing refrigeration, air-conditioning and heat pump equipment until **31 December 2014**, provided that they have been recovered from such equipment and may only be used by the undertaking which carried out the recovery as part of maintenance or servicing or for which the recovery as part of maintenance or servicing was carried out. (Article 11(4)), If the equipment has a fluid charge of 3 kgs or more, the undertaking has to keep a record of the type of substance recovered and added, and of the company and technician which performed the maintenance and servicing. (Article 11(7))
 - HCFCs may be placed on the **market for repackaging and subsequent export until 31 December 2019**. Any undertaking carrying out the repackaging and subsequent export of HCFCs shall register with the Commission, indicating the controlled substances concerned, their estimated annual demand and the suppliers of those substances, and shall update this information when changes occur (Article 11(5));
 - when reclaimed or recycled HCFCs are used for maintenance or servicing, the refrigeration, air-conditioning and heat pump equipment concerned shall be adequately **labelled** according to the requirements set in Article 11(6);
 - controlled substances may be produced, placed on the market and used as **process agent** in installations existing on 1 September 1997, and where emissions are insignificant. The Commission has set out in Decision 2010/372 (which implements Art. 8(4) of ODR) a list of eight companies that, from 1 January 2010, were permitted to use controlled substances as process agents in make-up within the annual quotas and emission levels set out in the Annex (but not after definite decommissioning of the installation for which the quota was granted). The companies listed may choose to transfer the make-up quota amongst themselves after notifying the Commission and having obtained its approval (Art. 8, of ODR, Arts. 2-3, Decision 2010/372).
- Ensure compliance with the prohibition of the placing on the market of products and equipment containing or relying on controlled substances, unless:
 - it is placed on the market for reclamation within the EU or for destruction within the EU in accordance with the requirements for destruction referred to in Article 22(1);
 - the use of the respective controlled substance is authorised in accordance with Article 10, Article 11(2) or Article 13 or has been authorised on the basis of Article 3(1) of Regulation (EC) No 2037/2000. (Art. 6(1) of ODR)

- Prohibit the use and ensure the decommissioning (except for uses referred to in Article 13(1)) of fire protection systems and fire extinguishers containing halons . (Art. 6(2) of ODR)
- Ensure that personnel involved in recovery, recycling, reclamation and destruction of controlled substance meet the minimum qualification requirements laid down by the competent authority. (Art. 22(5) of ODR). *(Note also the certification and training requirements for personnel handling recycling, reclamation and destruction of F-Gases under F-Gas Regulations and the WEEE Directive regarding electrical and electronic equipment containing controlled substances).*
- Ensure recovering, for the purposes of recycling, reclamation or ecologically acceptable destruction of controlled substances contained in: (Art. 22 of ODR)
 - refrigeration and air-conditioning equipment and heat pumps;
 - equipment containing solvents;
 - fire protection equipment and fire extinguishers.
- Where recovering or reclaiming is not possible, ensure that the final destruction of the controlled substances and equipment which contained such are destroyed in line with the approved technologies listed in Annex VII. (Art. 22(2), of ODR)
- Ensure that the use of halons, as critical use, in fire fighting equipment is in line with the phase out schedule with a cut-off date and end date set out in Regulation (EC) No 291/2011, i.e.:
 - 2010: cut-off date for the majority of applications for new equipment and new facilities, where halon extinguishers and fire protection systems are no longer necessary or are no longer being installed;
 - 2011: cut-off date for some military ground vehicle and aircraft applications for which alternatives are considered now to be available but which have not been implemented during development programmes now nearing completion and for which modifications might no longer be technically and economically feasible.
 - 2014: cut-off date for the aircraft engine nacelle and cabin portable extinguisher applications, which would correspond to the time-frame for the anticipated implementation of an equivalent restriction through the ICAO.
 - 2018: cut-off date for the aircraft cargo compartment application where alternatives have not yet been identified but for which it can reasonably be expected that, following further research and development, alternatives will be available by that date for installation in new aircraft being submitted for type certification.
 - 2040: cut-off date for some military or civil aircraft applications where alternatives have not yet been identified.
- Ensure that imports and exports of controlled substances are only allowed if meeting the requirements laid down in Art. 15(2) and 17(2) of ODR. All importers and exporters must hold an import or export licence issued by the Commission after verifying that the importer complies with Arts. 16 and 20 of ODR. Each exporter must notify the Commission of any changes in data and information that may occur during the validity of the authorised period.
- By the date specified in a notice issued by the Commission, importers of:
 - controlled substances if they are used for laboratory and analytical or critical uses;
 - controlled substances if they are used as feedstock;
 - controlled substances if they are used as process agents.

shall declare to the Commission the anticipated demand, specifying the nature and quantities of controlled substances needed. On the basis of those declarations the Commission establishes quantitative limits to the imports of those substances. (Art. 16 of ODR)

- Ensure that the import and export of controlled substances, and of products and equipment containing or relying on these substances, from and to states that are not parties to the Montreal Protocol or territories not covered by the protocol, only are allowed in case Arts. 20 (2), (3) are complied with.
- Take precautionary measures to prevent the escape of controlled substances, e.g. leakages or other emissions comprising period leakage checking (from once a year to once every third month depending on weight of the charge) and repairs. Also ensure that such checks and repairs are duly documented and that they are performed by staff having the necessary qualifications (Art. 23, ODR).
- Ensure compliance with the prohibition of production, import, placing on the market, use and export of new substances set out in Part A of Annex II to Reg. (EC) No 1005/2009 (currently only Dibromodifluoromethane (halon-1202) is prohibited, unless used as feedstock or for laboratory and analytical uses, or imported for transit through the customs territory of the EU or imports under the temporary storage, customs warehousing or free zone procedure (Art. 24, ODR).
- Register and submit application to the Commission for licences to produce and import controlled substances for certain "essential" uses, i.e. laboratory and analytical uses (Art. 10, Regulation (EC) No. 5005/2009).

2.2.2 OBLIGATIONS OF THE MEMBER STATES

Member States mainly have to provide systems and procedures for the development of minimum qualification requirements of technical personnel, and for monitoring compliance with the requirements as stated in paragraph 2.2.1, including inspection and enforcement.

- Lay down the minimum training requirements for personnel responsible for maintaining equipment containing controlled substances in order to prevent leakage of regulated substances and where possible establish coordination with the training schemes established for personnel handling equipment with F-Gases under the F-Gases Regulations.
- Carry out inspection, taking a risk-based approach, especially targeting those activities representing the highest risk of illegal trade or emission of controlled substances. In the inspection activities the Member States should take into account the guidance set out in Recommendation 2001/331/EC on environmental inspections. A Member State should also on the request of another Member State be competent to carry out inspections of undertakings or investigations of undertakings suspected of being engaged in the illegal movement of controlled substances and which are operating on the territory of that Member State. (Art. 28, Reg. (EC) No 1005/2009).
- Establish and impose penalties for non-compliance with the requirements of the Regulation (production, importation, exportation, placing on the market or use of ozone-depleting substances), Effective, dissuasive and proportionate penal sanctions are to be imposed on the perpetrator (Art 29 Reg. (EC) No 1005/2009 and Art. 3, Environmental Crimes Directive (2008/99/EC)).
- As regards the import and export licenses issued by the Commission, the Competent Authority of a Member State **may inform or instruct the applicant** for a license on any further information

deemed necessary to be included in the application for a license (Art 18(3 i)).

As indicated earlier it is the **Commission** that issues the licenses of controlled substances or products and equipment containing or relying on controlled substances and informs the Competent Authority of the Member State on that license.

In relation to authorisations the competent authorities of Member States:

- May grant **an additional authorisation** to an undertaking to confirm the Commission licenses for the production of controlled substances other than HCFCs for essential laboratory and analytical uses. The Commission needs to be notified in advance of its intention to issue any such authorisation (Art 10.7);
- May **authorise** that producer produces or exceeds the calculated and licensed levels of production of controlled substances other than HCFCs for essential laboratory and analytical uses. This can only be done when it satisfies any essential laboratory and analytical uses. The Commission needs to be notified in advance of its intention to issue any such authorisation (Art 10.8);
- **Authorise** that producer to exceed the calculated levels of production laid down in Article 10 and Article 11(1)¹²³ for the purpose of industrial rationalisation The Commission needs to be notified in advance of its intention to issue any such authorisation (Art 14(2)).

In relation to **requests** for authorisations and derogations the competent authorities of Member States:

- **Request authorisation to the Commission** a time-limited exemption to allow the use and placing on the market of HCFCs and of products and equipment containing or relying on HCFCs where it is demonstrated that, for a particular use, technically and economically feasible alternative substances or technologies are not available or cannot be used. (Art 11 (8));
- In case of an emergency (where unexpected outbreaks of pests or diseases so require) the competent authorities can **request authorisation the Commission** for temporary production, placing on the market and use of methyl bromides (Art 12(3));
- **Request a derogation to the Commission** from the end-dates of the placing in the market of halons, in case the end dates will be specified by the Commission, for the uses set out in Annex VI (Art 13(4));
- **Request to the Commission the authorisation of export** of products and equipment containing HCFCs where it is demonstrated that in view of the economic value and the expected remaining lifetime of the specific good, the prohibition of export would impose a disproportionate burden on the exporter. (Art 17(3)).

¹²³ Regulation states Article 11(2) instead of Article 11(1) which appears to be an error

2.3 REPORTING

2.3.1 REPORTING OBLIGATIONS OF THE COMMERCIAL, INDUSTRIAL AND PUBLIC SECTOR ORGANISATIONS (UNDERTAKINGS)

Each year by 31 March, each undertaking shall communicate to the Commission, sending a copy to the competent authority of the Member State concerned, the following data for each controlled substance and each new substance listed in Annex II for the previous calendar year.

For producers:

- Total production of each substance;
- Any production placed on the market or used for the producer's own account within the EU;
- Any production to meet the essential laboratory and analytical uses in the EU, licensed in accordance with Article 10(6);
- Any production authorised under Article 10(8) to satisfy essential laboratory and analytical uses;
- Any increase in production authorised under Article 14(2), (3) and (4) in connection with industrial rationalisation;
- Any quantity recycled, reclaimed or destroyed and the technology used for the destruction, including amounts produced and destroyed as by-product as referred to in Article 3(14);
- Any stocks;
- Any purchases from and sales to other producers in the EU.

For importers:

Any quantities released for free circulation in the EU, separately identifying imports for feedstock and process agent uses:

- For essential laboratory and analytical uses licensed in accordance with Article 10(6);
- For use in quarantine and pre-shipment applications;
- For destruction.

Importers importing controlled substances for final destruction must communicate the actual final destination or destinations of each of the substances, providing separately for each destination the quantity of each of the substances and the name and address of destruction facility where the substance was delivered, any quantities imported under other customs procedures, separately identifying the customs procedure and the designated uses, any quantities of used substances referred to in paragraph 1 imported for recycling or reclamation, any stocks, any purchases from and sales to other undertakings in the EU and the exporting country.

For exporters:

- Any quantities of such substances exported, separately identifying quantities exported to each country of destination;
- Quantities exported for feedstock and process agent uses;
- Any quantities for essential laboratory and analytical uses;
- Quantities for critical uses and for quarantine and pre-shipment applications;
- Any stocks;
- Any purchases from and sales to other undertakings in the EU;
- The country of destination.

For companies destroying controlled substances:

- Any quantities of such substances destroyed, including quantities contained in products or equipment;
- Any stocks of such substances waiting to be destroyed, including quantities contained in products or equipment;
- The technology used for the destruction.

For undertakings using controlled substances as feedstock or process agents:

- Any quantities of such substances used as feedstock or process agents;
- Any stocks of such substances;
- The processes and emissions involved.

For producers and importers holding a licence under Article 10(6) for each substance for which an authorisation has been received, report to the Commission, sending a copy to the competent authority of the Member State concerned:

- The nature of the use;
- The quantities used during the previous year, the quantities held in stock;
- Any quantities recycled, reclaimed or destroyed;
- The quantity of products and equipment containing or relying on those substances placed on the EU market and/or exported.

2.3.2 REPORTING OBLIGATIONS OF THE MEMBER STATES

According to Art. 26 of the ODSR, each year by 30 June Member States shall report the following information in an electronic format to the Commission, for the previous calendar year:

- The quantities of halons installed, used and stored for critical uses, pursuant to Article 13(1), the measures taken to reduce their emissions and an estimate of such emissions, and progress in evaluating and using adequate alternatives;

Cases of illegal trade, in particular those detected during the inspections carried out pursuant to Article 28.

2.4 LINKS WITH OTHER LEGISLATION

- Industrial Emissions Directive (2010/75/EU);
- F-Gas Regulation (EC) No 842/2006¹²⁴ (and implementing Regulations: 1493/2007, 1494/2007, 1497/2007, 1516/2007, 303/2008, 304/2008, 305/2008, 306/2008, 307/2008, 308/2008);
- Export and Recovery of Certain Waste Regulation (1418/2007)¹²⁵;
- Shipment of Waste Regulation (1013/2006)¹²⁶;
- Directive on Waste (2008/98/EC)¹²⁷;
- WEEE I and WEEE II Directives (2002/96/EC and 2012/19/EU) ;
- End-of-Life Motor Vehicles Directive (2000/53/EC)¹²⁸;
- Export and Import of Dangerous Chemicals Regulation (No 689/2008)¹²⁹;
- Biocidal Products Regulation (EU) No. 528/2012¹³⁰;
- REACH Regulation (EC) No 1907/2006¹³¹ regarding requirements for registration and authorisation of substances;
- Customs legislation and initiatives for Customs cooperation;
- Classification and Labelling Regulation (1272/2008)¹³², which will repeal Directives 67/548/EEC and 1999/45/EC;

¹²⁴ Regulation (EC) No 842/2006 of the European Parliament and of the Council of 17 May 2006 on certain fluorinated greenhouse gases as amended by Regulation (EC) 1137/2008

¹²⁵ Commission Regulation (EC) No. 1418/2007 of 29 November 2007 concerning the export and recovery of certain waste listed in Annex III or IIIA to Regulation (EC) No. 1013/2006 to certain countries to which the OECD Decision on the control of transboundary movements of waste does not apply, as amended by Regulation (EC) 740/2008 and (EC) 967/2008

¹²⁶ Regulation (EC) No 1013/2006 of the European Parliament and of the Council of 14 June 2006 on shipments of waste as amended by Regulations (EC) 1379/2007, (EC) 669/2008, (EC) 219/2009 and (EC) 308/2009 and Directive 2009/31/EC

¹²⁷ Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste

¹²⁸ Directive 2000/53/EC of the European Parliament and of the Council of 18 September 2000 on end-of life vehicles as amended by Decisions 2002/525/EC, 2005/63/EC, 2005/437/EC, 2005/438/EC, 2005/673/EC, 2008/689/EC, 2010/115/EC and Directives 2008/33/EC and 2008/112/EC and 2011/137/EC

¹²⁹ Regulation (EC) No 689/2008 of the European Parliament and of the Council of 17 June 2008 concerning the export and import of dangerous chemicals

¹³⁰ Directive 98/8/EC of the European Parliament and of the Council of 16 February 1998 concerning the placing of biocidal products on the market

¹³¹ Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC

¹³² Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC

- POPs Regulation (850/2004)¹³³;
- Environmental Crimes Directive (2008/99/EC)¹³⁴.

¹³³ Regulation (EC) No 850/2004 of the European Parliament and of the Council of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC and Regulations (EC) 1195/2006, (EC) 172/2007, (EC) 323/2007, (EC) 219/2009 and (EC) 304/2009

¹³⁴ Directive 2008/99/EC of the European Parliament and of the Council of 19 November 2008 on the protection of the environment through criminal law

3. IMPLEMENTATION

3.1 KEY TASKS

The key tasks involved in implementing the Regulation is summarised in the checklist below.

Table: Regulations on Ozone Depleting Substances – Key implementation tasks

1	Planning and preparation
1.1	Identify any logistical, administrative and regulatory requirements so that the Regulations can be effectively applied. Appoint a Competent Authority (or competent authorities).
1.2	Identify which sectors and activities in the country are affected, including all organisations which produce, recover, recycle, reclaim, use, destroy or trade in ozone-depleting substances (ODS) or which produce, operate or service refrigeration, air-conditioning or heat pump equipment, or fire protection systems which contain ODS.
1.3	Undertake cost assessment and plan how implementation costs will be covered and divided between private and public sector.
1.4	Organise meetings with stakeholders (main industrial sectors affected) and public authorities to delineate duties, facilitate compliance and discuss the legal obligations involved.
1.5	Devise information campaigns on the implications of the Regulations amongst directly affected parties, stakeholders and the public.
1.6	Competent authorities should assess capacity-building requirements to process information received, carry out the necessary reporting requirements, ensure regular monitoring of the implementation of the obligations, and ensure that information compiled and submitted to the Commission is accurate and complete.
1.7	Take measures to promote recovery, recycling, reclamation and destruction of controlled substances.
1.8	Lay down the minimum training requirements for personnel involved in recovery, recycling, reclamation and destruction of controlled substance as well as leakage control of RAC equipment.
1.9	Establish inspection systems which targets compliance of undertakings following a risk-based approach, including inspections on imports and exports of controlled substances as well as of products and equipment containing or relying on those substances. In addition, monitoring and inspection systems are to be set up for recovering, for the purposes of recycling, reclamation or ecologically acceptable destruction of controlled substances.
1.10	Establish penalties for non-compliance with the requirements of the Regulation and notify the Commission on the date of accession at the latest.
1.11	Establish monitoring and inspection systems for companies having received annual use quotas to transfer quotas amongst the companies after prior notification to the Commission.

1.12	Establish a monitoring and inspection system to ensure that new quotas for the production and use of controlled substances for laboratory and analytical purposes comply with the allocation mechanism set out in Regulation 537/2011.
1.13	Establish a monitoring and inspection system to ensure that the list of non-essential uses of controlled substances (other than HCFCs) that are not allowed (Regulation 291/2011).
1.14	Set up a system to ensure that halons may only be placed on the market by undertakings authorised by the competent authority to store halons for critical uses as set out in Annex VI. (Art 13(1)).
2	Regulation – Tasks for commercial, industrial and public sector organisations (Undertakings)
2.1	<p>Ensure compliance with the prohibition of the production, placing on the market and use of controlled substances with the following exemptions, most of which are subject to licensing:</p> <ul style="list-style-type: none"> ▪ Controlled substances may be produced, placed on the market and used <u>as feedstock</u>, provided that it is adequately labelled; ▪ Production, placing on the market, and use of controlled substances for <u>essential laboratory and analytical uses</u>; ▪ <u>Virgin HCFCs</u> may be produced subject to calculated levels as per article 11(1) and a total ban as from 2020; ▪ <u>Reclaimed HCFCs</u> may be placed on the market and used for the maintenance or servicing of existing RAC equipment until 31 December 2014, provided that it is adequately labelled; ▪ <u>Recycled HCFCs</u> may be used for the maintenance or servicing of existing refrigeration, air-conditioning and heat pump equipment until 31 December 2014, provided that they have been recovered from such equipment and may only be used by the undertaking which carried out the recovery. Rules on record keeping apply for equipment with a fluid charge of 3kg or more; ▪ HCFCs may be placed on the market <u>for repackaging and subsequent export</u> until 31 December 2019; ▪ When <u>reclaimed or recycled HCFCs</u> are used for maintenance or servicing, the RAC equipment concerned shall be adequately labelled; ▪ Controlled substances may be produced, placed on the market and used as <u>process agent</u> in installations existing on 1 September 1997, and where emissions are insignificant.
2.2	Ensure compliance with the prohibition of the placing on the market of products and equipment containing or relying on controlled substances unless it is placed on the market for destruction or when it is authorised in accordance with Article 6(1) ODR
2.3	Comply with the prohibition of the use and ensure the decommissioning (except for uses referred to in Article 13(1)) of fire protection systems
2.4	Comply with the prohibition of the use of fire extinguishers containing halons and ensure its decommissioning
2.5	Ensure that personnel involved in recovery, recycling, reclamation and destruction of controlled substance meet the minimum qualification requirements laid down by the competent authority.
2.6	Ensure recovering, for the purposes of recycling, reclamation or ecologically acceptable destruction of controlled substances contained in RAC equipment

2.7	Where recovering or reclaiming is not possible, ensure that the final destruction of the controlled substances and equipment which contained such are destroyed in line with the approved technologies listed in Annex VII (Art. 22(2), Reg. (EC) No 1005/2009)
2.8	Ensure that the use of halons, as critical use, in fire fighting equipment is in line with the phase out schedule with a cut-off date and end date set out in Regulation (EC) No 291/2011
2.9	Ensure that imports and exports of controlled substances are only allowed if meeting the requirements laid down in Art. 15(2) and 17(2) of ODR and that importers and exporters hold an import and export license issued by Commission.
2.10	Importers of controlled substance for essential laboratory and analytical use, used as feedstock or used as process agents declare to the Commission the demand
2.11	Ensure that there is no import and export from and to non-Montreal Protocol Parties (under certain exemptions, Art 20(2) and (3) of Reg. (EC) No 1005/2009))
2.12	Take measures to prevent leaks of controlled substances and implement periodical leakage checking by qualified staff (Art 23 of Reg. (EC) No 1005/2009))
2.13	Ensure compliance with the prohibition of production, import, placing on the market, use and export of new substances set out in Part A of Annex II to Reg. (EC) No 1005/2009 taking into account certain exemptions (Art. 24, ODR)
2.14	Register and submit application to the Commission for licences to produce and import controlled substances for certain "essential" uses, i.e. laboratory and analytical uses (Art. 10, Regulation (EC) No. 1005/2009).
3	Regulation – Tasks for Member States
3.1	Monitor compliance with the requirements 2.1 – 2.14. In this context keep systematic record of all applications and licenses granted by Commission in the context of ODR and carry out inspection, taking a risk-based approach, especially targeting those activities representing the highest risk of illegal trade or emission of controlled substances.
3.2	Lay down the minimum training requirements for personnel responsible for maintaining equipment containing controlled substances in order to prevent leakage of regulated substances.
3.3	Establish and impose penalties for non-compliance with the requirements of the Regulation.
3.4	As regards the import and export licenses issued by the Commission, the Competent Authority of a Member State <u>may inform or instruct the applicant</u> for a license on any further information deemed necessary to be included in the application for a license.
3.5	If applicable provide authorisations in accordance with Art 10(7), 10(8), 14(2) ODR.
3.6	If applicable request derogations, temporary derogations to the Commission in accordance with Art 11(8), Art 12(3), Art 13(4), Art 17(3) ODR.
4	Reporting
4.1	Establish reporting systems to ensure that the data required (see below) are collected.

4.2	Producers, importers, exporters, feedstock users and process agent users of ODS need to report annually on quantities produced, imported and exported during the preceding year. Member States need to keep record of all annual reports submitted by undertakings to the Commission in accordance with Art 27 ODR
4.3	<p>Each year by 30 June Member States shall report the following information in an electronic format to the Commission, for the previous calendar year:</p> <ul style="list-style-type: none"> ▪ The quantities of methyl bromide authorised, pursuant to Article 12(2) and (3), for different treatments for quarantine and pre-shipment purposes used in their territory, specifying the purposes for which methyl bromide was used, and the progress in evaluating and using alternatives; ▪ The quantities of halons installed, used and stored for critical uses, pursuant to Article 13(1), the measures taken to reduce their emissions and an estimate of such emissions, and progress in evaluating and using adequate alternatives; ▪ Cases of illegal trade, in particular those detected during the inspections carried out pursuant to Article 28.

3.2 PHASING CONSIDERATION

In the European Union, bans on the production and use of most ozone-depleting substances are already implemented, except where they are licensed by the Commission for essential use and other exempted uses. Since many of the requirements are also covered by the Montreal Protocol to the Vienna Convention, candidate countries that have already implemented this protocol are likely to be at least partly compliant with the Regulation. However, the Regulation contains different or stricter obligations than the Montreal Protocol and will impose new obligations, such as stricter standards and controls, different timescales for phasing out use, different information requirements and complete prohibitions.

4. IMPLEMENTATION GUIDANCE

At the earliest stage of implementation, it is necessary to identify key actors and stakeholders who will be involved in the implementation of the Regulations and arrange discussions between them and/or set up working and coordinating groups. The identification of, and initial discussion with all potential stakeholders will help to achieve the most efficient path to implement the Regulations, to avoid costly errors and to encourage the co-operation of stakeholders in complying with the requirements of the implementation of the Decision.

Since the Regulations require close co-operation with, as well as information from, various sectors, it is recommended that an entity be specifically set up to monitor the implementation of the obligations of these Regulations. Such an entity may be established under the ministry for environment or the environment agency but should have a regulatory cross-sectoral role to ensure that all public and private authorities required to submit information report to one focal point and that information received from various sources is quality controlled and verified by one entity in order to avoid gaps, duplication and fragmentation as well as to ensure accuracy, comparability and transparency.

A monitoring system must be put into place to ensure compliance with the Regulations in terms of ensuring that controlled substances are not put on the market, that the exemptions are adequately licensed and that an adequate labelling system is put in place.

Under the EU Regulation on substances that deplete the ozone layer, the production, import and export of ODS is subject to licensing. These activities, as well as the destruction of ODS, feedstock uses and process agent uses, are also subject to annual reporting. Furthermore, the use of ODS for laboratory and analytical uses (including the placing on the market for such uses) is subject to registration. For these purposes the European Commission operates electronic databases.

DG CLIMA provides a assistance relevant to the implementation of the ODS Regulations.

- To comply with **Articles 15, 17 and 18** of ODR, the "Main-ODS-database"¹³⁵ is used to apply for licences for the production, import or export of controlled substances (an update was expected for April 2013). Information on who is entitled to produce, import or export and how to use the Main-ODS-database is available in a published licensing manual, available on: <https://circabc.europa.eu/w/browse/772132eb-0071-4e96-8058-e29592766a18>
- The use of controlled substances for laboratory and analytical uses (including the placing on the market of ODS laboratory chemicals) is subject to registration. Controlled substances may only be used in laboratories for essential uses where no alternative is available. The placing on the market of such laboratory chemicals is subject to a range of conditions. To comply with **Article 10** of ODR, information about the applicable conditions and the registration process is available in the manual for the ODS licensing system for laboratory uses. The manual is also available on: <https://circabc.europa.eu/w/browse/e36f27d0-890d-4e8f-8dec-3b1a468c07e4>
- **Article 27 of Regulation (EC) 1005/2009** requires producers, importers, exporters, feedstock users and process agent users of ODS to report on quantities produced, imported and exported during the preceding year. Furthermore, destruction facilities need to report on the quantities of

¹³⁵ <https://webgate.ec.europa.eu/ods/labs/labedit.cfm>

ODS destroyed. Reports need to be submitted to the European Environment Agency via the Business Data Repository (BDR) tool, available on: <https://bdr.eionet.europa.eu/>

4.1 ADMINISTRATIVE ARRANGEMENTS AND PLANNING

Regulations are directly applicable in all Member States, and do not need to be transposed into national legislation (see further under the introduction section). However, additional legislation will be required, for example to designate competent authorities, assign enforcement powers, and establish penalties for non-compliance with the requirements of the Regulation.

- Member States have introduced various mechanisms to achieve the targets, for example market based instruments like taxation, Regulations and the use of voluntary agreements.
- Member States have provided guidance (manuals) for undertakings to comply with the Regulations on ozone depleting substances
- Member States have also produced extensive guidance for industry on alternatives for ozone-depleting substances, recovery procedures, and undertaking research to support the identification of non-ozone-depleting alternatives.

Box

United Kingdom

The Department of the Environment, Food and Rural Affairs (Defra) acts as the competent authority for the control of ozone-depleting substances. Under the COSHH Regulations (Control of Substances Hazardous to Health), the Health and Safety Executive plays a role in enforcement. Banks for halons and CFCs have been set up to serve as stores for recycled material required for essential purposes — such as halons for fire extinguishers, to reduce the need for their manufacture or import. Industry consortia are active in the management of the banks. Research has been undertaken by the government to develop non-ozone-depleting substances under contract from Defra.

Box

Examples of policy planning in Sweden

Sweden's overall environmental policy is linked to realising overarching environmental quality objectives. One of the objectives is „Protective Ozone Layer”:

From a generational perspective, the effect of the environmental quality objective “A Protective Ozone Layer” is that:

- Sweden acts to ensure that concentrations of chlorine, bromine and other ozone depleting substances (ODS) in the atmosphere do not exceed natural levels;
- The use of ODS in Sweden should be phased out within a generation.

Interim targets for monitoring achievement of the environmental quality objective “A Protective Ozone Layer”: Virtually all emissions of ODS should have ceased by 2010.

Source: *Skyddande Ozonskikt: Underlagsrapport till fördjupad utvärdering av miljömålsarbetet, Rapport 5320, October 2003. Available at: <http://www.swedishepa.se/Documents/publikationer/620-5320-5.pdf>*

4.2 REGULATION

The information requirements of the Regulations are extensive. Information is required on activities involving controlled substances, including their production, import, export, supply, use, recovery, storage, recycling and reclamation and destruction. In this context it is advised to keep systematic record of all applications and licenses granted by Commission in the context of ODR and carry out inspection, taking a risk-based approach, especially targeting those activities representing the highest risk of illegal trade or emission of controlled substances. The accuracy of the information provided should be monitored by undertaking random spot checks to audit data.

Leakages of controlled substances must be controlled, and this includes the escape of substances from household equipment, factories, and installations which recover ozone- depleting substances. Leakages must be minimised by adopting precautionary measures. Operators should be monitored to ensure that the necessary measures are being taken.

Member States have to ensure that production, import, export, placing on the market or use of ozone-depleting substances in contrary to the ODS provisions is considered an environmental offence according to Art. 3 of the Environmental Crimes Directive (2008/99/EC) and that effective, issuasive and proportionate penal sanctions are imposed on the perpetrator (Art. 3, Environmental Crimes Directive (2008/99/EC)).

Box

Sweden

The 1986 Montreal Protocol established an agreement to phase out ozone-depleting substances (ODS). This case study describes the route taken by one Member State (Sweden), which became a signatory to the protocol on 29 June 1988.

In 1986, Sweden's CFC consumption was about 5,300 tonnes per annum, of which around 1,500 tonnes were for the production of refrigerants. Annual emissions due to leakage from domestic and industrial equipment which used CFCs and other ODS were considered to be high, but no particular attention was focused on this area. In the early 1980s, there was a significant increase in the development of heat pumps to provide heating for district and individual residences, most of which used CFCs.

Some time prior to EU membership, Sweden introduced comprehensive national legislation on the handling, usage and phasing out of ODS, which was seen to be more stringent than the requirements of the EU legislation. The national legislation included the main national ordinance of 1995 (95/636) as amended, which was based on earlier ordinances. In accordance with EU policy, there is no national ban on the import of CFCs and HCFCs. EU Regulations have prevented the production of and imports into the EU of virgin CFCs from 1 January 1995. Production and imports of HCFCs from non-EU countries are gradually being reduced and will finally be banned by 1 January 2015.

Sweden banned the use of CFC and HCFC refrigerants in new equipment from 1 January 1995 and restrictions were introduced for CFCs for recharging existing equipment from 1 January 1998. Furthermore, the use of all

equipment with CFC refrigerants, except for private use, was prohibited on 1 January 2000. This ban also applies to recovered CFCs and HCFCs, with the intention of compelling the use of non-ODS refrigerants.

The authorities worked extensively with industry to implement the ODS initiatives and suppliers are obliged to take back recovered refrigerants free of charge. Since 1997, permits have been required from the Environmental Protection Agency to export refrigerants and are only issued for destruction purposes. In 1988, the government took a policy decision to reduce the use and emissions of CFCs by 25% by 1 January 1991 and by 50% by 1 January 1993. Achievement of these targets required close co-operation with industry. The three largest trade associations formed the National Refrigeration Foundation (KYS) to promote higher standards in refrigeration, including those amongst the installation workers. Based on these discussions, the EPA issued a Refrigerants Order which accredited installation workers; promoted high production standards; promoted reuse of refrigerants; and promoted equipment maintenance. The accreditation system is regulated by SWEDAC, the national accreditation body.

Box

Bulgaria

Bulgaria introduced the national legislation already in 2000, which was finally amended in 2007 to cover all the requirements of the Regulation. It follows the Regulation almost exactly, although one of the last changes in 2007 was the introduction of the minimum requirements for the qualifications of the personnel dealing in any way with equipment containing the above substances. Imports and exports are licensed by the European Commission. Specific customs points are established for the import and export of these substances, equipped with the necessary facilities and units for testing. The competent authority is the Ministry of Environment and Water. Reporting to the Commission is done by MoEW, to which all bodies must report in due time.

Box

Ireland

The EPA of Ireland has issued guidance note on ODS, intended for those involved in the use of Ozone Depleting Substances (ODS) as solvents. Information gathered to date has indicated that such uses are no longer common in Ireland. The guidance note spans the most essential implementation implications, including training requirements, reporting, ODS waste management, alternative substances and enforcement and prosecution.

Source:

http://www.epa.ie/downloads/advice/air/ods/revised_guide_note_ods_solvents_august_2008.pdf

4.3 REPORTING

Mechanisms will need to be established for reporting to the Commission on measures to implement the Regulation, including, for example, data on production, import and export of controlled substances but also on decommissioning of installations producing or using controlled substances, transfer of allocated quotas etc.

5. COSTS

The costs to implement this Regulation are associated with:

- Establishing the relevant competent authority and running the regulatory system, with bans, labelling and reporting requirements;
- Ensure sufficient coordination with requirements laid down in other relevant EU provisions or at international level (e.g. obligation to ensure that staff handling F-gases in fire protection systems and other equipment have received training and are duly certified);
- Monitoring and enforcing compliance as well as sanctioning system in case of non-compliance (the production, importation, exportation, placing on the market or use of ozone-depleting substances is considered an environmental offence according to Art. 3 of the Environmental Crimes Directive (2008/99/EC);
- Costs to industry and the public related to the replacement of existing substances by non-ozone-depleting substances in products.

As alternatives to ODS are becoming less costly, the compliance costs to industry and to purchasers of domestic refrigerating units are unlikely to be high.

Some of these costs can be covered from various administrative fees, such as certificate and training fees. It may also be possible to involve economic instruments that provide incentives for the affected sectors of industry to step up the phasing out of the use of the remaining uses of ODS.

These costs apply not only to the manufacturing industry but also to relevant waste operators and private users of equipment with ODS.

<http://www.ior.org.uk/app/images/pdf/TB%20use%20of%20hcf%20refrigerants%20post%20jan2010.pdf>

LEGISLATION ON CO₂ EMISSIONS FROM ROAD TRANSPORT

Cars

Regulation (EC) 443/2009 of the European Parliament and of the Council of 23 April 2009 setting emission performance standards for new passenger cars as part of the Community's integrated approach to reduce CO₂ emissions from light-duty vehicles, as amended by Commission Regulation (EU) No 397/2013, Regulation (EU) No 333/2014 and Commission Delegated Regulation (EU) 2015/6 of 31 October 2014¹³⁶

Commission Regulation 1014/2010 of 10 November 2010 on monitoring and reporting of data on the registration of new passenger cars pursuant to Regulation (EC) 443/2009 of the European Parliament and of the Council as amended by Commission Regulation (EU) No 429/2012 of 22 May 2012 and Commission Regulation (EU) No 396/2013 of 30 April 2013¹³⁷

Commission Regulation (EU) 63/2011 of 26 January 2011 laying down detailed provisions for the application for derogation from the specific CO₂ emission targets pursuant to Article 11 of Regulation (EC) 443/2009 of the European Parliament and of the Council 1999/94/EC¹³⁸

Commission Implementing Regulation (EU) No 725/2011 of 25 July 2011 establishing a procedure for the approval and certification of innovative technologies for reducing CO₂ emissions from passenger cars pursuant to Regulation (EC) No 443/2009¹³⁹

Commission Decision (of 17 February 2012) on a method for the collection of premiums for excess CO₂ emissions from new passenger cars pursuant to Regulation (EC) 443/2009 of the European Parliament and of the Council (2012/100/EU)

Vans

Regulation (EU) 510/2011 No of the European Parliament and of the Council of 11 May 2011 setting emission performance standards for new light commercial vehicles as part of the Union's integrated approach to reduce CO₂ emissions from light-duty vehicles as amended by Regulation (EU) No 253/2014 of 26 February 2014 and Commission Delegated Regulation (EU) No 404/2014 of 17 February 2014¹⁴⁰

¹³⁶ Consolidated version available at:

<http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1451791627840&uri=CELEX:02009R0443-20150127>

¹³⁷ Consolidated version available at:

<http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1451952122191&uri=CELEX:02010R1014-20130508>

¹³⁸ OJ L 23, 27.1.2011

¹³⁹ OJ L 194, 26.7.2011

¹⁴⁰ Consolidated version available at:

Commission Implementing Regulation (EU) 293/2012 of 3 April 2012 on monitoring and reporting of data on the registration of new light commercial vehicles pursuant to Regulation 510/2011 of the European Parliament and of the Council as amended by Commission Implementing Regulation (EU) No 410/2014¹⁴¹

Commission Delegated Regulation (EU) No 114/2013 of 6 November 2012 supplementing Regulation 510/2011 of the European Parliament and of the Council with regard to rules for the application for a derogation from the specific CO₂ emissions targets for new light commercial vehicles, as amended by Commission Delegated Regulation (EU) No 1047/2013 of 21 August 2013 and Commission Delegated Regulation (EU) No 482/2014 of 4 March 2014

Commission Implementing Regulation (EU) No 427/2014 of 25 April 2014 establishing a procedure for the approval and certification of innovative technologies for reducing CO₂ emissions from light commercial vehicles pursuant to Regulation (EU) No 510/2011 of the European Parliament and of the Council

Commission Implementing Decision 2012/99/EU of 17 February 2012 on the detailed arrangements for the collection of premiums for excess CO₂ emissions from new light commercial vehicles pursuant to Regulation 510/2011 of the European Parliament and of the Council

Mandatory labelling of cars for consumer information

Directive 1999/94/EC of the European Parliament and of the Council of 13 December 1999 relating to the availability of consumer information on fuel economy and CO₂ emissions in respect of the marketing of new passenger cars as amended by Directives 2003/73/EC and 2009/30/EC and Regulations (EC) 1882/2003 and (EC) 1137/2008

Commission Directive 2003/73/EC amending Annex III to Directive 1999/94/EC

<http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1451970005670&uri=CELEX:02011R0510-20140514>

¹⁴¹ Consolidated version available at:

<http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1452048493827&uri=CELEX:02012R0293-20140514>

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1. SUMMARY OF MAIN AIMS AND PROVISIONS

1.1 BACKGROUND

Road transport is the second largest GHG emitting sector in the EU given that it contributes about one-fifth of the EU's total emissions of carbon dioxide (CO₂). Light-duty vehicles – cars and vans¹⁴² – are responsible for about 15% of the EU's CO₂ emissions.

The original (1995) strategy for CO₂ emissions reduction in road transport had three main subjects:

Mandatory labelling for consumer information

EU Directive 1999/94/EC requires that each new car displays a label showing its fuel consumption and CO₂ emissions. Moreover, any promotional material on specific makes and models need to reveal fuel use and CO₂ emissions in an easily understandable way.

Specifically, the 'car labelling Directive' requires:

- A label showing fuel economy and CO₂ emissions to be attached to all new cars or displayed nearby at the point of sale;
- A poster or display to be exhibited showing prominently the official fuel consumption and CO₂ emissions data of all new car models displayed or offered for sale or lease at or through the respective point of sale;
- A guide on fuel economy and CO₂ emissions from new cars to be produced in consultation with manufacturers at least annually. The guide should be available free of charge at the point of sale and from a designated body within each Member State;
- All promotional literature to contain the official fuel consumption and specific CO₂ emissions data for the passenger car model to which it refers.

This Directive is available at:

<http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1451950843566&uri=CELEX:01999L0094-20081211>

Voluntary agreements with car makers

The automakers concluded voluntary commitments in 1998/99 to reduce CO₂ emissions from their new cars sold in the EU to an average of 140 g/km by 2008 (for European manufacturers) or 2009 (for Japanese and Korean manufacturers). While significant CO₂ emission reductions were achieved in the initial years, since around 2004 the manufacturers could no longer meet their voluntary targets. In response, the Commission developed a mandatory CO₂ emission reduction program.

¹⁴² ie. "light commercial vehicles": vehicles used to carry goods weighing up to 3.5 tonnes (vans and car-derived vans, known as "N1") and which weigh less than 2610 kg when empty

Promoting fuel-efficient cars through fiscal measures

The European Commission proposed EU legislation aiming at including a CO₂ element in national car taxes. It had become clear that the reduction target through voluntary measures by industry was unlikely to be met. Therefore, on 7th February 2007 the European Commission published its parallel communications on the '*Results of the review of the Community Strategy to reduce CO₂ emissions from passenger cars and light-commercial vehicles*'¹⁴³ and on the '*Competitive Automotive Regulatory Framework for the 21st century*'¹⁴⁴. As outlined in these communications, the Commission decided to pursue an integrated approach with a view to reaching the EU objective of 120 g/km carbon dioxide (CO₂) emissions from average new cars by 2012. This suggested that additional measures, including a legislative requirement for vehicles to meet a target of 120g/km by 2012, were needed to complement the measures which it had already proposed on fuel quality, with part of this reduction (to 130g/km) being delivered by improvements in vehicle technology, and the remaining 10g/km by a range of other measures, notably minimum efficiency standards for air-conditioning systems; the mandatory fitting of tyre pressure monitoring systems; maximum tyre rolling resistance limits for passenger cars and light commercial vehicles; the fitting of gear shift indicators; mandatory targets for fuel efficiency in vans; and increased use of biofuels.

1.2 CURRENT LEGISLATIVE FRAMEWORK

The EU has an integrated approach to reduce CO₂ emissions from light-duty vehicles, ie. cars and light commercial vehicles (vans). Currently the two cornerstones of this framework are Regulation (EC) 443/2009 for cars and Regulation (EU) 510/2011 for vans. The logic in these two pieces of legislation are identical, as it can be followed in the below mapping of the Regulations' structure:

	Cars Regulation	Vans Regulation
Article 1	Subject matter and objectives	Subject matter and objectives
Article 2	Scope	Scope
Article 3	Definitions	Definitions
Article 4	Specific emissions targets	Specific emissions targets
Article 5	Super-credits	Super-credits
Article 5a	Super-credits for 95 g CO ₂ /km target	-
Article 6	Specific emissions target for alternative-fuel vehicles	Specific emission target for alternative fuel light commercial vehicles
Article 7	Pooling	Pooling
Article 8	Monitoring and reporting of average emissions	Monitoring and reporting of average emissions
Article 9	Excess emissions premium	Excess emissions premium

¹⁴³ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2007:0019:FIN:EN:PDF>, Brussels, 7.2.2007, COM(2007) 19 final

¹⁴⁴ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2007:0022:FIN:EN:PDF>, Brussels, 7.2.2007, COM(2007) 22 final

Article 10	Publication of performance of manufacturers	Publication of performance of manufacturers
Article 11	Derogations for certain manufacturers	Derogations for certain manufacturers
Article 12	Eco-innovation	Eco-innovation
Article 13	Review and report	Review and report
Article 14	Committee procedure	Committee procedure
Article 14a	Exercise of the delegation	-
Article 15	Repeal	Exercise of the delegation
Article 16	Entry into force	Revocation of the delegation
Article 17	-	Objections to delegated acts
Article 18	-	Entry into force
ANNEX I	SPECIFIC EMISSIONS TARGETS	SPECIFIC CO ₂ EMISSIONS TARGETS
ANNEX II	MONITORING AND REPORTING EMISSIONS PART A — Collection of data on new passenger cars and determination of CO ₂ monitoring information PART B — Methodology for determining CO ₂ monitoring information for new passenger cars PART C — Format for the transmission of data	MONITORING AND REPORTING OF EMISSIONS A. Collection of data on light commercial vehicles and determination of CO ₂ monitoring information B. Methodology for determining CO ₂ monitoring information for new light commercial vehicles C. Formats for transmission of data

In details, the framework comprises the following pieces of legislation.

1. Regulation (EC) 443/2009 of the European Parliament and of the Council of 23 April 2009 setting emission performance standards for new passenger cars as part of the EU's integrated approach to reduce CO₂ emissions from light-duty vehicles

This Regulation (the 'Cars Regulation') was adopted on 23 April 2009 with the aim to reduce road transport emissions by setting CO₂ emission limits for new passenger cars through the determination of performance standards. The current limit is set as an average of 130 grams of CO₂ emitted per kilometre for new cars being registered in a given year in the EU. This limit will decrease to an average of 95 grams of CO₂/km from the year 2020. The 2015 and 2020 targets represent reductions of 18% and 40% respectively compared with the 2007 fleet average of 158.7g/km.

The Regulation has been amended by Commission Regulation (EU) No 397/2013 regarding the monitoring of CO₂ emissions (Annex II), Regulation (EU) No 333/2014, to define the modalities for reaching the 2020 target, and Commission Delegated Regulation (EU) 2015/6, to take into account the evolution of the mass of new passenger cars in specific emissions targets.

Emission limits are set according to the mass of vehicle, using a **limit value curve**. The limit value curve means that heavier cars are allowed higher emissions than lighter cars while preserving the overall fleet average. Only the fleet average is regulated, so manufacturers are still able to make vehicles with emissions above the limit value curve provided these are balanced by vehicles below the curve.

The 2015 EU fleet average target of 130g CO₂ per km was determined to be **phased in** between 2012 and 2015, while actually it was reached by 2013.

If the average CO₂ emissions of a manufacturer's fleet exceeds its limit value in any year from 2012, the manufacturer has to pay an **excess emissions premium** for each car registered. This premium amounts to €5 for the first g/km of exceedance, €15 for the second g/km, €25 for the third g/km, and €95 for each subsequent g/km. From 2019, the cost will be €95 from the first gram of exceedance onwards.

Manufacturers can be granted emission credits equivalent **to a maximum emissions saving of 7g/km per year** for their fleet if they equip vehicles with eco-friendly **innovative technologies**. Such an approval shall be based on independently verified data.

The Regulation gives manufacturers additional incentives to produce vehicles with extremely low emissions (below 50g/km) with a system of **super-credits**. Super-credits will apply with a multiplier of 1.3 in 2020-2023, ie. each low-emitting car will be counted as 2 vehicles in 2020, 1,67 vehicles in 2021, 1,33 vehicles in 2022 and 1 vehicle from 2023 onwards.

Manufacturers can group together to **form a pool** which can act jointly in meeting the emissions target. In forming a pool, manufacturers must respect the rules of competition law and the information that they exchange should be limited to average specific emissions of CO₂, their specific emissions targets, and their total number of vehicles registered.

Independent manufacturers which sell **fewer than 10,000 vehicles per year** and which cannot or do not wish to join a pool can propose their own emissions reduction target which is subject to approval by the Commission. The Commission decides on the basis of a set of agreed criteria which include the manufacturer's emissions reduction potential. Manufacturers selling between **10,000 and 300,000 cars per year** can apply for a fixed target of a 25% reduction from their 2007 average emissions from 2016 and a 45% reduction thereof from 2020 onwards.

Special purpose vehicles, such as vehicles built to accommodate wheelchair access, and **small manufacturers that register fewer than 1000 cars** in the EU per year are excluded from the scope of the legislation.

2. Regulation (EU) 510/2011 of the European Parliament and of the Council of 11 May 2011 setting emission performance standards for new light commercial vehicles as part of the Union's integrated approach to reduce CO₂ emissions from light-duty vehicles

This Regulation aims to reduce road transport emissions by setting emission limits for light commercial vehicles (ie. vans), through the determination of performance standards, in a similar structure as Regulation (EC) No 443/2009 does for passenger cars. It establishes a fleet-average CO₂ emission target of 175 g/km by 2017 (which was already achieved by 2013) and a long-term target of 147g CO₂/km from 2020.

The Regulation, adopted in 2011, has been amended by Commission Delegated Regulation (EU) No 205/2012 with regard to the data source and the data parameters to be reported by Member States (Annex II), Regulation (EU) No 253/2014 to define the modalities for reaching the 2020 target, and Commission Delegated Regulation (EU) No 404/2014 with regard to the monitoring of CO₂ emissions (Annex II as well).

As in the case of cars, emission limits for vans are also set according to the mass of vehicle, using a **limit value curve**. (The limit value curve means that heavier cars are allowed higher emissions than lighter cars while preserving the overall fleet average. Only the fleet average is regulated, so

manufacturers are still able to make vehicles with emissions above the limit value curve provided these are balanced by vehicles below the curve.)

If the average CO₂ emissions of a manufacturer's fleet exceeds its limit value in any year from 2014, the manufacturer has to pay an excess emissions premium for each van registered. This premium amounts to €5 for the first g/km of exceedance, €15 for the second g/km, €25 for the third g/km, and €95 for each subsequent g/km. From 2019, the cost will be €95 from the first gram of exceedance onwards. This premium scheme is the same as for the passenger cars.

Manufacturers registering **fewer than 22000 new vehicles** in a year can propose their own emission reduction target which is subject to approval by the Commission.

Pooling is allowed for manufacturers to jointly meet the emission target, subject to the rules of competition law. The information that they exchange should be limited to average specific emissions of CO₂, their specific emissions targets, and their total number of vehicles registered.

Light commercial vehicles that emit less than 50 g/km CO₂ will earn "**super credits**". Vehicles meeting this emissions limit would count as 2.5 vehicles in 2016, 1.5 in 2017 and then 1 vehicle from 2018 onwards.

Manufacturers can be granted emission credits equivalent to a **maximum emissions saving of 7g/km per year** for their fleet if they equip vehicles with innovative technologies (**eco-innovations**). Such an approval shall be based on independently verified data.

3. Commission Regulation 1014/2010 of 10 November 2010 on monitoring and reporting of data on the registration of new passenger cars pursuant to Regulation (EC) 443/2009 of the European Parliament and of the Council

and

4. Commission Implementing Regulation (EU) No 293/2012 of 3 April 2012 on monitoring and reporting of data on the registration of new light commercial vehicles pursuant to Regulation (EU) No 510/2011 of the European Parliament and of the Council

These Regulations implement Article 8 of Regulation 443/2009 and Article 8 of Regulation No 510/2011 respectively in particular to ensure that the data on the registration of new passenger cars and vans is accurate and can be processed effectively for the purpose of establishing the specific emission target and monitoring and assessment of compliance.

The structure of these Regulations is parallel as it can be seen in the below overview:

	COMMISSION REGULATION (EU) No 1014/2010 of 10 November 2010 on monitoring and reporting of data on the registration of new passenger cars pursuant to Regulation (EC) No 443/2009 of the European Parliament and of the Council	COMMISSION IMPLEMENTING REGULATION (EU) No 293/2012 of 3 April 2012 on monitoring and reporting of data on the registration of new light commercial vehicles pursuant to Regulation (EU) No 510/2011 of the European Parliament and of the Council
Article 1	Definitions	Subject matter
Article 2	Data transmission	Definitions
Article 3	Data sources	Data transmission
Article 4	Data maintenance and control	Data sources

Article 5	Preparation of data by Member States	Data maintenance and control
Article 6	Reporting of filling stations supplying ethanol (E85) fuel	Preparation of data by Member States
Article 7	Vehicles not covered by EC type-approval	Reporting of filling stations supplying ethanol (E85) fuel
Article 8	List of manufacturers	Vehicles not covered by EC type-approval
Article 9	Additional information to be provided by manufacturers	List of manufacturers
Article 10	Entry into force	Additional information to be provided by manufacturers
Article 10a	-	Notification of errors by manufacturers
Article 10b	-	Preparation of the provisional data
Article 11	-	Entry into force
ANNEX I	Data sources	DATA SOURCES
ANNEX II	Table of data precision	TABLE OF DATA PRECISION

Each year, Member States should record and transmit to the Commission detailed and aggregated monitoring data (as specified in Annex II of Regulation 443/2009) primarily based upon information contained in the certificate of conformity of the relevant vehicle or the type-approval documentation. Member States are responsible for the maintenance, collection, control, verification and transmission of these data.

Member States should also record and report information about newly registered vehicles that are designed to use alternative fuels. In order to allow the Commission to take into account reductions to the specific emissions target due to the use of ethanol (E85) fuel in accordance with Article 6 of Regulation (EC) No 443/2009, Member States have to inform the Commission about the proportion of filling stations in their territory and, where applicable, the total number of those which provide ethanol (E85) fuel meeting the sustainability criteria set out in Directive 2009/28/EC on the promotion of the use of energy from renewable sources and in Article 7b of Directive 98/70/EC relating to fuel quality.

Moreover, Member States should also monitor the number of vehicles registered under simplified approval procedures in order to assess its impact on the monitoring process and the attainment of the EU's average CO₂ emissions target for the new vehicle fleet.

Manufacturers also have to provide the Commission with up-to-date information on the names they indicate on the certificates of conformity and other information.

5. Commission Regulation (EU) 63/2011 of 26 January 2011 laying down detailed provisions for the application for a derogation from the specific CO₂ emission targets pursuant to Article 11 of Regulation (EC) 443/2009

and

6. Commission Delegated Regulation (EU) No 114/2013 of 6 November 2012 supplementing Regulation 510/2011 of the European Parliament and of the Council with regard to rules for the application for a derogation from the specific CO₂ emissions targets for new light commercial vehicles

These Regulations (so-called Regulation on Car CO₂ Targets for Small-Volume and Niche Manufacturers and Regulation on Van CO₂ Targets for Small-Volume Manufacturers) establish rules on the information to be provided by small-volume and niche manufacturers applying for derogation from the CO₂ emissions reduction targets.

- 7. Commission Implementing Regulation (EU) No 725/2011 of 25 July 2011 establishing a procedure for the approval and certification of innovative technologies for reducing CO₂ emissions from passenger cars pursuant to Regulation (EC) No 443/2009**

and

- 8. Commission Implementing Regulation (EU) No 427/2014 of 25 April 2014 establishing a procedure for the approval and certification of innovative technologies for reducing CO₂ emissions from light commercial vehicles pursuant to Regulation (EU) No 510/2011**

These Regulations set out the procedure to be followed for the application for, and assessment, approval and certification of, innovative technologies that reduce emissions of CO₂ from passenger cars and vans pursuant to Article 12 of Regulations (EC) No 443/2009 and (EU) No 510/2011 respectively.

2. PRINCIPAL OBLIGATIONS

The main tasks of Member States and their designated competent authority within this framework relate to the collection and communication of the monitoring data as prescribed.

The Commission calculates emission targets and publishes a list by 31 October each year indicating the performance of manufacturers. They also impose and collect excess emissions premiums from manufacturers, approve and certify eco-innovations and deal with derogations.

Tasks of manufacturers:

- For each calendar year, each manufacturer of passenger cars has to ensure that its average specific emissions of CO₂ do not exceed its specific emissions target determined in accordance with Annex I, except for where there is a derogation under Art. 11, in which case the target is specified in that derogation. (Art. 4, Reg. 443/2009)
- For each calendar year, each manufacturer of light commercial vehicles (vans) has to ensure that its average specific emissions of CO₂ do not exceed its specific emissions target determined in accordance with Annex I, except for where there is derogation under Art. 11, in which case the target is specified in that derogation. Phase in the emission targets where manufacturers must meet their average CO₂ emission targets for their fleets of new cars pursuant to the following schedule:
 - 80% in 2016;
 - 100% from 2017.(Art. 4, Reg. 510/2011)
- Manufacturers report to the Commission on the following:
 - the names they indicate on the certificate of conformity and the first section of the Vehicle Identification Number (as specified in Directive 76/114/EEC) and repeat this in case of changes to this information without delay (Art. 8(1), Reg. 1014/2010; Art.9(1) Reg) 293/2012;
 - by 28 February each year, in respect of any van (complete, completed or incomplete) they sold in the preceding calendar year in the EU, or for which they issued a warranty in that year, manufacturers submit to the Commission the vehicle identification numbers and potentially detailed data specified in Annex II of the Vans Regulation (Art. 10(3) Reg. 293/2012)
 - by 31 May every year, manufacturers notify the Commission of the name and address of the contact person to whom the notification on provisional calculations for that manufacturer's emission targets and specific emissions shall be addressed and update this information in case of changes to the data. (Art.9 Reg. 1014/2010; Art.10 Reg. 293/2012); Report errors of provisional calculations if any (Art. 8(5), Reg. 443/2009, Art. 8(5), Reg. 510/2011)
- when forming a pool, manufacturers must submit to the Commission
 - evidence of the connection of members of a pool of undertakings (Art. 9, Reg. 1014/2010);
 - information on the manufacturers included in the pool (Art. 7 Reg. 443/2009; art. 7 Reg. 510/2011);
 - information on the manufacturer nominated as the pool manager being the contact point for the pool and responsible for paying any excess emissions premium, and evidence that the pool manager will be able to fulfil these obligations (Art. 7 Reg. 443/2009; art. 7 Reg.

510/2011).

- a supplier or a manufacturer applying for a measure to be approved as an innovative technology has to submit a report, including a verification report undertaken by an independent and certified body, to the Commission. The report has to mention possible interactions with any other innovative technology already approved (Art. 12, Reg. 443/2009 and Art. 12, Reg. 510/2011);

2.1 PLANNING AND PREPARATION

- Designate a competent authority or bodies responsible for the implementation of the Regulations, in particular for the collection and communication of the monitoring data.

Directive 2007/46/EC of the European Parliament and of the Council of 5 September 2007 establishing a framework for the approval of motor vehicles establishes a harmonised framework containing the administrative provisions and general technical requirements for approval of all new vehicles within its scope. **The entity responsible for complying with the Cars and Vans Regulations should be the same as that responsible for all aspects of the type-approval process in accordance with that Directive and for ensuring conformity of production** (Paragraph 17 of the Cars Regulation's Preamble).

In each Member State, the competent authority designated for the collection and reporting of the monitoring data on cars and vans shall be the same (Article 8(8) of the Vans Regulation). Inform the Commission of the competent authority designated (Article 8(7) of the Cars Regulation).

- Ensure sufficient institutional capacity and competent staff members and, where appropriate, hiring external staff to implement all the requirements.
- Devise a data gathering and reporting system to comply with the monitoring and reporting obligations that the competent authorities have vis-a-vis the Commission.
- Candidate countries are recommended to take an integrative approach to the implementation of these Regulations considering also other key provisions playing an instrumental importance, e.g. EU legislation on Fuel Quality and Mobile Air Conditioning.
- Establish efficient coordination and cooperation mechanisms and forums involving industry - vehicle manufacturers and suppliers present in the Member State's territory - and various third party experts on data collection and monitoring techniques for instance to improve quality of monitoring data and enhance compliance.
- Ensure that manufacturers and suppliers are well informed about the requirements, e.g. provide them with practical guidance on phasing in the specific emission limit targets, how this can be done, ie. individually or in a pool with other car manufacturers and detailing the conditions under which they can apply to the Commission for derogations and approval of eco-innovations and incentives which will affect the specific emission targets.
- Candidate countries and their competent authorities for implementing EU provisions on cleaner cars could in general support work on building new air conditioning systems for testing on the vehicle level, as it could give competitive advantage in terms of contributing to research and development in this area. Candidate countries could aim at enhancing the motivation among the national vehicle industry (if applicable) for system development and eco-innovations (without constituting an arbitrary competitive advantage or illegal state aid):

- For vehicle operation (homologation drive cycles);
- For systems operation (e.g. air conditioning);
- CO₂ equivalent emissions (GWP of refrigerant type, refrigerant leakage).

2.2 IMPLEMENTATION REQUIREMENTS

Given that this legislation framework comprises Regulations, ie. binding legislative acts that must be applied in their entirety across the EU, transposition of these acts into national law is not supposed to be carried out. However, those provisions of national legislation that contradict any provision of these Regulations must be terminated.

Ensure compliance with other relevant legislation affecting the total emissions of CO₂ from road transport such as those setting minimum efficiency standards for air-conditioning systems; requiring mandatory fitting of tyre pressure monitoring systems; maximum tyre rolling resistance limits for passenger cars and light commercial vehicles; the fitting of gear shift indicators; and promoting an increased use of biofuels (for reference to the relevant legislation see below under other relevant legal requirements). A non-exhaustive list of relevant legislation is as follows:

- Regulation (EC) No 715/2007 harmonises across the EU the technical emission requirements - known as EC type-approval - for motor vehicles and replacement parts. It places specific obligations on manufacturers and provides access to repair and maintenance information.
- Directive 1999/94/EC relating to the availability of consumer information on fuel economy and CO₂ emissions in respect of the marketing of new passenger cars;
- The MAC Directive (Directive 2006/40/EC on emissions from air conditioning systems in motor vehicles) prohibits the use of F-gases with a global warming potential of more than 150 times greater than carbon dioxide (CO₂) in new types of cars and vans introduced from 2011, and in all new cars and vans produced from 2017.
- The Fuel Quality Directive (98/70/EC) requires a reduction of the greenhouse gas intensity of the fuels used in vehicles by 6 % by 2020 and regulates the sustainability of biofuels.
- The Renewable Energy Directive (2009/28/EC), which requires Member States to ensure that 10% of the total energy used in transport is sourced from renewable sources by 2020;
- The General Safety Regulation (661/2009/EC as amended), sets out requirements on tyre pressure monitoring systems, gear shift indicators and rolling resistance requirement applying to new cars

Member States shall put the necessary measures in place to ensure adequate accuracy in the monitoring procedure in respect of cars and vans where the certificate of conformity is not used. (Annex II, Part B, Cars Regulation).

2.3 MONITORING AND REPORTING

As mentioned above, provisions on monitoring and reporting are prescribed in details in Reg. 443/2009 and Reg. 1014/2010 regarding cars and Reg. 510/2011 and Reg. 293/2012 regarding vans.

The key provisions on **monitoring** by Member States are as follows:

- Member States are responsible for the maintenance, collection, control, and verification of the aggregated and detailed monitoring data. (Art. 4, Reg. 1014/2010; Art. 5, Reg. 293/2012)
- As mentioned in the Section on Planning and Preparation, designate a competent authority for the collection and communication of the monitoring data and inform the Commission of the competent authority designated. As mentioned above, the competent authority for monitoring and reporting regarding passenger cars shall also be responsible for vans (Art. 8(7), Reg. 443/2009 and Art. 8(8), Reg. 510/2011);
- Take active steps to ensure that reporting bodies operate in a transparent manner. (Art. 8(1), Reg. 443/2009 and Art. 8(1), Reg. 510/2011);
- Member States (reporting bodies or competent authorities) must record information for each new passenger car and light commercial vehicle registered in its territory in accordance with Part A of Annex II of the Cars Regulation and the Vans Regulation, which must also be made available to the manufacturers and their importers or representatives. (Art. 8, Cars Regulation; Art.8 Vans Regulation)

Regarding cars, these data comprise the manufacturer, the type-approval number with its extension, the type, variant, and version, make and commercial name, category of vehicle type-approved, total number of new registrations, mass, the specific emissions of CO₂, footprint (the wheel base, the track width steering axle and the track width other axle), the fuel type and fuel mode, engine capacity, electric energy consumption, code for the innovative technology or group of innovative technologies and the CO₂ emissions reduction due to that technology, and maximum net power. (Annex II, Reg. 443/2009)

Regarding complete vans, these data comprise the manufacturer, the type-approval number with its extension, the type, variant, and version, make, category of vehicle type-approved, category of vehicle registered, the specific emissions of CO₂, mass in running order, technically permissible maximum laden mass, footprint (the wheel base, the track width steering axle and the track width other axle), the fuel type and fuel mode, engine capacity, electric energy consumption, code of the innovative technology or group of innovative technologies and the CO₂ emissions reduction due to that technology and the vehicle identification number. Regarding vans approved in a multi-stage process, certain data out of the above determined list are to be collected. (Annex II, Reg.510/2012)

For each calendar year, Member States shall determine: the sources used for the collection of the above detailed data, the total number of new registrations of vehicles subject to EC type-approval, individual approval, national approval in small series and, where available, multi-stage approval. (Annex II Reg. 443/2009; Annex II Reg.510/2012)

- Ensure that the CO₂ emission level is measured in accordance with Regulation (EC) No 715/2007 on the approval of vehicles in view of their emissions. Ensure that the specific emissions of CO₂ of passenger cars which are not type approved in accordance with Regulation (EC) No 715/2007 are measured and recorded in the certificate of conformity (Art. 8, Reg. 443/2009);
- The competent authority responsible for monitoring must ensure full compliance with the provisions of Reg. 1014/2010 (Art.3) and Reg. 293/2012 (Art. 4) on data sources and in particular Annex I of the respective Regulation on Monitoring (Reg. 1014/2010; Reg. 293/2012).

The collected data shall be based on the certificate of conformity of the relevant vehicle or be consistent with the certificate of conformity issued by the manufacturer. Where the certificate of conformity is not used, Member States shall put the necessary measures in place to ensure

adequate accuracy in the monitoring procedure. (Annex II Reg. 443/2009; Annex II Reg. 510/2012)

- When completing the detailed monitoring data, include for each vehicle equipped with eco-innovative technologies, the specific emissions of CO₂ without taking into account the CO₂ emissions reduction through innovative technologies granted in accordance with Article 12 on Eco-innovation of the Cars Regulation. (Art.5 Reg. 1014/2010)
- In completing the aggregated monitoring data and the detailed monitoring data, the competent authority must use the names of the manufacturers taken from the list drawn up and published on the internet by the Commission and ensure that the most up to date list is being used. In case a name of a manufacturer is not listed, the Competent Authority should instead use the name on the certificate of conformity or in the type-approval documentation. (Art. 8, Reg. 1014/2010; Art.9, Reg. 293/2012)
- Determine the total number and percentage of all fuel filling stations on the national territory that provide E85 complying with criteria for biofuels set out in Directive 2009/28/EC and Directive 98/70/EC. (Art.8 Reg. 443/2009; Annex II Reg. 443/2009)
- To allow for the future inclusion in Regulation (EU) No 510/2011 of vehicles in categories M2 and N2 (Article 13(2) of the Vans Regulation), data should also be recorded and reported to the Commission for those categories of vehicles with a reference mass not exceeding 2 610 kg and vehicles to which type approval is extended. (Art. 8(10) of the Vans Regulation; Art.1 Reg. 293/2012)

The key provisions on **reporting** by Member States comprise the following:

- Member States are responsible for the transmission to the Commission of the aggregated and detailed monitoring data. (Art. 4, Reg. 1014/2010; Art. 5, Reg. 293/2012)
- By 28 February of each year, determine and transmit to the Commission information regarding the preceding calendar year,
 - with the contents listed in Part B of Annex II to Reg. 443/2009 and Reg. 510/2011
 - in the format set out in Part C of Annex II of both Regulations.
 - with the precision set out in Annex II to Reg. 1014/2010 and Reg. 293/2012 and (Art.8 Cars Regulation, Art.8 Vans Regulation; Annex II Reg. 1014/2010; Annex II Reg. 293/2012)That information will be the basis for the Commission to determine the specific CO₂ emissions target for manufacturers of new passenger cars and light commercial vehicles and will also serve for the assessment of whether manufacturers comply with those targets.
- On request from the Commission, a Member State shall also transmit the full set of data collected. (Art.8 Cars Regulation, Art.8 Vans Regulation)
- The competent authority must transmit the aggregated and detailed monitoring data via electronic data transfer to the Central Data Repository managed by the European Environmental Agency and notify the Commission when this data has been transmitted. (Art. 2, Reg. 1014/2010; Art.3 Reg. 293/2012)

3. IMPLEMENTATION CONSIDERATIONS

3.1 IMPLEMENTATION GUIDANCE

Each year, the Commission publishes information relevant for the implementation (including updated lists prescribed by the Regulations, guidance materials, checklists, etc.) both for Member States and manufacturers separately at:

<https://circabc.europa.eu/w/browse/6c4cb908-ea46-4276-9f1f-e21374d4b2fb>

In particular, the Guidelines (for Member States) on the monitoring and reporting of CO₂ emissions from light duty vehicles of December 2015 is available at:

<https://circabc.europa.eu/sd/a/c70fe9d3-a740-4e85-85ea-c7aef509ec4e/MS%20Guidelines%202015%20data%20FINAL.pdf>

3.2 IMPLEMENTATION LESSONS FROM MEMBER STATES

Box 34

Examples from Member State: initiatives supporting eco-friendly vehicles in Germany

The ESMT project financed by the German environmental ministry within the framework of the stimulus package „Konjunkturpaket II“ investigated how electric mobility may be part of a transition to a more sustainable transport in Germany particularly addressing the following points:

- How long-term economic and environmental costs and benefits of different policy instruments to foster and promote electric mobility;
- What are the long-term infrastructure needs to achieve sustainable transport with the integration of electric vehicles;
- Which overall growth and employment effects will occur in different scenarios.

The main conclusions of this study was:

- Car buyers are myopic as they overvalue the purchase price and underestimate future operating costs – that hinders the adoption of fuel efficient technologies;
- Electric mobility (via hybrid propulsion concepts) will become competitive by 2020 – even without policy support;
- A low range, a lack of quick charging infrastructure, high purchase costs mean only a low uptake of pure BEV in the foreseeable future;
- Effects of EV policies will be generally driven by regulatory context and will often produce negative net benefits;

- Effects of EVs on emissions will be ambiguous and counter intuitive;
- A fuel-based taxation of mobility will see its tax base erode;
- Subsidising private charging infrastructure is not an efficient policy option.

Source: <http://www.infraday.tu-berlin.de/typo3/fileadmin/documents/infraday/2011/presentations/Transport%20III%202.pdf>

3.3 COSTS

Given that the competent authority designated for the activities prescribed to the Member State in these Regulations shall be the one already set up for the implementation of the type-approval process and conformity of production, the initial set-up costs are limited to the extension of the existing competent authorities - establishment of devising systems and procedures, provision of sufficient human resources and their training. Capital expenditure consists of new databases, hardware and software for monitoring and reporting. Potential costs can be incurred by preparation of technical guidance for manufacturers on monitoring, compliance with emission limits and implementation options available.

On-going running costs include labor and other costs incurred for competent authorities, ie. reporting and monitoring bodies.

THE REGULATIONS ON CERTAIN FLUORINATED GREENHOUSE GASES

F-gas Regulation - Basic Act

Regulation (EU) No 517/2014 of the European Parliament and of the Council of 16 April 2014 on fluorinated greenhouse gases and repealing Regulation (EC) No 842/2006

F-gas Regulation – Ten Implementing Acts

1. Leak checking – Stationary refrigeration, air conditioning and heat-pump

Commission Regulation (EC) No. 1516/2007 of 19 December 2007 establishing standard leakage checking requirements for stationary refrigeration, air-conditioning and heat-pump equipment containing certain fluorinated greenhouse gases (OJ L 335/10, 20.12.2007).

2. Leak checking – Fire protection

Commission Regulation (EC) No. 1497/2007 of 18 December 2007 establishing standard leakage checking requirements for stationary fire protection systems containing certain fluorinated greenhouse gases (OJ L 333/4, 19.12.2007).

3. Labelling

Commission Implementing Regulation (EU) 2015/2068 of 17 November 2015 establishing the format of labels for products and equipment containing fluorinated greenhouse gases (OJ L 301, 18.11.2015)

4. Reporting

Commission Regulation (EC) No 1191/2014 of 30 October 2014 determining the format and means for submitting the report referred to in Article 19 of Regulation (EU) No 517/2014 of the European Parliament and of the Council on fluorinated greenhouse gases (OJ L 318, 5.11.2014)

5. Qualifications/Certification – Stationary refrigeration, air conditioning, heat-pump and trucks & trailers

Commission Implementing Regulation (EU) 2015/2067 of 17 November 2015 establishing minimum requirements and the conditions for mutual recognition for the certification of natural persons as regards stationary refrigeration, air conditioning and heat pump equipment, and refrigeration units of refrigerated trucks and trailers, containing fluorinated greenhouse gases and for the certification of companies as regards stationary refrigeration, air conditioning and heat pump equipment, containing fluorinated greenhouse gases

6. Qualifications/Certification – Fire protection systems and fire extinguishers

Commission Regulation (EC) No 304/2008 of 2 April 2008 establishing minimum requirements and the conditions for mutual recognition for the certification of companies and personnel as regards

stationary fire protection systems and fire extinguishers containing certain fluorinated greenhouse gases (OJ L 92, 3.4.2008).

7. Qualifications/Certification – Electrical switchgear

Commission Implementing Regulation (EU) 2015/2066 of 17 November 2015 establishing minimum requirements and the conditions for mutual recognition for the certification of natural persons carrying out installation, servicing, maintenance, repair or decommissioning of electrical switchgear containing fluorinated greenhouse gases or recovery of fluorinated greenhouse gases from stationary electrical switchgear (OJ L 301, 18.11.2015)

8. Qualifications/Certification – Gas-based Solvents from equipment

Commission Regulation (EC) No 306/2008 of 2 April 2008 establishing minimum requirements and the conditions for mutual recognition for the certification of personnel recovering certain fluorinated greenhouse gas-based solvents from equipment (OJ L 92, 3.4.2008).

9. Qualifications/Training and training attestations – Mobile air conditioning

Commission Regulation (EC) No 307/2008 of 2 April 2008 establishing minimum requirements for training programmes and the conditions for mutual recognition of training attestations for personnel as regards air-conditioning systems in certain motor vehicles containing certain fluorinated greenhouse gases (OJ L 92, 3.4.2008).

10. Format for notification of training and certification programmes

Commission Implementing Regulation (EU) 2015/2065 of 17 November 2015 establishing the format for notification of the training and certification programmes of the Member States (OJ L 301, 18.11.2015)

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1. SUMMARY OF MAIN AIMS AND PROVISIONS

Fluorinated greenhouse gases (F-gases) are man-made gases used in a range of industrial applications. Since they do not damage the atmospheric ozone layer, they are often used as substitutes for ozone-depleting substances. However, F gases are also greenhouse gases, actually more powerful than carbon dioxide (CO₂), contributing to global warming if released into the atmosphere. They currently account for 2% of the European Union's GHG emissions. To reduce these emissions, originally, Regulation No. 842/2006 and 10 pieces of implementing Regulations were adopted in 2006 and the subsequent years, which succeeded in stabilising EU F gas emissions at 2010 levels. In order to further strengthen and extend the related measures, the Regulation was replaced in 2014 by Regulation No 517/2014, which applies from 1 January 2015. The new Regulation aims to cut the EU's F gas emissions by two-thirds by 2030 compared to 2010 levels. The implementing Regulations adopted under the original Regulation remained in force and continued to apply until repealed by new acts. As of end-2015, five out of the ten have been replaced, namely:

- Commission Regulation (EC) No 1493/2007 replaced by Commission Regulation (EC) No 1191/2014
- Commission Regulation (EC) No 308/2007 replaced by Commission Implementing Regulation (EU) 2015/2065
- Commission Regulation (EC) No 305/2008 replaced by Commission Implementing Regulation (EU) 2015/2066
- Commission Regulation (EC) No 303/2008 replaced by Commission Implementing Regulation (EU) 2015/2067
- Commission Regulation (EC) No. 1494/2007 replaced by Commission Implementing Regulation (EU) 2015/2068

These Regulations target industrial applications of fluorinated gases (F-gases). The Regulation covers the use of Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs) and Sulphur Hexafluoride (SF₆), other greenhouse gases containing fluorine or mixtures containing any of those substances in all their applications with the exception of the prohibition of the use of F-gases in new types of cars and vans introduced from 2011, which is covered by the MAC Directive (2006/40/EC). To go into details, Hydrofluorocarbons (HFCs) are used as refrigerants, cleaning solvents and foam blowing agents; Perfluorocarbons (PFCs) are used in the electronics, the cosmetic and the pharmaceutical industries and still can be found in old fire protection systems; Sulphur hexafluoride (SF₆) is used as an insulating gas, in electric switch gear and magnesium and aluminium production.

The F-gas Regulation aims at:

- Improving the **prevention of leaks** from equipment containing F-gases. Measures comprise rules on the containment, use, recovery and destruction of F-gases, checks and detection systems, labelling, proper servicing and recovery of equipment; training and certification of personnel and of companies handling these gases; reporting on imports, exports and production of F-gases;
- **Avoiding F-gases in some applications** where environmentally superior alternatives are cost-effective. Measures include restrictions on the marketing and use of certain products and equipment containing F-gases. Besides, from 2015 onwards, the volume of HFCs, which are the most important F-gases, will be gradually reduced on the EU's market.

The Basic Act sets out the following provisions:

- National authorities are responsible for setting up certification and training programmes for businesses and people involved in installing, servicing, maintaining, repairing or decommissioning F-gases equipment and in recovering F-gases.
- Intentional release of F gases is prohibited, unless technically necessary for the intended use of a product. Manufacturers must do their best to limit emissions during the production, transport and storage of F-gases.
- Operators of equipment containing F-gases must take every precaution to avoid any leakage. They must ensure the equipment is regularly checked for leaks. Requirements vary according to the potential climate impact or whether the equipment is hermetically sealed.
- It phases in bans from 2015 to 2025 on the sale of new items such as certain categories of fridges and freezers, air-conditioning systems, foams and aerosols containing F-gases where safer, more climate-friendly alternatives exist.
- It reduces the climate impact of the use of HFCs over time. The annual limit for HFCs on the market in 2030 is 21 % of 2009-2012 levels. To ensure the limits are respected, the Commission allocates annual quotas to producers and importers, which must not be exceeded.
- Producers, importers, exporters, users of feedstock and businesses that destroy F-gases must report annually to the Commission. Importers of F-gas equipment must do the same and from 2017 provide evidence that the quantities of HFCs in their imported equipment are accounted for.

The structure of the Regulation can be mapped as follows:

Regulation (EU) No 517/2014 of the European Parliament and of the Council of 16 April 2014 on fluorinated greenhouse gases and repealing Regulation (EC) No 842/2006		
CHAPTER I		GENERAL PROVISIONS
	Article 1	Subject-matter
	Article 2	Definitions
CHAPTER II		CONTAINMENT
	Article 3	Prevention of emissions of fluorinated greenhouse gases
	Article 4	Leak checks
	Article 5	Leakage detection systems
	Article 6	Record keeping
	Article 7	Emissions of fluorinated greenhouse gases in relation to production
	Article 8	Recovery
	Article 9	Producer responsibility schemes
	Article 10	Training and certification
CHAPTER III		PLACING ON THE MARKET AND CONTROL OF USE
	Article 11	Restrictions on the placing on the market
	Article 12	Labelling and product and equipment information
	Article 13	Control of use
	Article 14	Pre-charging of equipment with hydrofluorocarbons

Regulation (EU) No 517/2014 of the European Parliament and of the Council of 16 April 2014 on fluorinated greenhouse gases and repealing Regulation (EC) No 842/2006		
CHAPTER IV		REDUCTION OF THE QUANTITY OF HYDROFLUOROCARBONS PLACED ON THE MARKET
	Article 15	Reduction of the quantity of hydrofluorocarbons placed on the market
	Article 16	Allocation of quotas for placing hydrofluorocarbons on the market
	Article 17	Registry
	Article 18	Transfer of quotas and authorisation to use quotas for the placing on the market of hydrofluorocarbons in imported equipment
CHAPTER V		REPORTING
	Article 19	Reporting on production, import, export, feedstock use and destruction of the substances listed in Annexes I or II
	Article 20	Collection of emissions data
CHAPTER VI		FINAL PROVISIONS
	Article 21	Review
	Article 22	Exercise of the delegation
	Article 23	Consultation Forum
	Article 24	Committee procedure
	Article 25	Penalties
	Article 26	Repeal
	Article 27	Entry into force and date of application
ANNEXES		
	Annex I	F gases referred to in Point 1 of Art. 2 (Definitions/F gases): Substance and GWP
	Annex II	Other fluorinated GHGs subject to reporting in accordance with Art.19 (production, import, export, feedstock use and destruction)
	Annex III	Placing on the market prohibitions referred to in Art. 11(1)
	Annex IV	Method of calculating the total GWP of a mixture
	Annex V	Calculation of the maximum quantity, reference values and quotas for placing HFCs on the market
	Annex VI	Allocation mechanism referred to in Art.16 (HFC quotas)
	Annex VII	Data to be reported pursuant to Art.19 (production, import, export, feedstock use and destruction)
	Annex VIII	Correlation Table (between old Reg. 842/2006 and new Reg. 517/2014)

The ten Implementing Regulations lay down specific requirements concerning:

- Standard **leak checking requirements** for the following applications containing fluorinated greenhouse gases:
- stationary refrigeration

- stationary air conditioning equipment
- heat pump equipment
- stationary fire protection systems
- refrigeration units of refrigerated trucks and trailers
- electrical switchgear
- organic Rankine cycles
- **Labelling** requirements for products and equipment containing certain fluorinated greenhouse gases;
- **Reporting** on production, import, export, feedstock use and destruction of certain fluorinated greenhouse gases;
- **Certification** of companies and technical staff handling applications with fluorinated greenhouse gases and the mutual recognition of the certificates of other Member States. These concern the following applications containing certain fluorinated greenhouse gases:
 - Stationary refrigeration
 - Refrigeration units of refrigerated trucks and trailers
 - Stationary air conditioning equipment
 - Stationary heat pump equipment
 - Stationary fire protection systems and fire extinguishers
 - Electrical switchgear
 - Equipment containing fluorinated greenhouse gas based solvents
- **Certification** of companies and technical staff **recovering** certain fluorinated greenhouse gas based solvents from equipment
- **Training** programmes and the mutual recognition of training attestations for personnel as regards mobile air conditioning systems containing certain fluorinated greenhouse gases
- The **format** for **notification of the training and certification programmes** of the Member States

The Commission will review the framework by 2022 and on that basis will possibly recommend further measures.

The most important links of this framework to other pieces of EU legislation are as follows:

- the establishment of reporting systems by Member States of emissions of fluorinated greenhouse gases would provide coherence with Regulation (EU) No 525/2013 on a mechanism for monitoring and reporting greenhouse gas emissions and for reporting other information;
- there also needs to be coherence with Directive 2012/19/EU on waste electrical and electronic equipment (WEEE) in terms of the preparing for re-use, recovery and recycling of waste cooling equipment and the substances, mixtures or components of F gas.;
- the above measures taken by the EU to reduce F gases are supplemented and technically harmonised with Directive 2006/40/EC concerning emissions from air-conditioning systems in motor vehicles (MAC Directive);
- REACH Regulation (No. 1907/2006) concerning the registration, evaluation, authorisation and restriction of chemicals.

2. PRINCIPAL OBLIGATIONS

2.1 PLANNING AND PREPARATION

Firstly, designate a competent authority or bodies responsible for the implementation of the Regulations. Identify any logistical, administrative and regulatory requirements so that the Regulations can be effectively applied.

Member States and candidate countries are advised to **assess which sectors and activities would be affected** by these Regulations. They affect a relatively wide range of stakeholders, namely, anyone who

- produces, uses, recovers, collects, recycles, reclaims, or destroys F-gases;
- imports or exports F-gases or products and equipment that contains F-gases;
- places on the market F-gases or products and equipment that contain, or whose functioning relies upon, F-gases;
- installs, services, maintains, repairs, checks for leaks or decommissions equipment that contains, or whose functioning relies upon, F-gases
- is the operator of equipment that contains, or whose functioning relies upon, F-gases;
- produces, imports, exports, places on the market or destroys gases listed in Annex II of Reg. 517/2014;
- places on the market products or equipment containing gases listed in Annex II of Reg. 517/2014.

In particular, the main industry sectors affected by the F-gas Regulation are:

- Stationary refrigeration, air conditioning and heat pumps;
- Refrigerated trucks and trailers;
- Fire protection systems and fire extinguishers;
- Mobile air conditioning;
- Electrical switchgear;
- Solvents and aerosols;
- Insulating foam;
- Magnesium;
- Semiconductors.

End users and contractors may both have obligations, as may equipment manufacturers and distributors. There are legal obligations for companies and qualification requirements for personnel working in the above industry sectors as well as other requirements relating to:

- Prevention of leakage: prohibition of intentional release, leakage checking of equipment, leakage detection systems, keeping record of such equipment;
- Limiting F-gas emissions from the production, transport and storage of fluorinated compounds;
- Recovery of F gas from products, including containers, and equipment during maintenance, servicing and at end of life;
- Reporting of annual F gas import, export, production, feedstock use and destruction figures;
- Labelling of equipment containing F gas (and inclusion of information in instruction manuals and advertisements);
- Prohibition of SF₆ use in magnesium die casting and in vehicle tyres;
- Placing on the market prohibitions and limitations for F gases in various products and equipment.

In order to ensure cost-efficient implementation and enforcement and to ease the transition to low-GWP technologies, above sectors need to **receive sufficient information about the legal and administrative requirements** and that awareness of the workings of these Regulations is enhanced. In this context, also the workers in installations performing certain activities have to be informed about the **obligation to acquire the necessary qualifications and training** to obtain a certificate and the competent authority has to put into place certification and verification schemes to ensure that all affected workers are certified within a reasonable time period.

It is important to remember that **Member States are allowed to introduce more stringent measures** than the ones prescribed by this legislative framework (Section 24 of Preamble in Reg. 517/2014).

On the other hand, a Member State is **allowed to request the Commission for an exemption** for up to four years to allow the **placing on the market** of products and equipment containing or relying on F-gases (as listed in Annex III) or to **exclude producers and importers from the HFC quota requirements**, if safe alternatives are not available or would entail disproportionate costs. (Art.11(3) and Art.15(4) Reg.517/2014) These possibilities need to be duly considered.

Undertake cost assessment and plan how implementation costs will be covered and divided between private and public sector.

It is recommended to organise meetings with the stakeholders from the main industrial sectors affected and public authorities to delineate duties, facilitate compliance and discuss the legal obligations involved. It is also recommended to devise information campaigns on the implications of the Regulations amongst directly affected parties, stakeholders and the public.

Moreover, plans could be developed to engage and create incentives for the affected industrial sectors (e.g. foam applications and manufacturers of windows, footwear, car components including air-conditioning units fitted in motor vehicles, refrigerators, electrical switch gears, fire protection systems and air-conditioning units) in the design and development of alternative gases, products or methods that have a reduced impact on the environment.

In particular, Member States should plan how to encourage the establishment of producer responsibility schemes regarding the recovery, recycling, reclamation and destruction of F-gases.

Competent authorities should also assess capacity-building requirements to process information received, carry out the necessary reporting requirements, ensure regular monitoring of the

implementation of the obligations, and ensure that information compiled and submitted to the Commission is accurate and complete.

It needs to be considered whether the competent authority should set up a database to store the records for each piece of equipment to be checked for leaks or to leave it to operators (Art.6 (2), Reg. 517/2014).

Plan the establishment of the required Certification Body, Verification Body and Attestation Body and consider combining the certification and verification body if it makes institutional and financial sense. Introduce mechanisms to ensure that these are independent bodies with appropriate coordination to effectively undertake their tasks.

2.2 IMPLEMENTATION REQUIREMENTS

This framework comprises Regulations, which means that these legislative acts are directly applicable in national law. Nevertheless, national legislation is needed to cover the compliance and enforcement measures. Moreover, those provisions of national legislation that contradict any provision of these Regulations must be terminated.

On the basis of Regulation No. 517/2014 and the ancillary Regulations, Member States mainly have obligations to administer, monitor and ensure the compliance of industry with the requirements. The tasks include the following:

- Establishing or adapting a **system and procedures** for:
- Ensuring that natural persons carrying out installation, servicing, maintenance, repair or decommissioning of stationary applications of refrigeration, air-conditioning and heat-pump equipment and fire protection systems, refrigerated trucks and trailers or electrical switchgears containing F-gases listed in Annex I, leak checks of the above equipment or recovery of F-gases, hold certificates and are sufficiently trained;
- In that context, **training programmes and certification schemes** (including evaluation processes) at least for companies and personnel involved in the installation, maintenance, servicing, repair and decommissioning, as well as leak checks of the relevant equipment and recovery of fluorinated greenhouse gases, as prescribed in Article 10(1) and (2) of Regulation No. 517/2014; and **training** for natural persons who wish **to update their knowledge** in relation to the certified material.

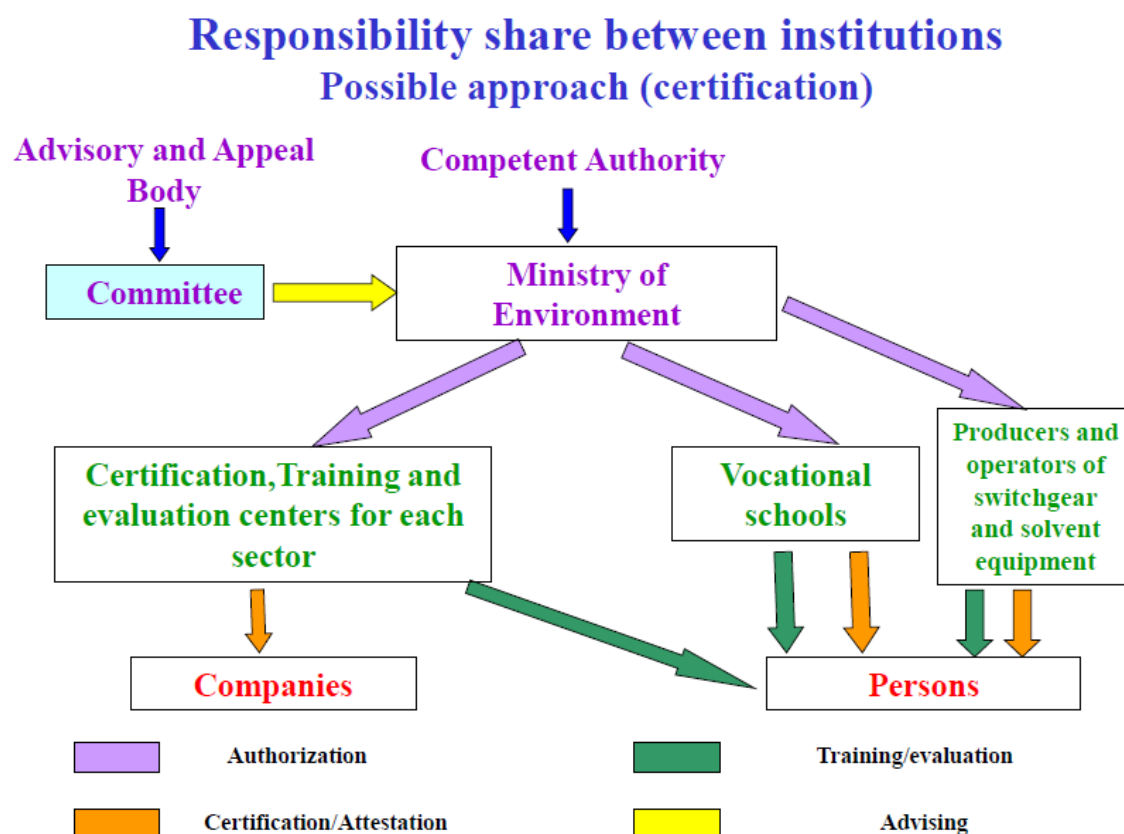


FIGURE 1.

Source: Kozakiewicz J. (2014) *F-Gas Regulation. Principal Obligations of Member States. Presentation at Multi-Country Workshop on Ozone Depleting Gases (ODS) and Fluorinated Gases (F-gases)*; 27-28 May 2014, Tirana.

It is important to note that if the provision of certification and training would **impose disproportionate burdens on a small Member State (where there is low demand for such training and certification)**, compliance with the obligations set out in Art. 10 of Reg. 517/2014 may be achieved through the recognition of certificates issued in other Member States. Such small Member States have to **inform the Commission** (who will in turn inform other Member States thereof). Otherwise the general provisions apply.

- The Competent Authority has to **designate or**, in case of Certification and Attestation Bodies, **national law can provide for the following bodies** for certification and verification schemes:
 - **Certification Body/-ies:** for the issuing of certificates to personnel or companies involved in one or more of the controlled activities. The certification body shall establish and apply procedures for the issuance, suspending and withdrawing of certificates. The certification body shall maintain records verifying the status of a certified person or company for a minimum period of five years. (Art 7, Regulation (EU) 2015/2067, Art 10, No 304/2008, Art 4, (EU) 2015/2066, and Art 4 No. 306/2008);
 - **Evaluation Body/-ies:** for organising the examinations for the personnel involved in the controlled activities. The Evaluation Body and the Certification Body could be the same, provided that it is independent and impartial in carrying out its activities. Examinations

have to cover the minimum skills and knowledge set out in the Annex to Regulations (EU) 2015/2066, (EU) 2015/2067, 304/2008 and 306/2008. (Art 5, (EU) 2015/2066, Art 8, Regulation (EU) 2015/2067, Art 11, No 304/2008, and Art 5 No. 306/2008) (In case fluorinated greenhouse gas-based solvents are not used in a Member State, a Member State can choose not to designate the certification or the evaluation body);

- **Attestation Body** (enshrined in national law to give it proper legal status) for issuing a training attestation to personnel who have completed a training course, covering the minimum skills and knowledge set out in the Annex. (Art. 3, Regulation 307/2008).
- Ensuring that all natural persons holding certificates have **access to information regarding technologies** to replace or to reduce the use of fluorinated greenhouse gases and their safe handling and existing **regulatory requirements** for working with equipment containing alternative refrigerants to fluorinated greenhouse gases.
- **Mutual recognition of certificates and training attestation** issued in other Member States (Art. 10(5), Regulation No. 517/2014).

Minimum requirements for training programmes and certification schemes and the conditions for mutual recognition for the certificates (and training attestations) of companies and personnel:

- Regulation (EU) 2015/2067 as regards stationary refrigeration, air conditioning, heat pump equipment and refrigeration units of refrigerated trucks and trailers,
- Regulation (EC) No 304/2008 for stationary fire protection systems and fire extinguishers containing certain fluorinated greenhouse gases,
- Regulation (EU) 2015/2066 regarding electric switchgear,
- Regulation (EC) No 306/2008 for certain fluorinated greenhouse gas-based solvents from equipment, and
- Regulation (EC) No 307/2008 as regards air-conditioning systems in certain motor vehicles containing certain fluorinated greenhouse gases.

The provisions of these Regulations can be mapped as follows:

	304/2008	306/2008	307/2008	2015/2067	2015/2066
	stationary fire protection systems and fire extinguishers	recovering F-gas based solvents from equipment	air-conditioning systems in certain motor vehicles	stationary refrigeration, air conditioning and heat pump equipment, and refrigeration units of refrigerated trucks and trailers	electrical switchgear
Article 1	Subject matter	Subject matter and scope	Subject matter	Subject Matter	Subject matter and scope
Article 2	Scope	Certification of personnel	Training of personnel	Scope	Certification of natural persons
Article 3	Definitions	Issuance of certificates to personnel	Issuance of training attestations to personnel	Certification of natural persons	Issuance of certificates to natural persons

	304/2008	306/2008	307/2008	2015/2067	2015/2066
Article 4	Certification of personnel	Certification body	Notification	Certificates for natural persons	Certification body
Article 5	Personnel certificates	Evaluation body	Conditions for mutual recognition	Certification of companies	Evaluation body
Article 6	Interim certificates for personnel	Notification	Entry into force	Company certificates	Notification
Article 7	Certification of companies	Conditions for mutual recognition	-	Certification body	Conditions for mutual recognition
Article 8	Company certificates	Entry into force	-	Evaluation Body	Repeal
Article 9	Interim certificates for companies	-	-	Notification	Entry into force
Article 10	Certification body	-	-	Conditions for mutual recognition	-
Article 11	Evaluation body	-	-	Repeal	-
Article 12	Notification	-	-	Entry into force	-
Article 13	Conditions for mutual recognition	-	-	-	-
Article 14	Entry into force	-	-	-	-
Annex I	Minimum requirements as to the skills and knowledge to be covered by the evaluation bodies	Minimum requirements as to the skills and knowledge to be covered by the evaluation bodies	Minimum requirements as to the skills and knowledge to be covered by the training programmes	Minimum requirements as to the skills and knowledge to be covered by the evaluation bodies	Minimum requirements as to the skills and knowledge to be covered by the evaluation bodies
Annex II	-	-	-	Correlation table	Correlation table

- In order to ensure transparency and consumer safety through consistent and harmonised labelling, establishing appropriate design criteria and specific requirements relating to the form and language of the **labels** affixed to products or equipment containing or intended to contain fluorinated greenhouse gases in accordance with Art.12 of Reg. 517/2014 and Regulation (EU) 2015/2068;
- Overseeing the compliance and efficiency of measures. In order to ensure that rules are implemented, Member States have to establish effective, proportionate and dissuasive **penalties** for infringements (Art. 25, Regulation No. 517/2014).

Adequate **capacity building** is a prerequisite for the successful implementation of this framework. In order to ensure sufficient information for stakeholders, it is recommended to prepare and publish guidelines explaining the duties of the national entity, various certification, verification bodies, the

affected industrial sectors and stakeholders. It is also recommended that technical training is provided for officers in public authorities involved in:

- Collecting information and submitting data in accordance with the Regulations;
- Monitoring compliance so as to facilitate compliance and a good organisational set-up;
- Ensuring the quality control of data submitted from the sectors involved.

Besides, training in communication skills is advised for officers who will handle claims, requests for more information and queries.

2.3 REPORTING

Member States must **establish reporting systems** applicable to the relevant sectors (producers, importers, exporters, undertakings destroying F-gases, users, wholesalers, recyclers, etc.) and ensure that emissions data are obtained (Art.20 Reg. 517/2014), in order to provide coherence with MMR Regulation (EU) No 525/2013.

The competent authorities in the Member States should also **ensure that the relevant sectors have been adequately informed about the reporting format and content for annual reports** (due 31 March each year) to the Commission and to the competent national authority, which should be in conformity with Commission Regulation (EC) No. 1191/2014.

Member States have to **inform the Commission of all training programmes and certification schemes** by 1 January 2017 (Art. 10(10), Regulation No. 517/2014) in the form prescribed in Regulation (EU) 2015/2065. They also have to notify the Commission, without delay, of the **names and contact details of certification bodies and attestation bodies** for personnel covered by Regulations 304/2008/, 306/2008 and 307/2008 and of the titles of certificates or training attestations for personnel complying with the requirements, using the reporting format set out in Annexes 1-5 of Regulation (EU) 2015/2065. Member States have to notify the Commission, by 1 January 2017, of the names and contact details of certification bodies for personnel covered by Regulations 2015/2066 and 2015/2067 and of the titles of certificates for personnel complying with the requirements, using the reporting format set out in Annexes 1-5 of Regulation (EU) 2015/2065.

Moreover, Member States also have to notify the Commission of the national provisions of penalties for the infringements of this framework by 1 January 2017 and in case of any later amendment.

In addition, Member States have to inform the Commission of actions to encourage the establishment of producer responsibility schemes for the recovery, recycling, reclamation and destruction of fluorinated greenhouse gases.

3. IMPLEMENTATION CONSIDERATIONS

3.1 PHASING CONSIDERATION

Once they are parties to the UNFCCC and the Kyoto Protocol, candidate countries should already have a national mechanism for implementing them. They will have formulated a national plan and a national inventory and will have carried out the national communications required by the UNFCCC. The national plan should include action related to fluorinated greenhouse gases, which could include economic instruments.

Before this can be done, national authorities need to ensure the necessary capacity building; institutionally, logistically and in terms of human resources. Considerable time and resources need to be spent to ensure that stakeholders are well aware of the legal implications of the Regulations. The authorities involved should agree on a plan to ensure that the time-frames for the implementation of the obligations stipulated in the Regulations themselves will be respected, whilst guaranteeing the accuracy, transparency and comparability of the information submitted.

In general, it is useful to start to implement the framework Regulation involving phase out deadlines, preventive measures, reporting obligations. After this, candidate countries could focus on putting into place the certification and verification scheme which involves extensive consultation with the affected companies to ensure that they are fully aware of their responsibilities and tasks vis-a-vis the national competent authorities, the Commission and its personnel handling applications with F-gases. The task to inform the workers about the obligation to receive certification and the reason why this is needed should be shared between the competent authority and the industry.

3.2 COSTS

By 1 July 2017, the Commission is supposed to publish a report assessing the costs of implementing Regulation 517/2014 in Member States.

In the course of financial planning, it needs to be considered that the competent authorities in the candidate countries mainly face administrative costs associated with:

- Overall consultation and wide awareness raising regarding the impact of the Regulations on the sector, e.g. manufacturers, retailers, users;
- Establishing overall competent authority, certification body, verification body and the necessary institutional, coordinating structures;
- Devising a training programme and certification system for service personnel and operators maintaining equipment and applications containing F-Gases including leakage checking, repairs, refilling, recovering or destroying greenhouse gases;
- Devising the form, size and language of the labels to be affixed to products and equipment containing or intended to contain fluorinated greenhouse gases;

- Monitoring and enforcing compliance with use restrictions and bans on the placing on the national market of equipment containing fluorinated greenhouse gases
- Ensuring compliance with the reporting obligations;
- Linking non-compliance with enforcement and sanctions.

Some of these costs can be covered from various administrative fees, such as certificate and training fees. It may also be possible to involve economic instruments that provide incentives for the affected sectors of industry to step up the phasing out of the use of fluorinated greenhouse gases in favour of gases with less or no climate change potential.

At the same time, since most of the requirements stemming from the Regulations apply to industrial sectors and other users of fluorinated greenhouse gases, industry is expected to bear a large share of the costs. These costs include the hiring and/or training of personnel in charge of handling equipment and products containing fluorinated greenhouse gases, including charging, maintenance, servicing and end-of-life treatment. These costs apply not only to the manufacturing industry but also to affected waste operators and private users of containers with greenhouse gases.

3.3 IMPLEMENTATION LESSONS FROM MEMBER STATES

At the earliest stage of implementation, it is necessary to identify key actors and stakeholders who will be involved in the implementation of the Regulations and arrange discussions between them and/or set up working and coordinating groups. The identification of, and initial discussion with all potential stakeholders will help to achieve the most efficient path to implement the Regulations, to avoid costly errors and to encourage the co-operation of stakeholders in complying with the requirements of the implementation of the Decision.

Since the Regulations require close co-operation with, as well as information from, various sectors, it is recommended that an entity be specifically set up to monitor the implementation of the obligations of these Regulations. Such an entity may be established under the ministry for environment or the environment agency but should have a regulatory cross-sectoral role to ensure that all public and private authorities required to submit information report to one focal point and that information received from various sources is quality controlled and verified by one entity in order to avoid gaps, duplication and fragmentation as well as to ensure accuracy, comparability and transparency.

Responsibility share between institutions Possible approach (except certification)

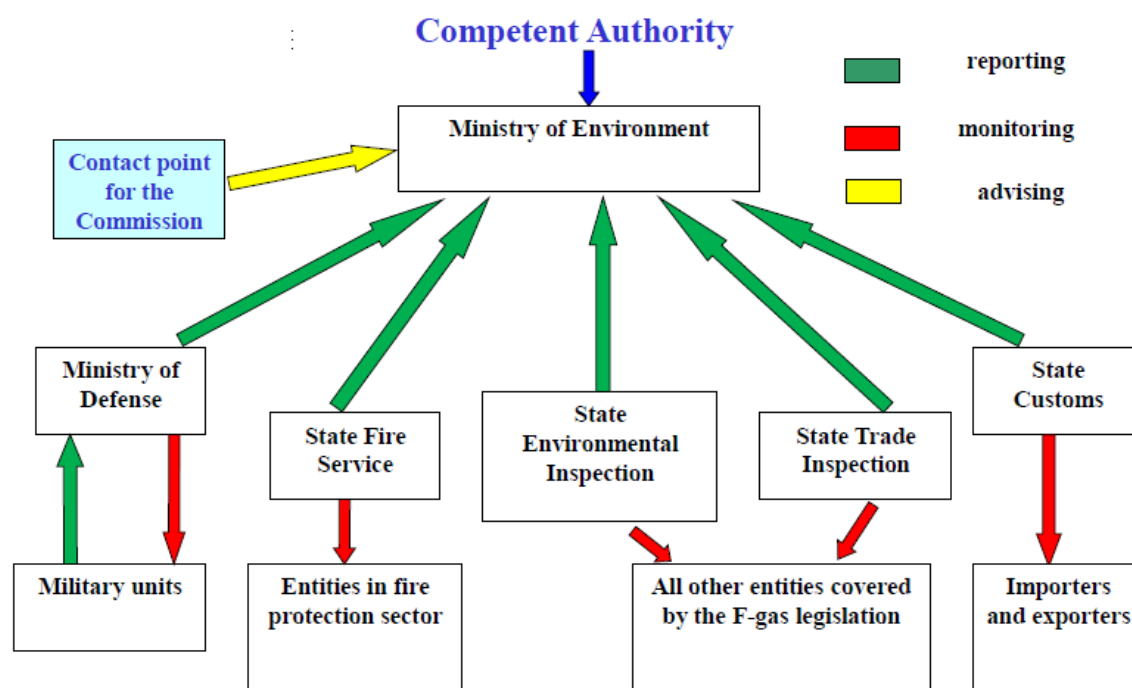


FIGURE 2. SOURCE: KOZAKIEWICZ J. (2014) F-GAS REGULATION. PRINCIPAL OBLIGATIONS OF MEMBER STATES. PRESENTATION AT MULTI-COUNTRY WORKSHOP ON OZONE DEPLETING GASES (ODS) AND FLUORINATED GASES (F-GASES); 27-28 MAY 2014, TIRANA

A monitoring system must be put into place to ensure compliance with the Regulations in terms of ensuring that non-conforming products are not put on the market and that all marketed products containing fluorinated gases are adequately labelled and that containment of the gases is maximised. Plans should also be developed to engage, and to create incentives for, the affected industrial sectors (e.g. foam applications and manufacturers of windows, footwear, car components, refrigerators, and air-conditioning units) in the design and development of alternative gases, products or methods that have a reduced impact on the environment.

Besides, a Consultation Forum consisting of representatives from Member States and civil society has been set up by the Commission to share experience and expertise in the implementation of the framework, particularly with regard to the availability of alternatives to F-gases. (Art.23, Reg. 517/2014)

Box

Example of the process of implementation: Lithuania

Institutions involved in the implementation (of Reg. 842/2006 at the time):

- Ministry of Environment (MoE), Climate Change Policy Division
- Environment Protection Agency (EPA) - Subordinated to MoE:
 - Data processing
 - Companies certification
- 8 Regional Environment Protection Departments (REPDs)
 - Implementation of state control functions
- State Non Food Products Inspection (SNFPI, under Ministry of Economy):
 - Inspection of labeling requirements
 - Control of implementation of placing on the market requirements
- Customs:
 - control of import, reporting on import
- Ministry of Education and Science:
 - approval of the form and requirements for the certificate issued for personnel

Steps of the implementation:

- First step – division of the responsibilities between national institutions
 - functions of the competent authority (CA) of the Member State are delegated to:
 - EPA - implements the functions of CA related to **reporting**
 - REPD - implements the functions of CA related to records **checking**
 - **inspection functions** delegated to national institutions:
 - REPD – inspection of the companies in the scope of containment, recovery, certification
 - SNFPI (under MoEcon) – inspection of the companies in the scope of labeling and placing on the market
 - EPA assigned as an institution responsible for the **collection of data**

Difficulties: To convince national subordinated institutions to take on additional functions

- Second step – Adoption of the rules on penalties
 - The Administrative Infringement Code was amended by the introduction of a new Article on F-gases in 2008
 - The penalties vary starting from 140 euro (breach of the requirements regarding the record keeping) to 2800 euro including the confiscation of products and equipment (breach of the requirements regarding placing on the market)
- Third step – Establishment of the training and certification system for the personnel
 - Order of the MoE and of the Minister of the Social Protection and Labor (MoSPL) regarding the establishment of the certification system for the personnel (2009):
 - Established obligation for personnel involved in the certain activities with the F-gases to obtain the certificates issued in accordance with the requirements of the Commission Regulations
 - Obligated subordinate institution of the MoSPL to organize the preparation of the training programmes for the personnel in accordance with the minimum qualification requirements as set out in the Commission Regulations
 - Obligated MoE to report to the Commission on the implementation of the training and certification system.
 - 6 formal vocational training programmes available for personnel:

Example of the process of implementation: Lithuania

- for work managers – RAC (F-gases (I category), ODS)
- for personnel – RAC (F-gases (I category), ODS)
- for personnel – HVS (high-voltage switchgear), FPE (fire protection equipment), Solvents, MAC (F-gases)
- 2 organizations licensed to issue certificates for the personnel
 - National Association of Refrigeration
 - Kaunas Constructors Training Center
- The certificates issued to personnel are recognized by the state

Difficulties: Although the training programmes and certification system for personnel were established, no training centers in Lithuania applied to the Ministry of Education and Science regarding the issuance of the license to execute the formal vocational training under the HVS and Solvents training programmes. It is assumed that this problem exists because these sectors in Lithuania are very small and the demand on qualified personnel is very low. In such cases the personnel is advised to obtain certificates in other Member States.

- Fourth step – The establishment of the attestation system for companies
 - Law on climate change management financial instruments (2009) establishes the main requirements for the issuance, suspension of validity, cancelation of the suspension of validity and cancelation of the companies F-gas certificates
 - Order of the Minister of Environment regarding the establishment of the attestation system for the companies (2009, with the latest amendments in 2013) establishes the more detailed requirements for the issuance, suspension of validity, cancelation of the suspension of validity and cancelation of the companies certificates
 - Functions related to the issuance of the certificates are assigned to the EPA
 - Companies attestation system has to be aligned with the requirements of the Service directive, which sets out conditions for exercising the freedom of establishment, the freedom to provide services and the freedom of economic service activities, while creating preconditions to maintain a high quality of services
 - Procedure of the issuance of the certificates for the companies:
 - Company submits to EPA the request to issue a certificate
 - Decision regarding the issuance of the certificate is taken by the Attestation Commission, established by EPA
 - The same attestation requirements are also applied for the persons working on the individual basis
 - Both – companies and personnel certificates – don't have an expiry date

Difficulties: defining the sufficient number of personnel in national legislation

- Fifth step: improvement of the data collection system
 - Order of MoE establishing F-gases (and ODS) data collection and accounting system (2010): F-gas / F-gas equipment producing, importing, exporting, dismantling, recovering, recycling, reclaiming, destroying entities are obliged to provide reports to EPA (copy to REPD)
 - Entities owning or servicing equipment were obliged to report to REPD (updated annually) the information about the owned or served equipment (inventory). Submitted info is verified by REPDs and forwarded to EPA. EPA is responsible for verification and evaluation of provided data and for proceeding and structuring the data.

Potential difficulties: shift from tonnes to CO₂e

Example of the process of implementation: Lithuania

Source: Rabauskaite J. (2014) F-gases and ODS legislation: Implementation in Lithuania. Presentation at ECRAN Workshop on ODS and F gases; Tirana, 27-28 May, 2014.

Box

Example of Competent Authorities: Various Member States

In general, the Ministry of Environment has overall responsibility. Examples of other Ministries or institutions may be designated to play important role in certain areas in Member States were as of 2014:

- Ministry of Economy/Industry/Education: certification body
- State Environmental Inspectorate: general control of following the legislation by entities and reporting to Ministry of Environment
- State Customs: control of international trade and reporting to Ministry of Environment
- State Trade Inspectorate: control of internal trade
- State Fire Service: control of provisions related to fire protection sector
- Ministry of Defense: collecting data from military units and reporting to Ministry of Environment

Source: Toth R. / Hungarian Meteorological Service (2014) Introduction to the challenge of ODSs and F-gases – trends and international policy responses. Presentation for the ECRAN workshop on ODS and F-gases; Tirana, Albania, 27-18 May 2014

Box

Example of Institutional Arrangements and Penalties – Sweden

The two main authorities involved in monitoring and supervising compliance with EC Regulations are the Swedish Environmental Protection Agency and the Swedish Chemicals Inspectorate. For example, all imports of HFCs to be installed in fire extinguishers are registered at the Swedish Chemicals Inspectorate. Regarding sanctions, the Swedish Environmental Code contains two chapters dealing with sanctions that include penalties (fines and imprisonment) as well as the administrative environmental sanction fee (“miljösanktionsavgifter”). The latter fee can be charged in case of non-compliance with leakage checks or with the reporting duty for the year 2008 or later. The environmental sanction fee is an administrative fee that has as its main objective the confiscation of any possible financial advantage from not complying with environmental Regulations. It supplements the more conventional sanctions and represents a greater financial incentive for industrial operators to comply with environmental Regulations.

Box

Example of more stringent rules in implementation: Various Member States

MSs going beyond the provisions set out by the F-gas Regulations:

- Leak checks for stationary equipment smaller than 3 kg (AT)

- Leak checks for mobile sources as well (ES, FR, HU, NL)
- Maximum allowable leakage rates for stationary equipment (GE)
- Extended record keeping by the operators (HU)
- Extension of certification for other staff (HU)
- Compulsory registration of equipment (HU)
- Mandatory take-back of the HFCs for recycling, reclamation and destruction (FR).

Source: Toth R. / Hungarian Meteorological Service (2014) Introduction to the challenge of ODSs and F-gases – trends and international policy responses. Presentation for the ECRAN workshop on ODS and F-gases; Tirana, Albania, 27-18 May 2014

Box

Example of implementation measures: The United Kingdom

In the UK compliance with the F-Gas Regulations has been continuously increasing much due to the introduction of three separate mechanisms, which mutually enforce each other and greatly contributed to better implementation of and compliance with the F-Gas Regulation. Thanks to these initiatives, out of all known businesses in the contracting chain affected by the Regulation, 80% is estimated to be compliant.

The UK F-Gas Support Team: awareness raising, training and support

The „F-Gas Support“ was established by the UK Government in 2008. It oversees the implementation of the Regulation across the different industry sectors and provides help, guidance, legal interpretations and support to end-users, contractors and equipment suppliers and staff working for regulators. It also maintains a central database of contacts covering the relevant industrial sectors. This initiative facilitates implementation and increases compliance. Even though the F-Gas Support team does not have any enforcement powers, it successfully works to raise awareness on requirements under the F-Gas Regulation through several activities:

- General Awareness for the sector: F-Gas Support provides information, writes articles, speaks at conferences, etc. It also has a Telephone Help Line, which provides advice about qualifications and company certification, and regularly publishes information sheets (available on www.defra.gov.uk/fgas). F-Gas Support also has an on-going programme of visits and information gathering with those organisations that may pose the greatest risk of causing emissions (e.g. supermarkets, large building operators) and the contractors that carry out installation and maintenance work at their sites;
- Supporting Regulators: the F-Gas Support Team works to educate and support the regulator through specialised “e-training” material on the F gas and Ozone Regulations and by providing F gas expertise to support any regulatory activity;
- Other support: the team provides personnel training, the raising of awareness to hold a valid qualification, specialised technical support and giving of information on company certification.

Company Certification: a key element of the F-Gas Regulation implementation

Company Certification requirements are a key element of the implementation of the EC F-Gas Regulations in Great Britain for the stationary fire protection and refrigeration & air-conditioning sectors. Company certification is therefore actively supported by the Governments of the UK and North Ireland and by the F-Gas Support Team specifically. DEFRA (Department for Environment, Food and Rural Affairs) has designated 4 certification bodies (REFCOM, Quidos, Bureau Veritas and Stroma) for the stationary refrigeration & air-conditioning and 1 for the stationary fire protection sector. Between them they have more than 4,700 companies (of which REFCOM has 4,323) registered and this figure continues to rise. The certification bodies are required to audit a percentage of the organisations with a full Company Certificate. The REFCOM

Example of implementation measures: The United Kingdom

Voluntary Scheme is the most common certification scheme in Great Britain and Northern Ireland. Already in 1994, the Register of Companies Competent to Handle Refrigerants (REFCOM) started providing this type of certification by creating a voluntary scheme. Its specificity is that it relies on a web-based information and application system, therefore reaching out to all stakeholders that install, maintain or service stationary refrigeration, air-conditioning and/or heat pump equipment containing or designed to contain F-gas refrigerants. The UK Government has taken most of the main components of the REFCOM voluntary scheme and used this as a model to set the criteria for meeting the F-gas Regulation's requirements for company and operative certification. It expressively is a „light touch and low cost“ scheme.

Voluntary industry initiatives to promote certification

The Air Conditioning and Refrigeration Industry Board (ACRIB) is working with the UK national sector to help encourage employers make the most of the F-Gas individual certification requirements.

In 2010 a leaflet was produced to explain the various types of individual certification and outline the benefits for the employer and the individual. The leaflet was endorsed by the two certification bodies approved to offer qualifications in the UK, City & Guilds of London Institute and CITB Construction Skills. It has been distributed to employers via the delivery network of colleges and independent training providers as well as being made available to individuals joining a voluntary register of certified individuals run by ACRIB.

Box

Example of Policy Measures for F-Gas Emission Reductions – Germany

On 24 August 2007, the Federal Cabinet adopted an integrated energy and climate protection programme, with one area focusing on the reduction of fluorinated greenhouse gas emissions recommending the following action measures:

- Issuance of a climate protection Regulation on chemicals;
- Measures that would lead to an early switch from f-gas-operated mobile air conditioning equipment to that with a GWP of considerably less than 150 in new passenger cars;
- Support of development and market launch of particularly energy efficient and ecological refrigeration systems using natural refrigerants;
- Renewal of EC Regulations on F-gases.

On 26 June 2008 the German Bundestag adopted the Ordinance on Climate Protection Against Changes Caused by Release of Certain Fluorinated Greenhouse Gases (*Chemikalien-Klimaschutzverordnung – ChemKlimaschutzV*). It entered into force on 1 August 2008 and aimed to implement the EU F-Gas Regulations. In order to advance development and market launch of particularly energy efficient and ecological refrigeration systems using natural refrigerants, the German Federal Ministry for Environment instituted a Climate Protection Incentive Programme for Commercial Refrigeration Plants as part of the Climate Protection Initiative. Funding was as follows for especially climate-friendly and energy-efficient new systems using natural refrigerants: 25% of net investment costs + bonus. For improvement of energy performance in existing systems, 15-25% of net investment costs were funded. In 2007 the Federal Environment Ministry and Federal Environment Agency discussed matters of practical implementation of EC Regulation Nr. 842/2006 with industry experts which were followed by more rounds of discussions (e.g. with representatives from magnesium foundries, which focused on substitution of SF6 for high pressure die casting and other casting processes. More information:

Example of Policy Measures for F-Gas Emission Reductions – Germany

- Integrated Energy and Climate Protection Programme:
<http://www.bmu.de/english/climate/downloads/doc/40589.php>
- Climate Protection Incentive Programme for Commercial Refrigeration Plants:
<http://www.bmu.de/klimaschutzinitiative/doc/41744.php> (in German)
- Climate Protective Initiative:
http://www.bmu.de/english/climate_initiative/general_information/doc/42000.php

Box

Example of Practice from a Member State – Sweden

In Sweden, Regulation on F-gases was implemented through Ordinance SFS 2007:846 on fluorinated greenhouse gases and substances that deplete the ozone layer, which entered into force on 1 January 2008. It supplements the so-called F-Gas Ordinance to ensure that the same conditions apply to fluorinated greenhouse gases as to ozone-depleting substances such as CFCs and HCFCs.

To ensure an adequate reading of the EC Regulation on fluorinated greenhouse gases a table is provided of the situation prior to the Regulations and afterwards, in line with the model provided by the Swedish Environmental Protection Agency.

Prior to 4 July 2007	After entry into force of 2007 Ordinance
Only HFCs were regulated.	HFCs, PFCs and SF6 are covered.
The owner is responsible for complying with the Regulations on fluorinated gases.	The operator, the person bearing the main responsibility for the equipment, is mainly responsible for complying with the Regulations.
Only professional activities were covered.	All activities, including private activities, covered by the new Regulations.
Annual controls of equipment regardless of size	Equipment containing less than 3 kg of fluorinated greenhouse gases exempted from periodic controls.
No requirement to install leakage detection systems.	Leakage detection systems required for equipment containing more than 30 kg of fluorinated greenhouse gases.
No requirement to recover fluorinated greenhouse gases from high voltage circuits and equipment containing solvents.	Obligation to recover fluorinated greenhouse gases from high voltage circuits and equipment containing solvents.
Control, installation and maintenance must be carried out by accredited companies where at least the work leader is certified.	Control, maintenance and recovery/recycling must only be carried out by certified personnel.

Example of Practice from a Member State – Sweden

No ban on the marketing of products containing fluorinated greenhouse gases.	Phased-in ban on the marketing of products containing fluorinated greenhouse gases.
No limitation on or bans of SF6.	Restrictions and bans on the use of SF6

Box

Example of a Dutch model to reduce F-Gas emissions

The Dutch model for certification

“STEK” is the abbreviation of the Dutch system of F-gases Regulation. The Dutch STEK programme has existed since 1992 and is based on emission reduction through containment and regular maintenance. It took 5 years for the STEK system to be fully understood and implemented by all actors in the Netherlands.

Under the STEK programme, some 2,000 companies were certified for stationary cooling systems. These companies were visited and assessed once every 18 months by independent bodies and inspected by government authorities. All STEK certified companies are obliged to keep a Refrigerant Registration at company level and a logbook at the installation indicating the type and quantities of refrigerants used as well as their purpose, i.e. new filling for new cooling circuits, maintenance or recovery. Since 1999 figures have been presented on an aggregated level.

The cost for a STEK certification is approx. € 0.33 per hour per service engineer for 80 to 90% of all companies. This estimation is based on an average cost of € 500 per year (fee and internal administration) per service engineer.

HFC leakage rate

Before the entering into force of the STEK system in 1992, the average leakage rate in the Netherlands was estimated to be around 20 to 25%. Since the introduction of the STEK system it decreased to an average rate of 3.5%, based on aggregated figures since 1999. This average rate takes into account tailor made installations as well as pre-charged equipment.

Benefits of the STEK system

High awareness about the environmental impact of cooling & heat pump equipment by the industry sector, including certified companies, their personnel and operators, equipment manufacturers and installers increased the quality of both equipment and services. Operators benefit from a higher reliability of their systems and thus higher productivity. There are lower operational costs for operators due to professional leak checks resulting in direct refrigerant and spare part savings. Leak-tight equipment, ensuring optimal refrigerant charge, also results in higher energy performance

For further information, please contact: STEK, POSTBUS 12, 3740 AA BAARN, The Netherlands, TEL: +31 35 542 75 20, info@stek.nl; <http://www.stek.nl>

Box

Example of the Implementation of the ODS and F-Gas Regulations - Hungary

Training and certification systems exist in Hungary since 1994, when the Hungarian Association HRACA was founded. With the implementation of the ODS Regulation (2037/2000), new certification categories (A-F) for personnel and companies were introduced, as well as refrigeration circuits registration, labelling and leakage checking methods. This system took already into consideration existing Member States solutions such as STEK (Netherlands).

The Hungarian Monitoring and Certification Body for Refrigeration (HMCB) was established by the Hungarian Refrigeration and Air-Conditioning Association (HRACA) in 2009 and appointed by the Hungarian Ministry of Environment and Water in June, 2009. HMCB was made responsible for implementing and managing the certification and monitoring tasks of ODS and F-Gas Regulations in Hungary. HMCB reached out to all stakeholders of the stationary and mobile refrigeration and air conditioning sector, through a web-based information system and database, satisfying the administrative and reporting requirements of the Regulations and environmental authorities. When implementing the F-Gas Regulation, Hungary decided to adopt a holistic approach, taking into consideration the following elements:

ODS and F-Gas Regulations merged into one global registration and certification system

- covering all stakeholders of the stationary and mobile refrigeration, air conditioning and heat pump sector, allowing tracking the entire lifecycle of refrigerants.

Creation of a web-based registration and certification system

- Certification of personnel based on Commission Regulations and European Standards, using e-learning + test-exams and theoretical + practical assessment methods. Creation of additional personnel categories (Category V-VI-VII) for MAC sector;
- Certification of companies based on Commission Regulation and integrating already existing information such as refrigerant inventories, databases etc.;
- Creation of a new registration system based on Commission Regulation for companies handling refrigerants but not being required to interfere with the refrigeration circuit or having their own certification system;
- Mandatory operator and refrigeration circuit registration to monitor the refrigeration circuit, leakage checking, service and maintenance and to control whether operators are respecting their obligations

Creation of an online database:

- IT system with barcode-ID and labelling of all the circuits;
- Online track-keeping of all services (leakage checks, maintenance);
- Refrigerant management system for the entire lifecycle of refrigerants from placing on the Hungarian market, through containment up to recovery, reclaim or disposal;
- Collection and evaluation of data (of the refrigeration circuit database, operators, etc.);
- Access to the database by authorities.

In 2013, the HMCB database included approx. 7600 certified persons, more than 1200 certified and registered companies, over 2000 registered operators and more than 22.000 registered refrigeration circuits.

Further planned developments:

- New, pre-charged equipment and container labelling, tracking;

Example of the Implementation of the ODS and F-Gas Regulations - Hungary

- Fully IT-based refrigerant management system;
- New personnel and/or company categories, as heat-pump installers, gas-equipment installers, energetic inspectors;
- New operator categories such as owners of transport AC&R, installed AC and heating equipment, - systems;
- Registration and administration of different entities, as MAC refrigeration circuits (leakage checking), AC- and heating devices and systems (EPBD energetic inspections).

More information: www.hlhmonitoring.hu

Box

Example of Site Surveys and Practical Guidance for Refrigeration Leakage Reduction – United Kingdom

The Institute of Refrigeration, together with the Carbon Trust, has launched the project „REAL Zero – Refrigerant Emission and Loss Zero”. The aim of this project is to achieve zero refrigerant loss. The project offers practical assistance to everyone involved in purchasing, designing, installing, servicing, maintaining and owning refrigeration equipment to help them reduce leaks.

Below two examples of outputs of this project:

REAL Zero site surveys

These surveys are undertaken by advisers who are trained and duly qualified in refrigeration leakage reduction skills. They are RAC (refrigeration & air conditioning) professionals who are members of the UK Institute of Refrigeration. A site survey comprises:

- A visual examination of the RAC plant;
- A leak test of readily accessible joints using a hand held electronic leak detector;
- An examination of the F Gas log and other service records;
- Discussions with site personnel who have day to day experience of the operation and service of the RAC equipment.

At the end of the survey, the client is provided with a comprehensive report that includes:

- Executive summary and analysis of the carbon and financial impact of refrigerant leakage, based on site records;
- Benchmarking of refrigerant leakage;
- A review of site compliance with F Gas Regulations, including logs and record keeping, with recommendations for improvements where appropriate;
- Identification of leaks and potential leakage points found during the survey, together with design or installation issues that may affect leakage;
- Recommendations for resolving leaks and other problems identified during the survey;
- A review of the site service and maintenance strategy.

Example of Site Surveys and Practical Guidance for Refrigeration Leakage Reduction – United Kingdom

REAL Zero illustrated pocket guide

REAL Zero has also produced an illustrated pocket guide for easy advice regarding 13 common leakages.

Source: <http://www.epa.gov/greenhill/downloads/RealZeroIllustratedGuideto13CommonLeaks.pdf>

Box

Example of Producer Responsibility Scheme: Denmark

A deposit-refund scheme has been established in Denmark through the Danish Refrigeration Installers' Environmental Scheme (KMO system) in 1992 in order to work on the prevention of emissions of all types of halogenated refrigerants and on training and certification of personnel and companies. Major measures of this voluntary scheme include:

- Only service companies being members of KMO can purchase new refrigerants from importers of synthetic refrigerants (no domestic production).
- End users pay a fee for refrigerants charged into the equipment, of which certain shares remain with the service company (expenses for training, recovery equipment) and the KMO (funding of secretariat, infrastructure for reclamation and destruction, refund).
- The service companies receive a refund when returning used refrigerants to KMO reclamation and destruction facilities. The level of the refund depends on purity of the recovered refrigerant.
- KMO undertakes reclamation and destruction of used refrigerants. Reclaimed gases are sold to service companies for ca. DKK 4/ kg (ca. €0.5) and contribute to the funding of KMO. Data on recovery of HFCs for reuse and recycling on-site are not available. Preliminary data show a stable share of returned refrigerants by KMO Members for reclamation and destruction compared to refrigerant sales (see table below).

	Refrigerant sales by KMO Members	Refrigerants returned to KMO	%
1998	ca. 400-500 t	ca. 23 t	ca. 5
2010	ca. 300 t	ca. 9-15 t	3-5

FIGURE: ESTIMATED REFRIGERANT SALES TO KMO MEMBERS (INCLUDING ALL TYPES OF SYNTHETIC REFRIGERANTS) AND RETURNED QUANTITIES FOR RECLAMATION AND DESTRUCTION IN DENMARK (T).

SOURCE: SCHWARZ W. ET AL. (2011) PREPARATORY STUDY FOR A REVIEW OF REGULATION (EC) No 842/2006 ON CERTAIN FLUORINATED GREENHOUSE GASES.

Box

Example of Introducing a Charge on Fluorinated Gases – Sweden

The Swedish EPA has introduced an environmental charge on F- gases on a par with the current carbon dioxide tax for the manufacturing industry. The size of the fee is approximately SEK 190 per kg of carbon dioxide equivalent, and it will be charged on the import of a fluorinated gas or a product containing a

fluorinated gas. The charge should be repaid on the export of products containing fluorinated gases and on destruction. Exemptions from the charge should be considered for mobile cooling systems/refrigerated containers, for gases in air-conditioning units in motor vehicles and for medical aerosols. A charge in line with the carbon dioxide tax relief rate for the manufacturing industry (SEK 190 per kg of carbon dioxide) would bring about a decrease in these emissions at a cost that is on a par with that of reducing carbon dioxide emissions in sectors that pay the reduced level of carbon dioxide tax. It is estimated that the new charge proposed on fluorinated gases will provide revenue of around SEK 75 million per year.