

# Climate change: fluorinated greenhouse gases, hydrofluorocarbons HFCs, perfluorocarbons PFCs, sulphur hexafluoride

2003/0189A(COD) - 26/09/2011 - Follow-up document

In accordance with the requirements of Regulation (EC) No 842/2006 on certain fluorinated greenhouse gases, the Commission presents a report evaluating the application and effects of the current rules and assesses the need for further action to reduce emissions of fluorinated gases in the EU. The overall objective of the Regulation is, together with Directive 2006/EC/40 on emissions from air-conditioning systems in motor vehicles ('the MAC Directive') to help fulfil the

commitments of the EU and its Member States under the Kyoto Protocol to the United Nations Framework Convention on Climate Change, for the period 2008 to 2012.

**Findings:** the provisions in the Regulation became operational at different stages between 2006 and 2011. The analysis has identified some shortcomings in the current application of some of its key provisions, in particular training and certification, containment, and recovery provisions.

**Delays regarding training and certification:** the deadline for the Member States to notify their training and certification systems on the basis of the Commission's minimum requirements was 4 January 2009. On 4 July 2011, 8 Member States had yet to notify all or part of their training and certification arrangements to the Commission. This difference in the speed of implementation reflects differences in the Member States' vocational training and certification systems before the Regulation applied. Moreover, Member States attribute delays to the size of certain sectors and to underestimation of the administrative effort required to create new systems and adapt existing ones.

**Varying levels of compliance with containment measures:** a low degree of overall compliance was observed, particularly in Member States where no similar containment requirements applied prior to the Regulation. Analysis has shown that, in the key applications of stationary refrigeration, air conditioning and heat pumps, compliance with the schedules for leakage checks was particularly low among operators of domestic and small commercial equipment. Maintaining of records for these key applications is reportedly below 50%. Compliance with the obligation to install leakage detection systems seemed satisfactory only in specific fields where the installation of such systems was already standard practice prior to the Regulation. In the fire protection sector, where voluntary technical standards with similar requirements were already widespread, containment provisions are applied to a higher extent.

**Recovery:** in the refrigeration and air conditioning sectors, recovery levels were generally low prior to the Regulation. Some data indicate a slight growth in the quantities recovered, but no systematic data are available to allow more precise assessment. Recovery in the fire protection and high-voltage switchgear sectors is currently a commonly applied practice during servicing and maintenance. In these sectors the potential for recovery from systems containing F-gases will grow in the coming years, as such systems will be reaching their end of life.

In 2010, reclamation and destruction infrastructure was available for hydrofluorocarbons in only about half the Member States and for sulphur hexafluoride in only a couple of Member States. Cross-border shipment of recovered F-gases for reclamation and destruction within the EU is therefore of key importance and should be facilitated by Member States.

**Measuring the effectiveness of the Regulation with regard to containment and recovery measures,** the analysis concludes that there is still a lack of reliable and sufficiently long time-data series, and it is therefore too early to quantify their present effectiveness. However, given the nature of those measures, the short period of their application and the current shortcomings of compliance with some of the relevant provisions in key areas, a significant effect on the leakage rates of affected equipment prior to 2010 seems unlikely.

Nonetheless, if fully applied in the short term, the containment and recovery provisions can be expected to achieve a substantial reduction of leakage rates during the operation and end-of-life of affected equipment by 2015. They have the potential to reduce projected emissions by more than 29 million tonnes of CO<sub>2</sub> eq. by 2020 and eventually by more than 38 million tonnes of CO<sub>2</sub> eq. by 2050.

The MAC Directive introduced restrictions on the use of F-gases with a Global Warming Potential (GWP) above 150 in air conditioning systems of motor vehicles, and is expected to achieve substantial reductions of projected emissions of around 13 million tonnes of CO<sub>2</sub> eq. by 2020 and almost 50 million tonnes of CO<sub>2</sub> eq. by 2050. Taking into account the effects of the Regulation and the MAC Directive, the total emissions are expected to stabilise around today's level of 110 million tonnes of CO<sub>2</sub> eq. in EU-27 despite the growing use of many of their key applications.

The relative emission reduction is estimated to be less than 3% in 2010. However, projections show that yearly emissions will be reduced by 28% in 2020, by 44% in 2030 and by 46% in 2050. The costs related to the Regulation are estimated to be around 41 EUR per tonne per CO<sub>2</sub> eq. reduced.

Overall, four years after its entry into application, **the Regulation has already contributed to the commitments under the Kyoto Protocol** for the period 2008 to 2012, and has the potential together with the MAC Directive, to avoid almost half of projected emissions, stabilising emissions at today's levels. However, to reach this potential, the Commission calls on Member States to intensify their efforts towards rapid and proper implementation and enforcement.

The report goes on to state that , **in the context of the overall EU objective to cut emissions by 80–95% by 2050**, the stabilisation of F-gas emissions at today's levels is **not adequate** and the analysis shows that already available or emerging low-GWP technologies are technically feasible and can be cost-effective in many application areas. With ongoing research constantly improving their safety and performance characteristics, such options have the potential to gradually replace technology based on F-gases with high-GWP, thereby aiding the transition to a climate-friendly, low carbon economy.

Consequently, the **EU must take further action** to achieve further cost-effective reductions of greenhouse gas emissions. Policy options to achieve further reductions in the EU must be considered in view of potential impacts, including on energy consumption, administrative burden and safety. The EU already supports global action to reduce F-gas emissions under the Montreal Protocol and this report identifies options for additional cost-effective reductions of F-gases in the EU, including:

the introduction of maximum, gradually declining, limits for the quantity of Fgases placed on the EU market (phase down) expressed in terms of CO<sub>2</sub> equivalent;

use and marketing prohibitions for new equipment and products (bans);

voluntary environmental agreements at Community level.

The Commission will consult stakeholders on these options and will, if appropriate, present a legislative proposal for revising this Regulation.

