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COMMISSION STAFF WORKING DOCUMENT

Reviewing Regulation (EC) N° 2037/2000 on substances that deplete the ozone layer
"Better regulation building on 20 years of success"
Impact Assessment

Accompanying the Proposal for a Regulation of the European Parliament and Council on Substances that Deplete the Ozone Layer (Recast)

[COM(2008) 505 final]
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1. INTRODUCTION

Context and Legal Basis

The European Institutions' commitment to better regulation, combined with the EU's 20 years' experience in protecting the ozone layer, have delivered a timely opportunity to review the Regulation (EC) N° 2037/2000 on substances that deplete the ozone layer (hereafter "the Regulation").[1]

The preparations for this review furthermore coincided with the 20th Anniversary of the Montreal Protocol, which was celebrated in the margins of the 19th Meeting of the Parties in 2007 in Montreal, and which offered ample opportunities for analysis and reflection on experience to date and on options for future improvements to the policy and legislative framework that protects the ozone layer.

As the revised Regulation will pursue the objective to preserve, protect and improve the quality of the environment and to ensure the EU's compliance with its obligations under an international agreement dealing with a worldwide environmental problem, it is appropriate to maintain Article 175(1) of the EC Treaty as legal basis.

Expert and Stakeholder Consultations

Preparations for the review of the regulation started at the end of 2006 when the Commission contracted a consortium of independent experts to conduct a review study following a competitive tender procedure.[2] Throughout the study, due opportunities were provided for broad stakeholder consultation.

An advisory group was established comprising representatives from Member States' National Authorities, other relevant agencies, companies and industry associations, and non-governmental organisations. Advisory Group meetings on 10 July and 7 November 2007 were well attended and offered stakeholders an opportunity to share experiences and expertise and to comment on draft reports circulated in advance by the experts contracted by the Commission.

The review study was based upon an extensive stakeholder survey conducted during the first half of 2007. The survey revealed general satisfaction with the Regulation's effectiveness and cost-efficiency. It also helped identify a number of areas for improvement, notably related to reducing the Regulation's complexity. A summary of suggested changes is included in Appendix V.

The survey and other relevant reports (including the latest Reports of the Montreal Protocol's Scientific Assessment Panel (SAP) and Technical and Economic Assessment Panel (TEAP)) subsequently helped inform the development of proposals for a revised regulation, including potential non-regulatory options. Proposals for changes were short-listed, based on preliminary feasibility and impact assessments and a set of recommended options was presented for consideration by the Commission. The final study was published on the Commission's website in

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1 The present review is included in the 2008 CLWP under the “Simplification Heading”.

2 Contract 07010401/2006/454578/MAR/C4 entitled “Review of the implementation of Regulation EC N° 2037/2000 on substances that deplete the ozone layer” awarded to Milieu Ltd and Ecosphere Ltd.

January 2008.[3] Stakeholders were then offered another opportunity to comment on the final report.

The review study and stakeholders' comments served as key inputs for the present impact assessment and the proposed review of the Regulation as contained in this report. The external study was complemented by in-house environmental and socio-economic analysis (in accordance with the applicable Commission guidelines for conducting regulatory impact assessments), further detailing the potential costs and benefits of the recommended options in terms of administrative burden and direct economic costs.

Key stakeholders were kept informed through existing consultation platforms dedicated to ozone protection policy areas (such as Meetings of the Management Committee established by Article 18 of the Regulation; the March 2007 Meeting of the Industry Group on Protection of the Ozone Layer (IGPOL), and the April 2008 Meeting of the Environmental Policy Review Group comprising all Director Generals from Member States Environment Ministries).

In parallel with the stakeholders' advisory group, an inter-service group was formed for the purpose of validating review options within the Commission.

Comments from the Impact Assessment Board

A draft of this report was submitted to the Commission's Impact Assessment Board on 30 April 2008. The draft impact assessment was presented and discussed at the 21 May 2008 meeting of the Impact Assessment Board. On 27 May 2008, the Impact Assessment Board issued its opinion which is reproduced in Appendix VII. All recommendations for improvements have been accounted for in the final version of this impact assessment, as described in Appendix VII.

Inter-Service Consultation

All services consulted (SG, SJ, ENTR, AGRI, ECFIN, TREN, RTD, SANCO, MARKT, TRADE, JRC, COMM, COMP, TAXUD) agreed to the proposed documents. Inter-service consultation revealed that entry of goods into the customs territory was not only to include those for release for free circulation in the Community and transhipment, but also those entering under other customs procedures or for customs-approved treatments and uses. Option 3 in section 6.4.2 was adapted accordingly.

2. POLICY BACKGROUND

2.1. The Montreal Protocol –From Environmental Pioneering to Hailed Multilateral Environmental Agreement in 20 Years

The stratospheric ozone layer provides a shield protecting life on earth from harmful ultraviolet radiation from the sun. In 1974, scientists predicted that emissions of certain man-made ODS might be depleting the ozone. During the early 1980s, scientists observed a very significant decrease in the concentration of ozone in the stratosphere over the Antarctic, which became widely known as the "ozone hole". At its peak – in the late 1990s – the ozone hole was most severe around the poles in

[3] http://ec.europa.eu/environment/ozone/review.htm.

spring time, although ozone concentrations were significantly reduced in other places as well. Increases in levels of UV radiation have caused adverse impacts on human life, primarily in terms of increased incidences of skin cancers and cataracts and ecosystems.

In 1985, Governments agreed upon the Vienna Convention for Protecting the Ozone Layer and thus committed to international cooperation to prevent harm from damage to the ozone layer. As soon as 1987, Governments proceeded to establish the Montreal Protocol on Substances that Deplete the Ozone Layer, thereby mandating the phase-out of production of ODS by all signatory Parties according to a specific time-table.

Since 1987, and following further scientific evidence, the Montreal Protocol has been amended five times to include additional ODS and accelerate production phase-out time tables. Table 1 provides a summary of the ODS currently incorporated ("controlled") in the Montreal Protocol and their common uses.

Table 1: Common Ozone Depleting Substances and Their Uses

Substance	**Most Common Uses**	**ODP**[4]
Chlorofluorocarbons (CFCs)	Refrigerants; cleaning solvents; aerosol propellants; foam blowing agents.	0.6 – 1.0
Halons	Fire extinguishants; explosion suppressants.	3 – 10
Carbon tetrachloride, CCl_4 (CTC)	Feedstock chemical in CFC production; cleaning and industrial solvent.	1.1
Methyl chloroform, $CHCl_3$ (TCA)	Industrial solvent for cleaning, inks, correction fluid.	0.1
MB, CH_3Br (MB)	Fumigant for control of soil-borne pests and diseases in crops and stored commodities.	0.6
Hydrochlorofluorocarbons (HCFCs)	Refrigerants; cleaning solvents; foam blowing agents; fire extinguishants.	0.01 – 0.5

In 2007, as the Parties celebrated the Montreal Protocol's 20th Anniversary the Protocol was widely hailed as one of the most successful of all international environmental agreements.[5]

Figure 1 illustrates how successful the Protocol has been in reducing global consumption and production up until the period ending 2005. By then, all 191 Parties had achieved a 95 percent reduction in the consumption of ODS compared to established baselines. Reductions are highest (99.2 percent) in industrialized countries, and somewhat lower (80 percent) in developing countries. These reductions were achieved on the basis of agreed consumption and production freezes and subsequent time-bound stepped reductions.[6]

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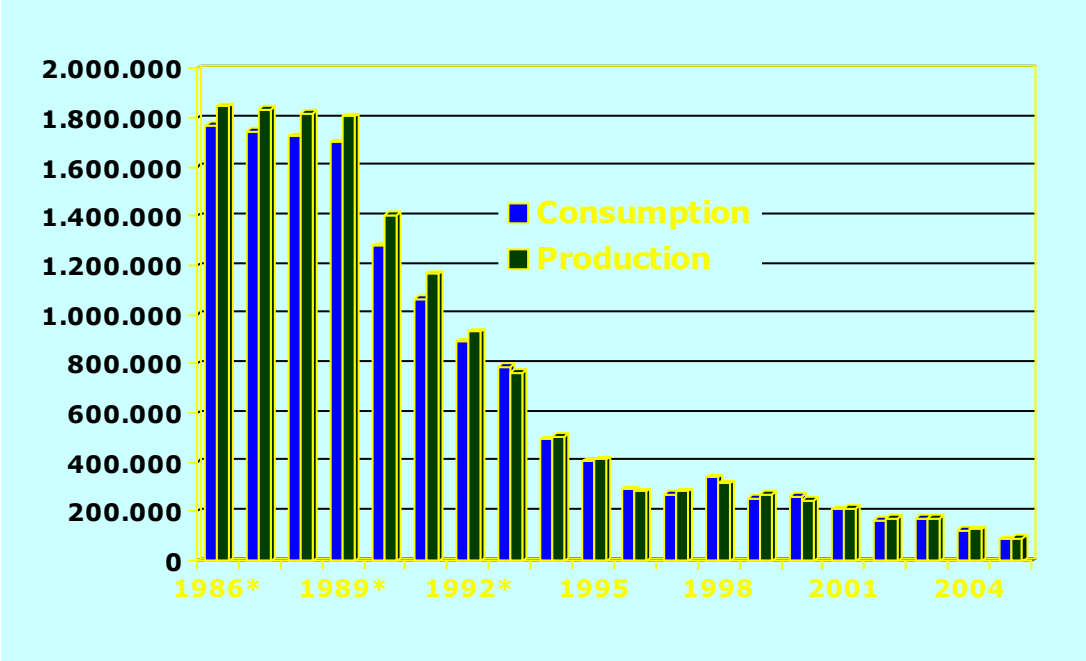
4 Note: The ODP is the ratio of a chemical's impact on the ozone layer compared to that of a similar mass of CFC-11, which is set to 1.0.

5 It is worth noting that the ability to focus on phasing out the tangible production and consumption of the ODS, rather that targeting emissions is by many considered a key feature of the success of the regulatory framework (both at international and EU level).

6 Successful reductions in developing countries were made possible by the Multi-Lateral Fund which has to date channelled about US$ 2.2 billion to technology transfer and related capacity building projects in developing countries.

Figure 1: Global Phase Out of Controlled ODS under the Montreal Protocol (ODP tonnes)



As of 2010, production and consumption of the most harmful (known) ODS should be completely banned in industrialized countries, except for a very limited number of exempted or non-controlled uses and a reducing "tail" of hydrofluorocarbons. Full bans in developing countries typically come into effect within 5 to 10 years following the bans in industrialized countries, although that an increasing number of developing countries now align their policies with industrialized countries such as those of the EU.

A key feature of the success of the regulatory framework (both at international and EU level) is its focus on phasing out the tangible production and consumption of the ODS, rather that targeting emissions.

The Scientific Assessment Panel (SAP), in its latest Report released in 2007, confirmed that the ozone layer is slowly recovering thanks to the control measures introduced by the Protocol – albeit with a 10-15 years delay compared to the projections in its earlier 2002 Report. Global average ozone and Arctic ozone levels are expected to return to pre-1980 levels by 2050 whilst the Antarctic ozone hole is expected to return to pre-industrial levels by the 2065-2075 timeframe.

Following the causal relationship between increased exposure to UV-B (due to the depleted ozone layer) and adverse health impacts such as cataract or skin cancer, the risks related to the occurrence of these health impacts will significantly decrease in future. According to UNEP, controls implemented under the Montreal Protocol will enable the global community to avoid millions of fatal skin cancers and tens of millions of non-fatal skin cancers and cataracts. The United States' authorities estimate that more than 6.3 million skin cancers will have been avoided in the US alone and that efforts to protect the ozone layer will have saved 4.2 trillion U.S. dollars in health care costs over the period 1990-2165.[7] [8] [9]

[7] The Benefits and Costs of the Clean Air Act, 1990-2010. Environmental Protection Agency; Office of Air and Radiation. November 1999. EPA 4W-R-99-001.

Controls implemented under the Montreal Protocol have furthermore delivered substantial climate benefits. That is because most ODS have a very high Global Warming Potential (GWP) as indicated in Table 2.

Table 2: Global Warming Potentials of the controlled ODS

Substance	**GWP**[10]
Chlorofluorocarbons (CFCs)	4,750 – 14,420
Halons	404 – 7,140
Carbon tetrachloride, CCl_4 (CTC)	1,400
Methyl chloroform, $CHCl_3$ (TCA)	146
MB, CH_3Br (MB)	5
Hydrochlorofluorocarbons (HCFCs)	77 – 2,310

Source: Scientific Assessment of Ozone Depletion: 2006, WMO, 2007

Unmitigated, ODS-related GHG emissions could have been as much of a concern today as global CO_2 emissions. The Montreal Protocol phase-out schedules have helped avoiding the emission of greenhouse gases equivalent to more than 100 billion tons CO_2 between 1990 and 2010. By 2010, GWP-weighted ODS emissions will account for less than 5% of global projected CO_2 emissions whereas they accounted for nearly 50% of global CO_2 emissions in 1990. On top of this, the Montreal Protocol decision of the September 2007 Meeting of the Parties to strengthen further the HCFC phase-out will potentially reduce emissions by an additional 18 billion tons of CO2-equivalent by 2030 corresponding to about 60% of current global annual CO2 emissions. Combined voluntary and national efforts to phase out ODS before the MP started, and the mandatory efforts under the Protocol, have succeeded in delaying the overall growth in greenhouse gas levels by a significant 7-12 years.[11]

2.2. Remaining Global Challenges Related to Recovery of the Ozone Layer

Despite the significant successes achieved to date, the 2006 SAP Report clearly stated that the global community continues to face significant challenges if the projected schedule for the recovery of the ozone layer is to be achieved. The SAP and Technical and Economic Assessment Panel reports released in 2007 stated that the anticipated recovery of the ozone layer critically depends on Parties accounting for the key issues listed below:

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8 Key Achievements of the Montreal Protocol to date, UNEP Fact Sheet, 2007.

9 The occurrence of skin cancers in mid-latitude developing countries has nevertheless increased over the last two decades due also to other factors such as the aging of population and the increased exposure to UV-B radiation due to changing life styles.

10 Global warming potential (GWP) is the ratio of the warming caused by a substance compared to the warming caused by a similar mass of carbon dioxide. The GWP of carbon dioxide is 1.0.

11 G.J. Velders et al., *The importance of the Montreal Protocol in protecting climate*, Proc. Nat. Acad. Sci, 2007, 10.1073/pnas.0610328104.

(1) **Failure to comply with the Montreal Protocol would delay, or could even prevent, recovery of the ozone layer.**

Emissions associated with continued or expanded exemptions under the Montreal Protocol could delay or even prevent achieving the projected recovery of the ozone layer. For example, critical use exemptions allowing production of MB in 2005 and 2006, and continued use of MB for quarantine and pre-shipment (QPS) purposes would, if they were to continue indefinitely at the 2006 levels, result in an increase in stratospheric chlorine levels at mid-latitude, thereby delaying recovery of the ozone layer. SAP finally suggested that Parties should also to monitor ODS emissions from other exempted uses, related to their use as feedstock and process agents.

(2) **Alarming growth of HCFC production and consumption in developing countries.**

New projections for the recovery of the ozone layer assume action is taken by Parties to stem the alarming growth of HCFC production and consumption in developing countries. HCFCs had been phased in as a transitional alternatives to CFCs in some sectors even though they still have significant (but lower than CFC) ODP characteristics. Whilst developed countries are well advanced in the phase out of HCFCs, production and consumption in developing countries were projected to double from their current levels (similar to current yet decreasing levels in developed countries).[12]

Parties have moved swiftly by adopting Decision XIX/6 on the early phase-out of HCFCs less than a year after the publication of the SAP report. The Decision commits developed countries, including the EC, to bring forward the full phase out of HCFC production from 2025 to 2020.

(3) Significant ODS contained or "banked" in products and equipment.

Because the Protocol has focused on the reduction and ultimate elimination of ODS production rather than on controlling use, there remain significant quantities of ODS contained in products such as building insulation foams and in refrigeration and air conditioning equipment. A failure to recover, recycle, and ultimately destroy these ODS at the end of the useful life of the products or equipment concerned poses a risk to maintaining the progress achieved in phasing out ODS as well as to global warming.

TEAP estimated that, in 2005, 3.5 million ODP tonnes of ODS were contained in equipment and products and, as such, ODS banks present the second most significant threat (after potential growth of HCFCs consumption in A5 countries) towards early recovery of the ozone layer. Recovery of ODS from the banks also presents an opportunity. Considering the significant GWP characteristics of CFCs and other "banked" ODS, these banks also represent a significant climate change issue, i.e. containing over greenhouse gases equivalent to over 2 billion tonnes of CO_2.

[12] Based on latest available date for 2005, they represented about 60 percent of the remaining substances in developed countries with overall quantities steadily decreasing.

(4) The role of very short-lived substances in ozone depletion is of greater importance than previously assessed.

It is now believed that very short-lived halogenated substances such as normal-propyl bromide (n-PB), which is almost exclusively anthropogenic, significantly contribute to total stratospheric bromine and thus have an adverse effect on stratospheric ozone.[13] The TEAP's n-PB Task Force informed Parties in 2001 that n-PB is being aggressively marketed for solvent applications which traditionally used ODS and non-ODS. Production of n-PB is a rather simple process allowing it to be economically produced in both developed and developing countries. Hence, annual production could easily increase significantly over the next few years if no preventative measures were taken. Technically and economically feasible alternatives that are environmentally superior to n-PB are available for almost all its applications – in solvents, as a feedstock and as a carrier and intermediate for pharmaceutical and other industries.

(5) Understanding the interconnections between ozone depletion and climate change is crucial for projections of future ozone abundances.

By the middle of the 21st century, quantities of the ODS in the stratosphere are expected to have fallen to those present in 1980 before the onset of significant ozone depletion. However, climate and other atmospheric factors will not be the same in 2050 as in 1980, and this could cause ozone abundances in 2050 to be somewhat different from those observed in 1980. At high latitudes, the stratospheric temperature cooling related to climate change tends to delay the recovery of the ozone layer. In mid-latitudes however, the recovery is somewhat accelerated by the changes in the temperature in the upper atmosphere. Hence, projections of the recovery of the ozone layer remain uncertain and further delay in the recovery of the ozone layer because of climate change cannot be excluded.

At the 19th Meeting of the Parties held in 2007, the above challenges were recognised by the EU Member States and the Commission. Hence they are duly accounted for in the problem definition outlined below.

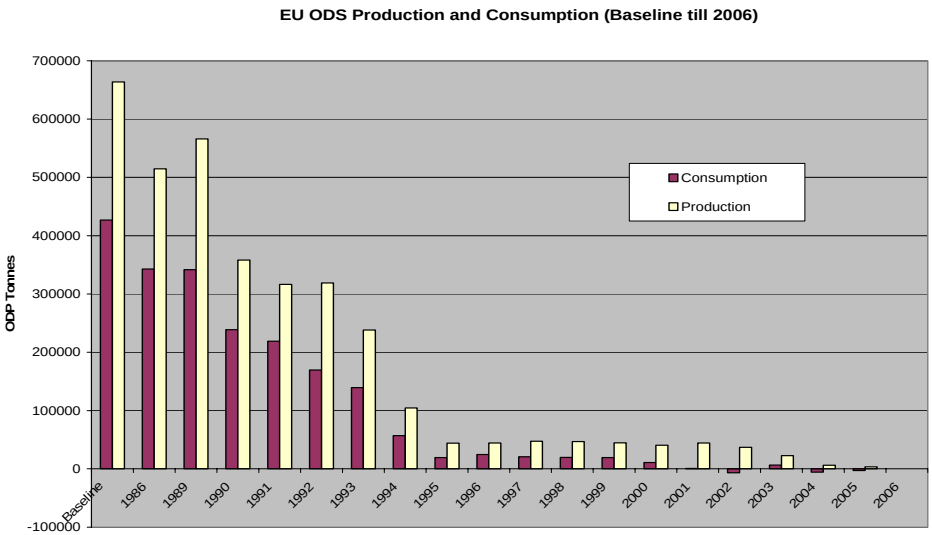
2.3. Regulation (EC) N° 2037/2000 on Substances that Deplete the Ozone Layer – Leading the Montreal Protocol Implementation

The Regulation is the Community's main instrument for implementing the provisions of the Montreal Protocol. The closely matching and mutually reinforcing international and EU policy framework has lead to an impressive track record, with a near complete phase out of production and consumption of the controlled ODS (See appendix II for specific features).

As shown in Figure 2, ODS production and consumption in the EU have decreased by more than 99 percent compared to baseline levels.

[13] SAP confirmed the ODP for n-PB to be 0.1 for tropical emissions and 0.02-0.03 for emissions in northern mid-latitudes in its 2006 Report.

Figure 2: Trends in EU ODS Production and Consumption 1987-2006



The survey conducted in support of the review showed a general stakeholder satisfaction with the effectiveness of the Regulation. Likewise, stakeholders have generally appreciated the efficiency of the Regulation, notably the fact that it allowed markets to adapt whilst keeping the overall administrative burden under control.

Table 3 summarizes the key characteristics of the Regulation, building on stakeholder's comments in terms of its strengths, weaknesses, opportunities and threats – a SWOT analysis.

The near-complete phase out in ODS production and consumption has not lead to any material market disruption in the EU or globally. Following the provisions of the Montreal Protocol, the staged phase-out approach embedded in the Regulation has offered a clear perspective for markets (both producers and consumers) allowing them gradually to adapt without causing major market disruptions. Where the Regulation has banned ODS production, a series of exemptions for critical and essential uses has been allowed in line with the provisions of the Montreal Protocol and associated Decisions of the Parties.[14]

These exemption regimes have allowed for a (controlled) grace period for the more difficult and costly phase out areas and formed one of the Regulation's efficiency features.[15] In the areas where the Regulation went beyond the provisions of the Montreal Protocol, such as where it established use bans on equipment that contained or relied upon HCFCs, cost-efficiency was achieved through progressive introduction of use bans by date and sector. The use of HCFCs in products and equipment for which alternatives were readily available was banned first, and longer phase out schedules were applied to more difficult sectors.

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14 Decisions of the Parties have generally established two key criteria concerning critical and essential uses, i.e. (1) the importance of the use, and (2) the lack of availability of technically and economically feasible alternatives.

15 Before 2010, the two most important exemption regimes provided for in the Regulation will have ended: essential uses for metered dose inhalers (MDI) and critical uses of MB. The remaining exemption regimes are currently under review.

Table 3: A SWOT Analysis – Building on 20 Years' Experience.

Strengths	Weaknesses

• **Effective** policy framework
  ◦ Near complete phase out of production of controlled ODS
  ◦ Clear evidence of decreasing ODS levels in the atmosphere
  ◦ Prospects of ozone layer recovery between 2050-75
  ◦ Significant indirect environmental benefits (climate change)
• **Efficient** policy framework
  ◦ Staged phase-out regimes
  ◦ Post-phase out exemption regimes
  ◦ On-line ODS licensing and other efficiency features
	• **Complex** Regulation
	• **Rigid** quota and licensing procedures
	• **Extensive** reporting requirements
	• **Lack** of Synergies with other EC policies

Opportunities	**Threats**

• **Advancing the progress of ODS phase-out**
  ◦ Critical use of MB
  ◦ Essential use of CFCs for Metered Dose Inhalers (MDIs)
  ◦ Essential laboratory and analytical uses
  ◦ Critical uses of halons
  ◦ HCFC Production
• **New Scientific Assessment & TEAP Reports** (2006)
  ◦ Better understanding of (short-lived) ODS impacts
  ◦ Better understanding of ozone & climate change links
  ◦ New data on ODS/GHG "Banks"
  ◦ Updated risk assessment related to ozone layer recovery
• **Dialogue on the future of the MP**
	• **Emissions** from "non-controlled" ODS use
	  ◦ Banks
	  ◦ QPS
	  ◦ New and short-lived ODS
	  ◦ Feedstock Use
	• **Illegal and Harmful** Trade
	• **Climate change** impacts on ozone layer recovery
	• **Fading Commitment** to Remaining Phase-Out
	  ◦ Growth of HCFC use in Developing Countries
	  ◦ Slowing reduction in phasing out ODS essential/critical uses
	  ◦ Fading R&D prioritization and donor attention

Whilst this flexibility has imposed (often significant) administrative costs on Member States' authorities, including their customs agencies, the Commission, and the companies benefiting from the flexible arrangements, these costs have generally come down as the number of exemptions requested and granted has reduced.[16]

The staged phase-out regimes have furthermore served as instrumental in driving innovation and the development and marketing of new, more environmentally friendly, products, equipment and processes that no longer contain or rely on ODS.[17]

3. GENERAL PROBLEM DEFINITION AND OBJECTIVES

3.1. Defining the Remaining Problems to be Tackled in the EU Based on the 2010 Outlook

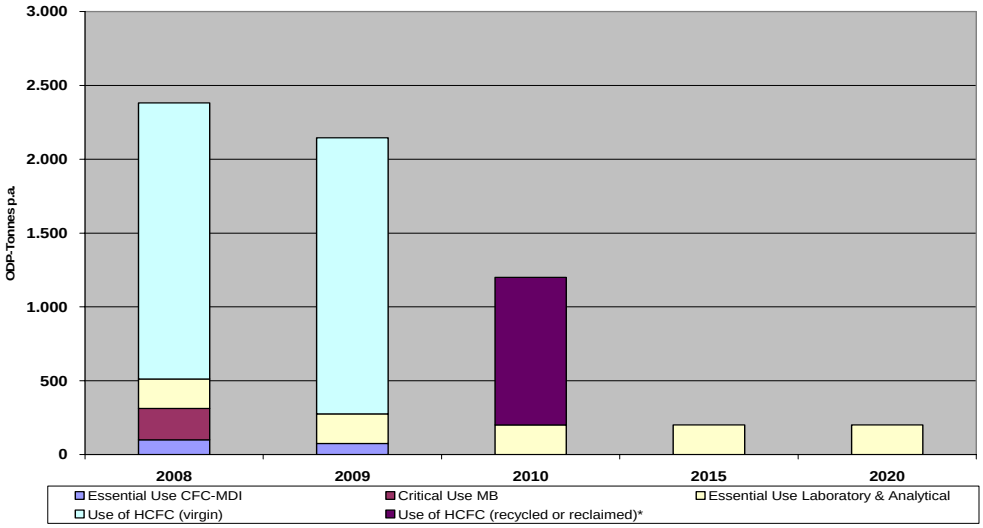
By 2010, the EC will have reached a full phase-out of controlled ODS, save for approximately 1 200 ODP tonnes p.a. (See figure 3 below). The amount of 1 200

16 The bulk of these costs have gone to the management of the procedures for these exemptions. For example, an analysis indicates that the ODS Management Committee spends about one-half of its meeting time discussing these exemptions, including issues not clearly defined in the Regulation Estimate based on an analysis of the minutes of Management Committee meetings in 2005 and 2006.

17 For examples of applications that historically relied on ODS and where non-ODS solutions were developed and adopted by the markets see: http://ec.europa.eu/environment/ozone/alternatives.htm.

ODP tonnes compares to baseline consumption levels of 400 000 ODP tonnes and includes an estimated 1 000 ODP tonnes of recycled or reclaimed HCFCs which will be banned as of 2015, thus leaving a tail of less than 200 ODP tonnes p.a. of ODS "consumption" as defined by the Montreal Protocol. In addition, there will be a remaining use of "emissive ODS uses" that are covered by the regulation (yet not accounted for as consumption under the Protocol) amounting to an estimated 1 400 ODP tonnes for the period beyond 2010 (assuming that current levels would be maintained in the absence of further measures). ODS production in the EC will have reached less than 4 000 ODP tonnes p.a. by 2010 (comparing to baseline production levels of 700 000 ODP tonnes). Further details on the 2010 outlook are provided in Appendix III.

Figure 3: Remaining Emissive Uses of the ODS in the EU (Base Case Estimates for the period ending in 2020)



Considering the international context described in section 2.2, the 2010 outlook and stakeholders' suggestions for improvement (Appendix V), the following remaining problem areas have been defined:

(1) Regulatory and Associated Administrative Complexity

The administrative costs incurred by users in interpreting the legal text, if current complexities remained, are estimated at €5.6 million over the period 2010-2020, including €5.4 million for EU industry, particularly SMEs. There is a need for simplification and clarification of the Regulation's structure, inter alia by removing obsolete provisions, for example those related to the phase out steps before 2010. Current reporting requirements, if they were to continue up over the period considered, would amount to €2.48 million overall in terms of administrative costs, including €1.5 million falling upon Member States. In addition, the overall administrative costs related to exemption regimes in case of no action would be €1.3 million over the whole period. Measures to reduce administrative costs are therefore required, notably related to reporting. Synergies with related policies such as the regulations on fluorinated greenhouse gases, waste, chemicals and plant protection should be better exploited. The quota and licensing procedures need to remain flexible.

(2) Full compliance with the Montreal Protocol, as adjusted, and risk of illegal trade

To address the global growth of HCFC production and consumption, Parties adopted Decision XIX/6 on an early phase-out of HCFCs. The Regulation must as a minimum option be realigned with the Decision to bring forward the production phase-out of HCFCs from 2025, as currently provided for in the Regulation, to 2020.[18]In addition, the upcoming phase-out of the use of "virgin" HCFCs for the maintenance and servicing of refrigeration and air conditioning equipment, and the related difficulties in verifying the source of the HCFC potentially fuelling illegal trade in virgin HCFCs are also of concern. As a comparison, during the CFC phase out in the 1990s, an estimated 15.000 ODP tonnes p.a. were traded illegally during the period 1994-96. Stronger enforcement of import and export requirements across the EC is required.

(3) **Uncontrolled ODS production and trade, and ODS banked in products and equipment**

Introducing measures for currently uncontrolled ODS production and trade (notably new ODS and methyl bromide uses for Quarantine and Pre-Shipment purposes) and to ensure recovery and destruction of ODS banked in products and equipment must be considered. Annual emissions from ODS banks are estimated to be in the range of 17 000-24 000 ODP tonnes in the EU (compared to 180 000 globally). Emissions over the period 2010-2020 would add up to 200 000 tonnes. The production of new and short-lived ODS is projected to be up to 20 600 ODP tonnes over the whole period. The annual use of methyl bromide to QPS is currently 200 ODP tonnes (10 000 globally), which would amount to 2000 ODP tonnes over the full period considered.

In addressing the above mentioned problems, due account will be given to their drivers, notably that remaining ODS remain profitable for producers and consumers albeit that technically viable alternatives are available to date for all but a few ODS uses.

3.2. General and Specific Objectives

The general long-term objective pursued during the review remains the timely recovery and subsequent protection of the ozone layer to avoid adverse impacts, notably on human health and ecosystems. The associated short and medium-term objective, however, is to simplify the regulatory framework, whilst at the same time reducing any unnecessary administrative burden, in line with the Commission's commitment to develop and implement better regulation.[19]

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[18] This also followed consultations with EU industry and Member States who endorsed the EC position.

[19] It is noted that jointly pursuing the long-term and short/medium term objectives implies that major revisions of the regulation that would lead to a substantial deviation from the current regulation were to be avoided (notably related to definitions which stem from the Protocol), unless there was an overriding argument to do so. It implies also, that a review in the context of a simplification exercise is not to exclude the consideration of selective measured strengthening provisions that are required to enabling the EU to adapting to remaining challenges.

In order to deliver these general objectives, **specific objectives** were identified, addressing all problems outlined above whilst building on the strengths and opportunities identified in the SWOT analysis. These objectives, listed in order of priority, include:

(1) Achieving better and simpler regulation by reducing the administrative burden

(a) Clarifying and simplifying the Regulation

(b) Streamlining reporting and associated administrative burden

(c) Updating exemption regimes and associated administrative processes

(2) Ensuring continued compliance through full implementation of the Montreal Protocol as adapted in 2007 and strengthened enforcement

(a) Implementing Decision XIX/6 on the advanced HCFC phase out

(b) Ensuring EC compliance status and preventing illegal and harmful trade

(3) Addressing future challenges by tackling ODS not yet controlled under the Montreal Protocol

(a) ODS contained (or "banked") in products and equipment

(b) New and Short-lived ODS

(c) MB Use for Quarantine and Pre-Shipment Purposes

3.3. Method and Criteria for Assessing the Impacts

The methodology recommended by the impact assessment guidelines was adopted for the purpose of conducting this review.[20]

The impacts of the different policy options were considered according to the three general impact assessment criteria recommended by the guidelines: economic, social and environmental impacts. Within these three impact categories, 16 specific categories were identified based on an initial review of the options and of the information and comments gathered during the review study.

Details of the assessments and the criteria used are provided in Appendix IV and can be found in the study commissioned to support this impact assessment.[21]

Since this Review takes place in the context of the 'Better Regulation' initiative, special emphasis was put on the evaluation of the impact of proposed policy options on administrative costs, using the EU standard cost model.

Direct economic impacts were approximated using forgone profit margins.

Impacts in terms of administrative costs and direct economic impacts for the period until 2020 have been stated in terms of Net Present Value (NPV) in the year of 2010, using a 4 percent discount rate.

Environmental benefits were quantified in terms of saved ODP tonnes when feasible. Final impacts in terms of reduced probability of skin cancer and cataract, increased

[20] Reference to IA Guidelines

[21] See http://ec.europa.eu/environment/ozone/review.htm

crop and fisheries productivity thanks to reduced exposure to UV-B could in principle be monetised. This was not deemed useful for two main reasons:

- a full cost-benefit analysis would not be proportional to the problem as the benefits (as well as the costs) are expected to be small since we are now at the tail-end of the problem. Monetising the benefits would be time-consuming and would be unlikely to change the decision process;
- the exercise would not be meaningful as formation and depletion of the ozone layer are governed by long-term processes, and attempting to link an annual net gain in a unit ODP tonne to global processes and final human and environmental health impacts is an extremely difficult task. The final figure is likely to be well within the error margin. A cost-benefit analysis of limiting emissions of ODS was undertaken for by the US Environmental Protection analysis for the period 1990-2175, based on dose-response models. The same study however underlined that estimating incremental effects of a reduction in emissions of ODS was an 'extremely difficult, if not impossible, task'.[22] The same rationale applies to the small quantities and time frame considered here.

In some cases, full quantification was not possible because of lack of data, or because the magnitude of the impact was difficult to assess ex ante (e.g. the environmental impact of strengthened inspection or labelling provisions). A scale was used where (detailed) impacts were largely unquantified, i.e. "+" or "-" referring to environmental impacts of less than 1 000 ODP tonnes and "++" or "- - " for impacts over this threshold. Likewise, the same scale was used for economic impacts below or in excess of €1 000 000.

3.4. Who may be affected?

The risk of a delay in the recovery of the ozone layer concerns all EU citizens and indeed the global population.

The current complexity of the Regulation and the related administrative burden affect the Commission, Member States, and industry, particularly SMEs which tend to be more affected. Considering that the review takes place at the tail-end of the ODS policy problem, there remain relatively few stakeholders that are directly affected by the present Regulation.

For example, there remain only 16 producers of ODS, most of which are multinational companies. There remain an equally low number of producers of products and equipment that contain or rely upon ODS, mostly the manufacturers of refrigeration, air conditioning and heat pump system and producers of insulation foams. Whilst these are also mainly multi-national companies, associated installation and servicing companies tend to be mostly SMEs.

There are a limited number of users of ODS is specialist sectors such as research, defence and aerospace

The main stakeholders potentially affected by the revision to the Regulation have been identified, as well as the areas where options are most likely to affect them. All relevant stakeholders have been invited to participate in the review.

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[22] The Benefits and Costs of the Clean Air Act, 1990-2010. Environmental Protection Agency; Office of Air and Radiation. November 1999. EPA 4W-R-99-001, p G-1.

4. DEVELOPING VIABLE POLICY OPTIONS

4.1. Maintaining the Business as Usual Scenario

The 2010 outlook on the status of ODS in the EU (section 2.3 and Appendix III) offers a good indication of the business as usual (BAU) case.

Maintaining the BAU scenario is attractive at first sight. What is the advantage of changing the regulation if only 1% of the problem remains? However, it has been rejected by stakeholders first and foremost because it prevents the pursuit of the simplification objective and removes any opportunity to reap the associated savings in administrative costs. It would also prevent an appropriate EU response to the remaining challenges that have been identified (section 3.1).

Failure to revise the Regulation would also put the EC and its Member States in non-compliance with the Montreal Protocol, because the adjustment related to the phase out schedules of HCFCs (see section 3.1) would not be transposed into EU laws.

Whilst some limited progress in ODS phase-out could be expected under BAU (because producers and product and equipment manufactures and service companies would continue to retract from the declining ODS sector), net environmental impacts are likely to be negative. This is due *inter alia* to the fact that illegal trade may not be adequately tackled and that opportunities for further reducing ODS use (e.g. reducing the cap for QPS) are missed.

4.2. Withdrawing the Regulation

The option of withdrawing the Regulation goes beyond BAU. This option was not seen by stakeholders or the Commission as a valid alternative for obvious reasons, not least that the EC and Member States would no longer be able to comply with their international commitments under the Montreal Protocol.

4.3. Towards Simpler and Better Regulation

Maintaining the BAU scenario or withdrawing the Regulation are clearly not viable options for the reasons explained above. In line with stakeholders' views, there is a need for, and opportunities to be gained from, changes to the Regulation in line with the overall and specific objectives stated in section 3.2.

A considerable effort has been made to identify all possible areas for improvement to the Regulation. Managing the implementation of the Regulation has evolved over the years into a broad set of processes and associated applications linked to reporting, monitoring, information exchanges and enforcement. Hence, many opportunities for savings are to be found in "non regulatory" options.

Considering the above, the policy options are described in detail in the remainder of the Impact Assessment. The description is structured according to the specific objectives stated in section 3.2.

4.4. Other Policy Options Initially Considered and Subsidiarity

Finally, it should be noted that some broad policy options to reduce the remaining uses of ODS have been discarded early in the processes. These include the selective use of taxes or other economic instruments such as tradable permit systems.

These options were discarded because the low remaining level of ODS production and use would not warrant the creation of a totally new infrastructure. Furthermore, some Member States already use taxes or levies as an instrument to discourage the

remaining use of ODS (and to encourage the adoption of alternatives). Pursuing tax measures at the EU level would imply difficult and time-consuming decision-making and would run counter to subsidiarity principles.

5. ACHIEVING SIMPLER AND BETTER REGULATION

During the consultation, a large number of Member States and other stakeholders underlined their desire for a simpler, clearer Regulation. Significant efforts went into the identification and development of options for achieving this. The insights gained by the Commission, Member States' competent authorities and industry from (almost) ten years' experience with the current Regulation proved particularly valuable in this respect.

5.1. Clarifying and simplifying the Regulation

5.1.1. Definition and Drivers of the Problem

Many stakeholders commented that the Regulation is unnecessarily complex, now contains numerous obsolete provisions, and requires significant knowledge by the reader of the international context because of a lack of clarity in definition of terms. In several key areas, Member States have different interpretations of the Regulation's provisions[23]. The different interpretations imply that businesses may face variation in enforcement of the Regulation across the EU.

5.1.2. Description of Options

Option 0	No EU action
Option 1	Removing obsolete regulatory provisions
Option 2	Simplifying the structure of the legal text
Option 3	Improving definitions and links with Montreal Protocol and other policies
Option 4	Removing perceived regulatory uncertainties and loopholes

Option 0 No EU Action

Current complexities would remain. A conservative estimate of the extra time required to interpret this Regulation (compared to the same Regulation drafted according to best practice standards) yields a total of about 12 full-time equivalent professional staff per year across 500 companies. This estimate includes the time that EU businesses spend in interpreting the legal text and by trade associations in supporting their members at EU and national level. The current complexity and lack of clarity is felt to be particularly disadvantageous to SMEs and new entrants to the market. The overall administrative costs for interpreting the legal text over the period 2010-2020 would be €5.6 million, including €5.4 million for EU industry, €42 900 for Member States, and €81 100 for the Commission.

Option 1 Removing obsolete regulatory provisions

The progress that has been made in phasing out ODS offers an opportunity to remove obsolete and expired provisions, especially related to the production, placing on the

[23] One important example is the difference in the interpretation of "placing on the market". Another is whether the Regulation requires recovery of MB during QPS use (see section 1.3).

market and use of CFCs and MB. Articles 3, 4 and 5 would be most affected. For example:

- Article 3(1), second subparagraph, on essential uses of CFCs for medical devices can be removed because these uses will have become obsolete by 2010;
- Article 3(1)(ii) on critical uses of MB can be removed because of new restrictions on MB use under biocide and pesticide legislation[24];

Option 2 Simplifying the structure of the legal text

Separate chapters would be created for the different types of exemption and derogation. Linked issues would be collated into single articles.

Option 3 Improving definitions and clarifying links and synergies with the Montreal Protocol and other EU policies

Although stakeholders have called for a closer alignment of the definitions in the Regulation with other EU regulations, balance is necessary to ensure that the definitions do not deviate unacceptably from those contained in the Montreal Protocol. Nevertheless, where sensible, definitions would be shortened and realigned with other legislation and interpretations that have developed in practice. An example of the latter would be to replace "placing on the market" with “first placing on the market”.

The introduction of several new annexes would improve the Regulation's links to the Montreal Protocol and, for example, help Member States identify and regulate ODS destruction technologies that have been approved by the Parties to the Protocol. References to the relevant EC legislation on chemicals and waste would be included.

Option 4 Removing perceived regulatory uncertainties and loopholes

Real or perceived regulatory uncertainties would be addressed throughout the text to improve clarity and consistency in the use of terms such as "products and equipment".

5.1.3. Impact Analysis

Removing obsolete regulatory provisions, consolidating linked issues within single articles, and introducing better structured chapters considerably would reduce the current complexity of the Regulation. This would facilitate the enforcement of the Regulation and help deliver better compliance. Environmental benefits, whilst not directly quantifiable, can therefore be expected.

Clarifying and simplifying the legal text is expected to reduce costs for industry, the Commission and Member States' competent authorities. It should also simplify enforcement procedures and thus reduce the costs for other Member State organisations. It is estimated that the options would save almost half of the estimated annual baseline costs for Member States (of € 0.02 million – all estimates are NPV at 2010) and the Commission (€ 0.03 million), and for industry (€ 2.3 million). This estimate assumes that a revised regulation would require some learning effort when introduced, with costs estimated to be twice the baseline costs in the first year.

[24] A critical use exemption clause will be retained in case of a serious pest outbreak for which MB use is deemed necessary

5.1.4. Comparison of the Options and Emerging Preferences

As "Better Regulation and Simplification" is an overarching objective of the Commission, the "no-action" option was discarded. All of the above options would be selected to maximise simplification and related benefits, which are summarized in Table 4.

Table 4: Options for clarifying and simplifying the Regulation

POLICY OPTIONS **Bold:** preferred regulatory option *Italics:* preferred non-regulatory option ~~Strikethrough~~: discarded option *option implemented through other EC legislation	**Environmental Impacts (ODP tonnes) 2010-2020**	**Administrative Costs (€million) (NPV 2010)**	**Direct Economic Impacts (€million) (NPV 2010)**	**Social and Other Impacts**
Combined options 1 through 4	0-50	-2.35	0	+[1]
Total impacts related to preferred options	**0-50**	**-2.35**	**0**	**+[1]**

1. Reduced burden on SMEs

A number of other options are described in the following chapters which would also help simplify the regulation and generate benefits. Whilst they are not duplicated here, a reference to these synergies is included in the summary table in appendix VI.

5.2. Streamlining of Reporting and Reducing the Associated Administrative Burden

5.2.1. Definition and Drivers of the Problem

Several Member States called for measures to reduce their administrative costs related to reporting, indicating that these are one of the more burdensome aspects of implementing the Regulation. In contrast, responses from business and industry did not cite major concerns with reporting.

A legal analysis of the different options for streamlined reporting showed however that the margin for manoeuvre was limited because of the need to meet the reporting obligations of the Montreal Protocol and the Commission's need for information on progress in the various phase-outs[25]. An analysis of potential synergies with reporting under other EU legislation showed no duplication of information. Moreover, the reporting and monitoring provisions in the Regulation are often cited as one of its strengths.

Reporting represents an administrative cost for Member States and companies in the form of time and effort required to collate information and prepare and submit reports. Producers, importers, exporters and users of controlled substances are required to report respectively on production, imports, exports and on quantities recycled, reclaimed and destroyed, as well as any stocks of ODS.

[25] In addition, two options were considered and discarded. Harmonising reporting requirements with the F-Gas regulation was discarded because few companies report under both pieces of legislation and the reporting requirements do not overlap significantly. Sanctioning companies who have not reported in three or more years by withholding licenses or authorisations was also discarded because of concerns of proportionality.

5.2.2. Description of Options

Option 0: No EU action
Option 1: Simplified and on-line reporting requirements for companies (non-regulatory option)
Option 2: Streamlining reporting on ODS destruction
Option 3: Cancelling the reporting requirement for ODS recovery, recycling and reclamation, and for HCFCs replacing halons
Option 4: Centralising reporting to UNEP at the Commission level (non-regulatory option)

Option 0: No EU action

The current reporting requirements would continue. These are estimated over the period 2010-2020 at a total of €1.5 million to Member States and €420,000 to ODS importers, exporters and producers. The Commission's overall cost of gathering this information and assembling it into reports for the Ozone Secretariat is estimated at €560,000.

Option 1: Simplified and online reporting requirements for companies

Companies that export and import ODS must provide data, annually via the ODS database[26], to the Commission for the purpose of ensuring EC compliance with the reporting obligations under the Montreal Protocol. The companies are not required to provide the Commission with production data as production is licensed by Member States. The obligation on companies to report data on imports and exports could be deleted from Article 19.

The feasibility of this option depends on addressing some data gaps in the licensing processes that are processed through the Commission's ODS database as well as improved feedback from Custom authorities that currently do not return processed licenses. Reporting on production which is not subject to licensing by the EC would still be required under Article 19, as well as information on stock levels. These reporting requirements can be modified through Comitology in the current Regulation.

Moving beyond electronic data submission towards online reporting would allow Member States (and companies) to directly input information into the ODS licensing database hosted by the Commission. Electronic reporting by Member States (i.e. sending reports in electronic form, e.g. via CIRCA) is currently widely used. Companies and other users currently report by email, and a contractor to the European Commission compiles these reports. Whilst electronically submitting reports yields some time saving, its efficiency gains would be limited because it is still necessary to input the data at some stage.

Option 2: Streamlining reporting on ODS destruction

Given the particular importance of monitoring the recovery of ODS from older products and equipment, this option would require ODS destruction facilities to

[26] The ODS database is an on-line facility operated by the Commission to facilitate licensing of and reporting by industry

report directly to the Commission on the types and quantities of ODS they have destroyed rather than indirectly via the Member State Competent Authorities. Currently, Member States are required to report on recovery, recycling, reclamation and destruction of ODS. However the quality of the data received by the Commission is often poor reflecting also the difficulties in obtaining those data.

An extension of this option was considered, requiring recovery, recycling and reclamation operators to report directly to the Commission. This extension was discarded in view of the large number of facilities involved in the recovery and recycling of ODS (including small enterprises such as motor vehicle services, WEEE collectors), as it would lead to disproportionate implementation and enforcement costs whilst there is no such reporting requirement on these data under the Montreal Protocol.

Option 3: Cancelling the Member States' annual reporting requirement for ODS recovery, recycling and reclamation and for HCFCs replacing halons

Reporting on ODS recovery, recycling and reclamation is not a requirement of the Montreal Protocol. This option would therefore remove Member States' reporting obligations on recovery, recycling and reclamation. However, Member States shall ensure that operators keep records on those activities, already broadly covered by national waste legislation transposing the relevant EC Directives.

By 2010, Member States are not expected to report to the Commission any further use of HCFCs as replacements for halon critical uses, as required by Article 5(3). This obligation can therefore be removed.

Option 4: Centralising reporting to UNEP at the Commission level (non regulatory option)

In accordance with the ratification provision, Member States currently report directly to the Ozone Secretariat on ODS production, whilst the Commission reports on consumption of ODS on their behalf. Since consumption is defined as production plus imports minus exports, the Commission must await the collection of production data (mainly done through Article 19) before consumption data can be calculated and reported to the Secretariat. There is, therefore, duplication of reporting effort, which sometimes also leads to inconsistencies at UNEP level between production and consumption data. This option would require data collation and reporting by the Commission to the Ozone Secretariat to be expanded to include both consumption and production.

5.2.3. Impact Analysis

Simplified reporting requirements for companies, through relying more on the ODS licensing database for the purpose of complying with the Montreal Protocol reporting obligations as proposed in option 1, could yield savings in administrative costs of an estimated €0.29 million (all estimates NPV 2010).

Moving towards online reporting for companies would require an initial investment from the Community Budget of an estimated €50 000 in the first year. Over time, on-line reporting will yield savings in administrative costs for companies and the Commission by simplifying the paper flow. Overall costs saved by the Commission are estimated to be €0.16 million. Savings for companies are likely to be more modest, assuming the same data would need to be reported (€ 0.05 million). Set-up

cost for online reporting for Member States is likely to be higher as reporting requirements are more complex. The immediate benefits for Member States would also be limited as most reports contain qualitative information for which it is more difficult to create uniform reporting formats that would yield significant savings.

Concerning option 2, various pieces of EC legislation, such as the Waste Framework Directive and the WEEE Directive, require the relevant facilities to keep records of the quantities of substances[27], including ODS, that are recovered, recycled, reclaimed and destroyed, and to make them available to the authorities when so required. The cost would be further limited because there are few destruction facilities within the EU, and they are already familiar with reporting as Member States normally request this information from them. In addition, the quality of reporting on ODS destruction will improve. It is estimated that the additional administrative cost to industry for a more systematic reporting directly to the Commission would be some € 0.2 million. The associated cancelling of the reporting requirements from Member States would lead in parallel to savings of € 0.27 million.

The savings in terms of reporting costs from Member States associated with option 3 are estimated at around € 0.4 million. This would lead to less information on recycling, recovery and reclamation, but due to the difficulty in obtaining these data, the current quality of the reporting is poor, and there is no reporting requirement under the Montreal Protocol. Under Member States' waste legislation the relevant information should already be recorded by the operator concerned. On the basis of Article 20 such data might be requested by the Commission on a case by case basis, if need be.

Cancelling the reporting requirement relating to the use of HCFCs to replace halons, would reduce administrative costs for Member States and the Commission for an estimated € 0.02 million.

Provided that additional reporting from destruction facilities becomes effective (as proposed in option 3), the centralizing of UNEP reporting proposed in option 4 could reduce the administrative burden associated with the reporting of production and consumption data by Member States and the Commission by an estimated € 0.06 million. Increased consistency in the data reported to UNEP (and subsequently published) is considered another ancillary benefit.

5.2.4. Comparison of the Options and Emerging Preferences

Table 5: Options for streamlining of reporting and reducing the associated administrative burden

POLICY OPTIONS **Bold:** preferred regulatory option *Italics:* preferred non-regulatory option ~~Strikethrough~~: discarded option *option implemented through other EC legislation	**Environmental Impacts (ODP tonnes) 2010-2020**	**Administrative Costs (€million) (NPV 2010)**	**Direct Economic Impacts (€million) (NPV 2010)**	**Social and Other Impacts**
1. Simplified and online reporting for companies & users	0	-0. 5	0	0

[27] E.g. Article 14 of Directive 2006/12/EC or Article 7(3) of Directive 2002/96/EC.

2. Streamlining reporting on ODS destruction	0	-0.07	0	0
3. Cancelling MS reporting on ODS recovery, recycling and reclamation and for HCFCs replacing Halons	0	-0.42	0	0
4. Streamlining UNEP reporting	0	-0.06	0	0
Total impacts related to preferred regulatory options	**0**	**-0.49**	**0**	**0**

All the options considered are complementary and are proposed to be retained, some alternatives having already been discarded. Option 2 would provide additional information from destruction facilities thereby enabling the Commission to have more complete data on production and to centralise reporting to UNEP (option 4).

Option 3 would cancel the reporting requirement on ODS recovery, recycling, and reclamation from Member States. The Regulation should include a clause allowing the Commission to seek such information from Member States as and when needed to allow effective monitoring of implementation and future review.

Further non-regulatory actions (options 1 and 6), to implement in parallel to the Regulation review following more detailed assessment, would provide additional savings.

Overall savings in administrative burden resulting from regulatory options would amount to about €0.5 million (more than €1 million when including non regulatory options). Accompanying direct costs to industry are expected to be negligible.

5.3. Updating Exemption Regimes and Related Administrative Processes

5.3.1. Definition and Drivers of the Problem

Exemption regimes have played an important role in ensuring cost-effectiveness and proportionality, especially during the early stages of the implementation of ODS phase-out. At the tail end of this process most exemption regimes have lost their economic relevance. Relatively few actors benefit from the exemption regimes, yet their administration still results in considerable costs. Moreover, the 2006 Report of the SAP warned that current exempted uses must be reduced if the recovery of the ozone layer was to materialize as projected.

A specific issue is related to the inward processing relief (IPR) regime, whereby ODS are imported into the European Community for repackaging and export. The ODS Regulation allows the issue of import licenses for specific substances for IPR. As these uses are phased out, the IPR regime should be re-assessed.

In addition, in parallel to the review of the Regulation, a separate review is underway of the critical uses of halons listed in Annex VII. The purpose of the Annex VII review is to reduce the number of uses and insert phase out dates for those that remain, reflecting the now greater availability of alternatives. Consultations with stakeholders have confirmed the feasibility of ending the critical uses over the period 2010 to 2030. Stakeholders have indicated, however, that for certain specific applications, no alternatives have yet been identified. For the purpose of enabling the insertion of challenging deadlines whilst avoiding possible disproportionate costs (and adverse safety implications), it was strongly recommended that a new exempted use clause would be inserted in the Regulation.

5.3.2. Description of Options

Option 0:	No EU action
Option 1:	Ending production of ODS for Basic Domestic Needs (BDN)
Option 2:	Ending the Inward Processing Relief (IPR) Regime for MB and HCFCs
Option 3:	Ending exempted uses of HCFCs for replacing halons
Option 4:	Ending exempted uses of HCFCs where no alternatives are available
Option 5:	Inserting a new exempted use clause for critical uses of halons
Option 6: Updating the essential use process for laboratory and analytical uses	

Option 0: No EU action

The projected level of exemptions will continue as from 2010. Whilst EC companies currently produce and export CFCs and CTC to enable developing countries to meet their basic domestic needs for these substances (BDN), those regimes will soon end in accordance with the provisions of the Montreal Protocol. Between 2010 and 2015, the BDN regime will be limited to 1,1,1-trichloroethane (TCA). The current low levels of TCA exports for BDN (at less than 100 ODP tonnes) are expected to drop beyond 2010 as demand decreases. The continued BDN regime would maintain low levels of administrative costs.

The IPR regime for MB, although involving relatively small quantities of ODS, results in several hundred licence applications each year. The overall administrative costs are estimated to be €0.63 million (all estimates are NPV at 2010).

IPR for HCFCs currently represents only a small share of the number of requested IPR licences. EU HCFC producers have been withdrawing from the global HCFC market, shifting production capacity to HFC substitutes for which demand has been growing steadily. Furthermore, IPR applies only to a very small share of global demand for HCFCs, which is expected to fade more rapidly following the adoption of Decision XIX/6 on the accelerated phase out of HCFCs. The associated administrative costs are estimated at €0.29 million.

The Regulation provides an exemption to allow use of HCFCs as replacements for halon critical uses. This provision has been little used in the past with only one request dating back to 2005 that involved 25 kg (for which alternatives are now available). The baseline assumes no further exemption requests and therefore no administrative cost.

The present exemption for the placing on the market of HCFCs when no alternatives are available is projected to continue into the future under the baseline scenario, with associated costs of €0.12 million.

Laboratory and analytical uses of ODS will remain as one of the few remaining exempted uses beyond 2010. Projected administrative costs of licensing are estimated at €0.28 million.

The overall administrative costs associated with no action over the period 2010-2020 would therefore be more than €1.3 million.

Option 1: **Ending production of ODS for Basic Domestic Needs**

This option would remove the current Article 3(6) provision allowing production of TCA for BDN.

Option 2: Ending the Inward Processing Relief Regime for Methyl Bromide and HCFCs

This option would end the IPR regime for MB and as such correct what is generally considered a loophole. IPR for ODS has traditionally been allowed until their placing on the EU market was banned according to the Regulation. For MB, the IPR regime did not stop when the import ban came into place. This is generally considered as an omission at the time the Regulation was developed. It would also end the IPR regime for HCFCs in 2010, when the import ban for HCFCs will come into effect.

Option 3: Ending exempted uses of HCFCs for replacing halon

This option would remove the present derogation in Article 5(3) of the Regulation allowing the use of HCFCs as replacements for halon critical uses. This option is considered as merely updating the Regulation to reflect the present state of play.

Option 4: Ending the exemption for the placing on the market of HCFC where no alternatives are available

This option would remove the present Article 5(7) of the Regulation which provides the possibility of authorising the placing on the market and time-limited use of HCFCs where alternatives are not available.

Option 5: Inserting a new exempted use clause for critical uses of Halons

This option would insert a modified exemption clause in the Regulation, to avoid possible disproportionate costs and adverse safety implications linked to the phase out dates for critical uses likely to be proposed as a result of the separate review of Annex VII to the Regulation.[28]

Option 6: Updating essential use regime for laboratory and analytical purposes

The preferred option is for the Commission to assess requests and grant exemptions for multiple years, rather than annually as currently practised, and to establish a cap on total ODS consumption at a level close to that of recent historic use. The latter would serve as an additional signal to laboratories that the ultimate goal is for them to move away from ODS use. The option also implies further non-legislative initiatives whereby the Commission and/or Member States would develop web-based information to better inform laboratories on the alternatives to ODS use[29].

5.3.3. Impact Analysis

The impact of option 1 on EU companies is projected to be zero or very low as few developing countries are currently importing TCA from the EC for and demand is continuing to drop towards zero. Ending the BDN exemption will further contribute to an overall simplification of the Regulation and the enforcement thereof.

The ending of the IPR regime for MB, as proposed in option 2, is expected to have a small economic impact (approximated to be forgone profit margins for the company

[28] The preferred solution is subject to ongoing discussions with the Commission Legal Services.

[29] The option to extend licensing requirement to laboratories rather than importers and producers was discarded because of the large number of laboratories that would be impacted and the significant infrastructural changes that would be required at the level of the ODS licensing system.

involved) but also savings in administrative costs, notably for the Commission and one Member State.

As MB traded according to the IPR regime is not destined for the EU market, there will be no immediate direct environmental impacts. Indirect environmental benefits can be expected, however, outside the EU, notably in destination countries that may have further incentives to adopt alternatives that are technically and economically viable. The extent to which these benefits will materialize will depend on the substitution rate in destination countries and the involved company's readiness to adapt its product range to include these alternatives. Should the latter not happen, there may be consequences in terms of social impacts, i.e. a few tens of jobs may be lost. This social impact is considered very low, however, considering the presently tight labour market in the Member State involved. An important side benefit is that the ending of this IPR regime will strengthen the EC's negotiating position in the Montreal Protocol context, notably in its efforts to motivate other Parties towards a quicker phase-out of critical and other uses of MB. It also removes the risk of non-compliance with the Montreal Protocol due to likely discrepancies between licensed import and export volumes at the end of the year.

Ending the IPR regime for HCFCs in 2010 will not have significant direct environmental impacts as global customers may readily switch to other non-EU based suppliers. Indirect environmental benefits could be generated through international negotiations and related support activities as it would strengthen the EU's credibility in promoting the timely implementation of the global phase-out of HCFCs. The economic impact of ending the IPR for HCFCs is expected to be low as demand for HCFCs is expected to decrease. Under a low-demand scenario, direct costs for the companies involved are expected to be €0.5 million (using foregone profit margins for the period 2010-2020 as a proxy). However, as mentioned, these losses are likely to be offset by increased profits from the more lucrative export of HFCs. Related administrative cost savings are expected to range between €0.21 million for industry and € 0.08 for the Commission.

Removing the derogation for HCFCs replacing halons, as proposed in option 3 and for placing on the market of HCFCs, option 4, will not have significant economic, environmental or social impacts. Savings in administrative costs and environmental benefits would be equally limited, considering that very few cases were processed in recent years. According to a conservative estimate, savings would amount to €0.1 million. However, two Member States and industry have requested retention of the placing on the market exemption. Furthermore, enlarging the exemption to include products and equipments would limit the costs of banning trade of products and equipments manufactured before the HCFC use ban date (providing also a benefit in terms of illegal trade) and allow continued exemptions for HCFC use as halon alternatives where necessary. Thus the preference is for option 3, and option 4 will not be taken forward.

Option 5 would create administrative costs associated with assessing the requests for exemptions for critical uses of halons, but these would be considerably smaller than the disproportionate costs of replacing halons in the most challenging circumstances.

With option 6, only producers and importers of ODS, distributors of laboratory chemicals and laboratories and research institutions in the public and private sector would be affected. No regionally specific impact is expected. The extent to which the multi-year exemption will reduce administrative costs would depend on the number

of years for which the exemption would be granted and will have to be tied to related Decisions of the Parties. Estimated saving based on an average two-year cycle are generally low, however, amounting to €0.09 million. In addition, the multi-year exemption will improve regulatory certainty for importers and producers (which will still have to request licenses on a yearly basis).

5.3.4. Comparison of the Options and Emerging Preferences

Table 6: Options for Updating Exemption Regimes and Related Administrative Processes

POLICY OPTIONS **Bold:** preferred regulatory option *Italics:* preferred non-regulatory option ~~Strikethrough~~: discarded option *option implemented through other EC legislation	**Environmental Impacts (ODP tonnes) 2010-2020**	**Administrative Costs (€million) (NPV 2010)**	**Direct Economic Impacts (€million) (NPV 2010)**	**Social and Other Impacts**
1. Ending production of ODS for BDN	0-22	-	+(1)	-(2)
2. Ending IPR for MB and HCFCs in 2010	0-6475	-0.92	+(1)	-(2)
3. Ending exempted uses of HCFCs for replacing halons	0	-	0	0
4. ~~Ending exempted uses of HCFCs when no alternatives are available~~	0-2000	-0.12	+	0
5. **Inserting a new exempted use clause for critical uses of Halons**	-125 -0	+	--	0
6. **Updating the essential use process for laboratory and analytical uses**	0-200	-0.09	0	0
Total impacts related to preferred options	***0-6570***	***-1***	***3.3***	***-(2)***

1 Confidential (impact included in total)

2. Possible small job loss

Considering that all options, as summarised in Table 6, are complementary and that none would have significant economic impacts, the preference is to retain all options except option 5. Expected administrative savings are more than €1 million. Direct economic impacts (approximated by foregone profit margins) would be in the magnitude of €3 million. Whilst the package could result in up to 6570 reduction in ODP tonnes produced or transiting in the EU, there is uncertainty in terms of the global environmental impact, as much depends on the indirect impact on production and consumption in developing countries. Indirect benefits could however be reaped from a stronger Community position in international negotiations.

6. ENSURING CONTINUED COMPLIANCE WITH THE MONTREAL PROTOCOL

6.1. Implementing Decision XIX/6 on the accelerated phase out of HCFCs

6.1.1. Definition and Drivers of the Problem

Following the concerns expressed in the SAP's 2006 Report on the accelerating growth of HCFC production and consumption in developing countries, the EU and other Parties acted swiftly by adopting Decision XIX/6. Whilst the phase out schedule for developing countries was advanced from 2040 to 2030, the schedule for industrialized countries was changed from 2030 to 2020, reflecting the fact that most industrialized countries, notably the EU, were already ahead of the schedule.

The key task is to align the Regulation with this Decision by adjusting the phase out schedule from 2025 to 2020.

Options for contributing to the efforts of developing countries could also usefully be explored.

6.1.2. Description of Options

Option 0 (maintaining the BAU case) would put the EU into non compliance with the Montreal Protocol, and was therefore discarded.

Option 1: Adjusting HCFC Production Phase out Date from 2025 to 2020
Option 2: Moving HCFC Production ban to 2015 or 2010 (instead of 2020)

Option 1: Adjusting the HCFC Production Phase-Out Date from 2025 to 2020

This option implies a minimum level of action by strictly adjusting the phase-out data for production of HCFCs from 2025 to 2020 as required by all industrialized countries in accordance with Decision XIX/6. As this measure was already agreed upon at the 19th Meeting of the Parties held in September 2007, it forms the de facto baseline case against which the other options are assessed.

Option 2: Moving Production ban to 2015 or 2010 (instead of 2020)

This option implies a more ambitious adaptation of the Regulation by moving forward the phase out date for the production of HCFCs in the EU to 2015 instead of the required 2020 date. It would align the phase out of production with the ending of permitted use of HCFCs in the EU. An alternative would imply aligning the production ban of HCFCs with the 2010 ban date for importing and using virgin HCFC in the EU.

6.1.3. Impact Analysis

Because moving the ban on production of HCFCs from 2025 to 2020, as proposed in option 1, represents the de facto baseline, *no additional impacts are associated with this option*. This option was indeed already agreed upon with Member States and industry during the final consultations that were held in the margins of the 19th Meeting of the Parties.

Moving the ban on production of HCFCs within the EU to 2015 or 2010 – option 2 – implies an additional *economic impact* for EU industry equal to the potential foregone exports. Considering a low and high price scenario, the total market that would be lost could range between €11.7 million and €82.9 million for the period 2010 to 2020. Because a number of HCFC-related patents are due to expire in 2010, with associated downward pressure on prices, the low-end of the range is considered

more likely to apply. Assuming a net profit margin of about 20 percent, the *direct cost to industry* related to a shift to 2015 would be around €2.3 million (all estimates are NPV in 2010). Foregone profits related to a shift to 2010 would be ranging around €9.5 million. Direct costs may still be overstated because released production capacity is likely to be absorbed by the same companies for the production of HFC or other chemical alternatives for HCFC refrigerants (with higher profit margins). For the same reasons, job losses or other *social impacts* are expected to be insignificant.

Environmental impacts associated with option 2 are likely to be limited. Moving the ban to 2015 would result in a foregone production compared to the baseline of 5200 ODP tonnes, whereas a phase out in 2010 would result in a reduction of 18000 ODP tonnes for. Reduced global supplies of HCFCs from EU producers are likely to be partly replaced by increased production of HCFC in developing countries, where production plants may operate according to less strict environmental standards. For example, HFC23, a by-product of HCFC production with a high GWP, is not flared in all installations as it is in the EU, so additional HCFC production in such plants may contribute further to global warming. Environmental benefits will be furthermore muted in the event that restricted supplies of HCFCs (should this occur) may lead to a greater uptake of HFCs rather than lower-ODP alternatives.

6.1.4. Comparison of the Options and Emerging Preferences

Table 7: Options for Implementing Decision XIX/6 on the accelerated phase out of HCFCs

POLICY OPTIONS **Bold:** preferred regulatory option *Italics:* preferred non-regulatory option ~~Strikethrough~~: discarded option *option implemented through other EC legislation	Environmental Impacts 2010-2020 (ODP tonnes)	Administrative Costs (€million) (NPV 2010)	Direct Economic Impacts (€million) (NPV 2010)	Social and Other Impacts
1. Advancing production phase out to 2020	De facto base case			
2. ~~Advancing production phase out to 2010 or 2015~~	0-18000	-	2.3-9.5	+
Total impacts related to preferred options	0	0	0	0

Option 2 is an alternative to option 1, which represents the de facto base case against which impacts were assessed

Advancing the ban on HCFC production from 2025 to 2010 would be most consistent as it would align the production ban with the ban on HCFC import and the use of virgin HCFCs. However, when comparing the options there emerges no compelling argument for deviating from the de facto base case reflected in option 1. Environmental benefits do not constitute a decisive criterion, as the overall global impact of a reduced EU production is uncertain. Neither do anticipated administrative savings provide an overriding argument for compensating the anticipated direct costs for EU producers of HCFCs. Hence option 1 whereby production of HCFCs is moved forward from 2025 to 2020, emerges as the preferred choice.

It is noted that, even for the most ambitious scenarios reflected in option 2, direct costs to industry remain fairly modest. Depending on the need for tighter measures, e.g. against illegal trade, there is some margin during the political decision making to deviate from the preferred option, ideally following further consultations with the industry involved.

6.2. Adapting the phasing out of the use of HCFCs

6.2.1. Definition and Drivers of the Problem

Article 5(1)(v) of the Regulation calls upon the Commission to assess the technical and economic availability of alternatives to HCFCs for the purpose of a reviewing of the 2015 phase-out date for the use of recycled and reclaimed HCFCs. The rationale for this review is to consider bringing forward or delaying these phase out dates in view of latest experiences. A related issue is the need to assess whether a mechanism is required to avoid virgin HCFCs being placed on the market as illegal substitutes for recycled or reclaimed HCFC. Virgin HCFC can indeed be rather easily contaminated or processed to make it indistinguishable from recycled HCFC. This form of counterfeiting is less likely to occur for reclaimed ODS as these are undergoing a purification process in specialized sites.

6.2.2. Description of Options

Option 0: No EU action
Option 1: Advancing the Phase out date for the use of recycled and reclaimed HCFCs from 2015 to 2012
Option 2: Voluntary agreement with industrial process refrigeration sector
Option 3: Certification of recycled and reclaimed HCFCs
Option 4: Limiting the supply of HCFCs to reclaimed HCFCs only

An additional option to delay the phase-out date for the use of recycled HCFCs from 2015 to 2020 was discarded, based on the recommendations of a study conducted for the Commission in 2006. This found that industry was facing no difficulties in complying with the 2015 date.[30]

Option 0: No EU action

The use of recycled and reclaimed HCFCs would be phased out as from 2015 as currently foreseen by the Regulation.

Option 1: Advancing the Phase out date for the use of recycled and reclaimed HCFCs from 2015 to 2012

The ban date for the use of recycled and reclaimed HCFCs would be brought forward from 2015 to 2012, taking into consideration progress with the technical and economic availability of alternatives to recycled HCFC.

Option 2: Voluntary agreement with industrial process refrigeration sector

To account for potential difficulties for the industrial process refrigeration sector by 2012, a voluntary agreement would be pursued with this sub sector as an alternative

[30] ICF International, Review of the Technical and Economic Availability of Feasible Alternatives to Recycled Hydrochlorofluorocarbons (HCFCs) in Existing Refrigeration Equipment, 2006

to option 1. This would require that the sector proposes a phase-out strategy with an accompanying monitoring scheme that is then reviewed and endorsed by the Commission and the Member States.

Option 3: Labelling of recycled and reclaimed HCFCs

This option would require producers (including reclamation facilities) and distributors of recycled and reclaimed HCFCs to label containers with the origin (using a unique ID number) and purity of the HCFC.

Option 4: Limiting the supply of HCFCs to reclaimed HCFCs only

This option would prohibit the sale of recycled HCFCs, limiting the supply HCFCs for servicing of equipment between 2010 and 2015 to reclaimed HCFCs only, which would have to be labelled as reclaimed. As with option 3, this would aim at reducing the risks of illegal trade and use of HCFCs.

The re-use of HCFCs recovered while servicing equipments would remain authorised. Reclaimed HCFCs would serve as top-up material.

6.2.3. Impact Analysis

The main sectors identified as being potentially affected by option 1 are related to commercial refrigeration, refrigerated transport, stationary air conditioning, and industrial process refrigeration. The 2006 study noted that, whilst alternatives to HCFC were widely available for most sectors, phase-out earlier than 2015 would impose disproportionate economic and technical burdens on European companies, particularly for SMEs in the commercial refrigeration, refrigerated transport, and stationary air conditioning sectors. With regards to industrial process refrigeration, this study estimated that an advanced schedule for phase-out could yield significant ODS emission reductions cost-effectively.[31] However, a detailed follow-up study[32] on HCFC use in industrial process refrigeration raised issues with respect to implementing a phase-out by 2012 and did not confirm that cost effective, significant environmental benefits could be delivered by bringing the phase-out date to 2012 for this sector on its own, due to lack of data. The study proposed instead that a voluntary agreement is negotiated between the Commission, Member States and the representatives of the industrial process refrigeration sector, pending further consultation of the sector.

Option 2 would develop a phase-out strategy with the industrial process refrigeration sector where environmental benefits might be realised, prioritising the phase-out of old and large installations requiring most maintenance care and servicing with HCFCs.

The costs of option 3 are limited to affixing labels by the recycling and reclamation facilities. The aim would be to verify the source of recycled products and to reduce the risk of illegal trade and use of virgin HCFCs. However, this option may not be easily implemented as the number of actors involved in the recycling process is much larger than the number of players in HCFC reclamation business. Recycling

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31 ICF International, Supply and Demand of Recycled Hydrochlorofluorocarbons (HCFCs) in Existing Refrigeration and Air Conditioning Equipment Beyond 2009: Analysis of Regulatory Phaseout Scenarios, August 2006

32 ICF International, The feasibility and Cost effectiveness of advancing the phase-out date for HCFCs in industrial Process refrigeration equipment, Draft report, April 2008.

operations with HCFC can be done on the equipment site with simple filtering devices. The enforcement of the requirement to certify and label the recycled material is likely to prove difficult in practice.

Option 4 would minimise the risk of development of a market of illegal recycled HCFC, whilst also limiting the risk of diverted use of virgin HCFCs. This option is realistic considering that supply of reclaimed HCFCs is not projected to constrain demand over the period 2010 to 2015. Currently, 46 reclamation facilities operate across 20 EC Member States[33]. As the projected supply of reclaimed HCFC significantly exceeds the projected demand, the cost increase from restricting the servicing market to reclaimed HCFCs only is marginal. Incidentally, an increase in the price of reclaimed HCFCs would accelerate the transition away from HCFCs which would reap environmental benefits also from a climate change perspective as new equipment demonstrates significantly better energy efficiency.

6.2.4. Comparison of the Options and Emerging Preferences

On Option 1, the cost-effectiveness of an expedited phase out for recycled/reclaimed HCFCs could not be demonstrated, due to lack of data. A more targeted voluntary agreement with the industrial process refrigeration sector, where some cost-effective options have been identified, could be envisaged (option 2). Option 4 was preferred to option 3 as it offers a more effective solution to avoid illegal use of virgin HCFCs.

Table 8: Adapting the phasing out of the use of HCFCs

POLICY OPTIONS **Bold:** preferred regulatory option *Italics:* preferred non-regulatory option ~~Strikethrough~~: discarded option *option implemented through other EC legislation	**Environmental Impacts 2010-2020 (ODP tonnes)**	**Administrative Costs (€million, NPV 2010)**	**Direct Economic Impacts (€million, NPV 2010)**	**Social and Other Impacts**
1. ~~Expedited phase out from the use of recycled and reclaimed HCFCs~~	0-600	-	++	+(1)
2. Voluntary agreement on phase out strategy with industry	0-400	0	+	0
3. ~~Certification of recycled and reclaimed HCFCs~~	+	++	0	+(1)
4. Use of reclaimed HCFCs only after 2010	0-300	+	+	+(1)
Total impacts related to preferred options	**0-300**	**+**	**+**	+(1)

1. Reduced risk of illegal use of virgin HCFCs

[33] 7 Member States did not reply to date to the survey on recycled/reclaimed HCFCs.

6.3. Options for Strengthening Enforcement of the Regulation

6.3.1. Definition and Drivers of the Problem

Responsibility for enforcement action rests with the Member States, but there are indications that there is much left to do in this area. The provisions for enforcement in the current ODS Regulation are limited. In addition to illegal or harmful trade, there are concerns about ODS emissions within the EU due to levels of leakages from stationary and mobile refrigeration units. Inspections are also needed during waste management operations, as the WEEE and ELV Directives do not require them for ODS. An additional concern is that customs officials find it difficult to identify ODS and to distinguish products and equipment that contain controlled substances from those which do not.

6.3.2. Description of Options

Option 0: No EU action
Option 1: Updating inspections provisions
Option 2: Adapting labelling requirements for ODS produced for feedstock
Option 3: Extending labelling requirements to sales of products and equipment
Option 4: Labelling existing products and equipment during servicing, recycling, and reclaiming.
Option 5: Awareness Raising and Training Programmes

An option to include further specifications on penalties was discarded because of subsidiarity issues and the ongoing inter-institutional debate on ways to tackle environmental crime.

Option 0: No EU action

Under the business as usual scenario, Member States would continue to follow varied approaches to inspections for the enforcement of the Regulation. These differences could provide a window for illegal trade as well as for lax practices where ODS are used.

In addition, current provisions of EC chemicals legislation require producers, importers and exporters to label substances classified as ODS[34]. It is however not required to specify the use for which these substances have been produced or imported, and there is no explicit requirement on labelling of products and equipment containing or relying on ODS. Under the no action scenario, substances produced for certain uses only would continue to circulate freely in the Community with risks of diversion for other uses, and Member States would continue to have difficulties identifying products and equipment containing ODS.

Option 1: Updating inspections provisions

This option would amend Article 20 to highlight the need for risk-based inspection regimes. The scope of this obligation should be explicitly extended to checks on the

[34] Directive 1999/45/EC of the European Parliament and of the Council of 31 May 1999 concerning the approximation of the laws, regulations and administrative provisions of the Member States relating to the classification, packaging and labelling of dangerous preparations.

compliance with all provisions of the Regulation and not only with the import requirements.

Option 2: Adapting labelling requirements for ODS produced for feedstock

Labels would be affixed to containers of ODS produced or imported for feedstock uses, to distinguish them from ODS intended for other uses.

Option 3: Extending labelling requirements to sales of products and equipment

This option would extend the current labelling requirements for ODS to include the placing on the market of new products and equipment containing or relying on ODS, as well as to sales of used products and equipment.

Option 4: Labelling existing products and equipment during servicing, recycling, and reclaiming.

This option would involve affixing labels to fixed equipment (mainly large cooling installations), during servicing and whilst recycling, reclaiming and topping up any losses from leakages.

Option 5: Awareness raising and training programmes

This option would require the Commission and Member States to launch additional awareness raising and training initiatives to strengthen inspections and enforcement. These actions would particularly focus on Member States' customs agents in cooperation with existing platforms such as IMPEL or CLEEN. The preparation and distribution of handbooks to assist in the implementation of the Regulations are envisaged as accompanying measures.

6.3.3. Impact Analysis

Option 1 should not entail significant additional costs, as the current Regulation already obliges Member States to ensure its enforcement. The extension of the scope of the obligation would clarify this general obligation. Shifting to risk-based sampling would only entail a marginal additional cost in terms of designing a new sampling strategy, whilst contributing to a more efficient use of resources. There should be a positive environmental impact in terms of reduction in illegal trade and leakage rates.

The extended labelling requirement reflected in option 2 would increase administrative costs for a limited number of importers and producers of ODS for feedstock uses. However, since ODS are already subject to labelling requirements under the chemicals legislation, the increase would be limited to the costs of designing and distributing new labels. The improved transparency would facilitate the enforcement by the Member States' authorities and would contribute to reduced illegal trade.

The labelling requirement in option 3 would mainly affect used, commercially sold refrigeration and air conditioning equipment containing HCFCs. It would impose direct costs on businesses, in particular producers and distributors of products and equipment containing ODS as well as resellers of used products and equipment. The administrative costs for industry should be low– estimated at €37,000 annually between 2010 and 2014 (or €0.16 million NPV) – , as this market is expected to be restricted when the revised Regulation comes into force (products and equipment sold among individuals, such as used household refrigerators, would not be affected).

However, the environmental benefit would also be limited as quantities involved in terms of ODP would be small.

Option 4 mainly impacts operators of large cooling installations. Servicing operators would incur costs related to the time needed to fill out and affix labels to the equipment they service. The estimated costs are some € 400,000 annually for operators across the EU, decreasing over time, i.e. a NPV of € 0.92 million. All installations would be progressively covered, with decreasing costs in time, and benefits in terms of reduced illegal trade, alerting operators to the need to recover the ODS at end of life.

Option 5 would cost little as information material is already under preparation, which could serve as basis for this initiative. For instance the Nordic Council of Ministers is currently preparing a handbook. A joint workshop in cooperation with IMPEL or CLEEN would cost around € 0.08 million, and would increase knowledge about violations and therefore reduce illegal activities.

6.3.4. Comparison of the Options and Emerging Preferences

Table 9: Options for strengthening enforcement of the regulation

POLICY OPTIONS **Bold:** preferred regulatory option *Italics:* preferred non-regulatory option ~~Strikethrough~~: discarded option *option implemented through other EC legislation	**Environmental Impacts 2010-2020 (ODP tonnes)**	**Administrative Costs (€million, NPV 2010)**	**Direct Economic Impacts (€million, NPV 2010)**	**Social and Other Impacts**
1. Updating inspections provisions	0-150	+	0	+(1)
2. Adapting labelling requirements for ODS for feedstock use	0-90	+	0	+(1)
3. ~~Extending labelling requirements to sales of products and equipments~~	+	0.16	0	+(1) (2)
4. Labelling requirements for existing products and equipment during servicing	0-30	0.92	0	+(1) (2)
5. Awareness raising and training programmes	+	0.08	0	+(1)
Total impacts related to preferred options	**0-270**	**0.92**	**0**	**+(1) (2)**

1. Reduced risk of illegal trade/use

2. Increased consumer choice

From the analysis, the preferred regulatory options would be options 1, 2 and 4. Options 1 would provide benefits in terms of better enforcement at little or no additional cost, whereas option 2 would help to keep track of ODS produced for feedstock, reducing the risk of diversion for other uses at a small additional cost. Option 4 would be the most effective labelling option to reduce illegal trade, inform consumers and facilitate the recovery of ODS. In contrast, option 3 would provide

little benefit while creating some costs. Option 5 would also provide additional benefit and would be implemented outside the regulation.

6.4. Options for Avoiding Illegal Imports and Closing Remaining Loopholes

6.4.1. Problem definition and Drivers

Article 4(6) allows the importation and placing on the market of products and equipment containing all ODS except HCFCs and MB manufactured before the entry into force of the Regulation. Article 5(4) allows the importation and placing on the market of products and equipment containing HCFCs manufactured before the date of entry into force of the specific use restriction. These provisions are transitional clauses to reduce economic disruption. The last use ban for commercial products and equipment containing CFCs took effect in 2005, whilst the last ban for military equipment using CFC will take effect in 2009. For HCFCs, the last use ban will enter into force on 31 December 2008. Thus, by 2010 such transitional clauses should no longer be necessary.

Nonetheless, Articles 4(6) and 5(4) contain a loophole: they refer to products and equipment containing ODS, but not to those relying on ODS. In at least one new Member State, second-hand refrigerators and air-conditioners relying on HCFCs have been imported without their HCFCs with the intention of being refilled and sold in the EC, thus passing through the loophole.

Lack of control of trans-shipment has been identified by the Parties of the Montreal Protocol as a potential source of illegal trade (Decision XIX/12).

6.4.2. Description of Options

Option 0: no EU action
Option 1: Ending the import of products and equipments relying on ODS
Option 2: Ending the import of products and equipments containing or relying on ODS manufactured before the specific use ban date
Option 3: Extending licensing to entry under customs procedures or for customs-approved treatments

Option 0: No EU action

The legislation would remain unclear and the opportunity for import of used products and equipment relying on ODS manufactured before the Regulation's entry into force would remain. It is assumed that up to 45 000 refrigerators and freezers would be imported annually from 2010 to 2014, in particular into the new Member States. The loophole allowing import of products and equipment relying on ODS for refilling in the EC would not be addressed.

Option 1: Ending the import of products and equipments relying on ODS

This option would extend the ban in articles 4(6) and 5(4) on import of products and equipments containing ODS to products and equipments relying on ODS.

Option 2: Ending the import of products and equipments containing or relying on ODS manufactured before the specific use ban date

This option concerns all ODS and would remove the placing on the market ban exemption for products and equipments manufactured before each relevant use ban. Placing on the market is interpreted as *first* placing on the market in the ODS

Regulation, and this option would therefore only affect imports of products and equipments. Second hand markets within the EU for products and equipments already on the EU market before 2010 would still be allowed. In parallel, exemptions would be provided for specific cases deemed to be too costly. Article 5(7) currently provides an exemption for the placing on the market of HCFCs when no alternatives are available. Enlarging it to products and equipments would enable such exemptions by a Comitology decision.

Option 3: Extending licensing to entry under customs procedures or for customs-approved treatments

Licensing currently only covers entry of goods into the customs territory for release for free circulation in the Community. This option would extend licensing requirements to entry under other customs procedures or for customs-approved treatments and uses, to better align the Regulation with the customs code. ODS placed under temporary storage, including transhipment in Community ports and airports as well as transit through the Community under customs supervision, would not be subject to licensing at this stage, but a legal basis would be established for the Commission to gather evidence and consider measures for further control.

6.4.3. Impact Analysis

Option 1 would have very minor economic impacts, as there have been few requests for imports of products and equipments relying on ODS. Environmental impacts would equally be small. The option is, however, necessary to clarify the Regulation and to close an unintended loophole.

Option 2: The economic impacts for CFCs would again be minimal as refrigerators and freezers containing CFCs imported under this provision would have been manufactured before 2000 and so not have significant market value. In addition, ending the imports would remove a provision that has proved extremely difficult to enforce, as there is no manufacture date on used products. Environmental benefits would be small in quantitative terms, but would avoid a continued build-up of CFC banks, particularly in the EU-12 countries.

The main economic impact for HCFCs would be on current importers of used refrigerators and users, who would incur an annual loss estimated at €0.22 million. On the other hand, this option would increase EU sales of non-ODS containing refrigerators and freezers (a net annual benefit estimated at €0.85 million). As a first estimate, it is assumed that – due to higher prices – new sales replace only half of the imports of HCFC-containing refrigerators and freezers. Even so, there would be a net economic benefit to EC operators of €2.78 million (NPV at 2010). The option would also provide greater legal clarity for enforcement against possible illegal imports of products and equipment and thus could reduce administrative costs for enforcement on the part of the Member States.

There may be rare cases where, to avoid disproportionate costs from bans on imports of long-life and high-value products and equipment, such as ships and aircraft, exemptions could be provided.

Concerning environmental impacts, this option would reduce HCFC consumption in the EC by 1.5 ODP tonnes over the period 2010-2015. Importantly, it would limit the growth of HCFC banks in the EU. On a global basis, however, little environmental benefit is expected, as used products and equipment would remain in third countries.

Under **Option 3**, additional control on entry into the customs territory would make the tracking of illegal shipments possible and would therefore reduce the risk of illegal trade. No data are available on the volumes concerned, but additional administrative costs for customs authorities are not expected to be disproportional. Licensing would at this stage not apply to transhipment or transit through the Community under customs supervision to avoid increasing the burden on operators and customs authorities, pending a separate evaluation of the benefits and costs of such a measure.

6.4.4. Comparison of the Options and Emerging Preferences

Table 10: Options for avoiding illegal imports and closing remaining loopholes

POLICY OPTIONS **Bold:** preferred regulatory option *Italics:* preferred non-regulatory option ~~Strikethrough~~: discarded option *option implemented through other EC legislation	**Environmental Impacts 2010-2020 (ODP tonnes)**	**Administrative Costs (€million, NPV 2010)**	**Direct Economic Impacts (€million, NPV 2010)**	**Social and Other Impacts**
1. Ending the import of products and equipments relying on ODS	0-5	-	+	0
2. Ending the import of products and equipments containing or relying on ODS manufactured before the specific use ban date	0-140	-	-2.78	+(1)(2)
3. Extending licensing to entry under customs procedures or for customs-approved treatments	+	+	0	+(1)
Total impacts related to preferred options	**0-145**	**--**	**-2.78**	**+(1)(2)**

1 Reduced risk of illegal trade

2. Possible job increase in the destruction sector

The three options are not mutually exclusive, and it is recommended that all are adopted. Option 1 would have minimal impacts, but is necessary to close an existing loophole in the Regulation. Option 2 is necessary to avoid the further build-up of ODS banks in the EU, and would give a boost to the EU market for non-ODS refrigerators, resulting in an overall economic benefit. A possibility to grant exemptions would be provided to avoid disproportionate costs in exceptional circumstances. Option 3 strengthens imports control measures to address potential threats of illegal trade.

6.5. Options for Avoiding Exports Harming the Phase Out in Destination Countries

6.5.1. Problem definition and Drivers

Several Member States, several parties to the Protocol and environmental NGOs have called for stronger international control of transboundary movement of ODS and ODS-containing products and equipment, to reduce illegal trade. Although the EU, as an exporter, can play a key role, the Commission does not at present have a

strong legal basis to reject any export authorisation request. With the various phase-outs already underway, there will be increasing incentives for illegal trade. The reviewed options aim to improve the control of transboundary movements of ODS and to bring the exports from the EU into closer compliance with Decision XIX/12 and with other Decisions of the Parties in this regard.

6.5.2. Description of Options

Option 0:	No EU action
Option 1:	Preventing the issuing of export authorisations for unwanted ODS
Option 2:	Establishing an export notification procedure for all ODS
Option 3:	Extending the ban on ODS exports to MB and HCFCs for destruction
Option 4:	Introducing export licensing per shipment
Option 5:	Extending the ban on exports of products and equipment to HCFCs and MB and licensing remaining products and equipment

Option 0: No EU action

By 2010, a number of export categories will have disappeared. Decreases in licence applications are observed in most export categories, with the exception of IPR and halons. Taking this into account, the export authorisation regime will become less demanding to administer, and the projected baseline administrative costs are 15.25 work months per year (compared to an estimated 30.3 in 2006).

Under business as usual, used products and equipment will also continue to be exported to developing and transitional countries, and the contained ODS might be released where those countries do not have facilities for their proper recovery.

Option 1: Preventing the issuing of export authorisations for unwanted ODS

This option would provide the legal basis for the Commission to refuse an export license, if it had received information from other Parties to the Montreal Protocol which indicated the potential for illegal trade or adverse consequences for ODS control measures in the importing country.

Option 2: Establishing an export notification procedure for all ODS

The Prior Informed Consent (PIC) Regulation, which implements the Rotterdam Convention on the PIC Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, already covers two ODS (CTC and TCA). This option would expand this to include all ODS.

Option 3: Extending the ban on ODS exports for destruction to MB and HCFCs

The export for destruction of all ODS is banned, except for MB and HCFCs. Exports of the latter substances are indeed authorized for all uses, including for destruction. A generalization of the export ban for all substances would end this loophole.

Option 4: Introducing export licensing per shipment

As the Regulation does not specify the type of licence required, this is not a regulatory option. Currently, individual licences are required for each shipment of halons, ODS for basic domestic needs, inward processing regime (IPR), and essential use exports. This option would extend the licensing requirement for other exports for which currently bulk licences are issued: ODS for feedstock uses, for process agent uses, all exports for MB and HCFCs except for IPR.

Option 5: Extending the ban on exports of products and equipment to HCFCs and MB and licensing remaining products and equipments

The export of products and equipment containing or relying on ODS other than MB and HCFCs, with the exception of some items such as personal effects, is currently prohibited. This option involves extending the ban to MB and HCFCs.

Licensing is only currently required for substances. This option would extend the requirement to remaining products and equipment that contain or rely upon ODS.

6.5.3. Impact Analysis

Option 1: Under the Montreal Protocol there are currently several schemes based on information exchange, which have been recognised as a useful tool to prevent illegal trade (e.g. Decision XIX/12, introduced by the EC). Establishing a legal basis for the refusal of licensing requests would enable the European Community to participate in those schemes more effectively. The economic impact would be negligible, as in the few cases that have occurred in the past, companies agreed voluntarily to withdraw their requests.

Option 2: Expanding the PIC regulation to all ODS could potentially lead to a simplified notification system for the Commission. The additional information on substances and hazards provided by the PIC procedures could be useful in the monitoring and enforcement of transboundary movements of ODS. However, this would require action at the level of the Rotterdam convention, i.e. outside the scope of this review, with likely high administrative costs. Furthermore, the licensing requirements of the Rotterdam Convention and the Montreal Protocol do not match, e.g. the PIC system does not differentiate between uses. A previous test to merge PIC export notifications with the ODS database showed that it would not deliver the expected benefits.

Option 3: There are currently no exports of MB for destruction. No data are available on HCFC exports for destruction as the ODS database does not allow this distinction. It is however unlikely to be significant as HCFCs (as all ODS) are covered by the Basel convention, which would imply high export costs. Exports of other ODS for destruction are currently prohibited. The ban on exports of HCFCs for destruction would therefore clarify and strengthen the EU position on exports of waste, with no expected significant economic impact. The environmental impact would be positive as destruction facilities outside Europe are unlikely to be of the same standards, with an increased risk of release in the atmosphere.

Option 4: Moving to licensing per shipment for all exports would have significant benefits in terms of improved control over exports, and in harmonizing the regulatory requirements placed on all exporters, and would facilitate the exchange of information between Parties. The administrative costs of expanding the current system are estimated to increase by around 0.6 man-months per annum for the Commission and 2 man-months for industry, representing an overall cost of €0.17 million (NPV at 2010). This would, however, be offset by a simplification of the licensing system (with only one type of licence), and the possibility of reducing the requirements for reporting by companies and users (see the option on streamlining of reporting). There may also be a case for exempting the maritime service sector from a requirement to apply for a licence of each shipment, if it is demonstrated that it is disproportionately hit by this measure.

Option 5: The use of HCFCs in the manufacture of products for export will be banned as from 1 January 2010. Hence exports of equipment containing HCFCs will be limited to used equipment. It is expected that, for the bulk of the equipment, HCFCs would be recovered and reclaimed. However, there is a risk that significant quantities of used HCFC equipment, which can no longer be refilled in the EU, would be exported to developing countries. While it has not been possible to evaluate the economic impact in terms of foregone benefits of banning such exports, it would be clearly undesirable that a market develops which would result in the build-up of HCFC banks in countries where destruction facilities might not available, thereby causing a negative environmental impact. Such trade would be seen as harmful in the context of the Montreal Protocol. Economic impacts might however be high for some long-lived products and equipment. To avoid excessive costs, an exemption for aircraft and ships should be considered. Exemptions could also be granted for products and equipments intended for analytical purposes.

There are no known products or equipment relying on MB, and extending the ban to that substance would mainly be for completeness and clarification.

In terms of economic impacts, licensing remaining products and equipments would require minor additional administrative and enforcement effort and result in associated costs for the Commission and Member States. However, in the long term, a better system of information sharing, as well as a clearer procedure, should reduce enforcement costs for Member States. There would also be minor administrative costs for EC exporting businesses. Only a few sectors are expected to continue such exports after 2010, including civil aircraft and military equipment containing halons, currently subject to an export authorisation (Article 12(4)).

In terms of environmental impacts, this provision would strengthen provisions against illegal trade, by enabling customs to distinguish between legal and illegal trade (all new equipment).

6.5.4. Comparison of the Options and Emerging Preferences

Table 11: Options for avoiding exports harming the phase out in destination countries

POLICY OPTIONS **Bold:** preferred regulatory option *Italics:* preferred non-regulatory option ~~Strikethrough~~: discarded option *option implemented through other EC legislation	**Environmental Impacts 2010-2020 (ODP tonnes)**	**Administrative Costs (€million, NPV 2010)**	**Direct Economic Impacts (€million, NPV 2010)**	**Social and Other Impacts (Million Jobs)**
1. Preventing the issuing of export licenses for unwanted ODS	0-5	+	0	+[1]
2. ~~Establishing an export notification procedure for all ODS~~	0-10	++	0	+[1]
3. Extending the ban on ODS exports to MB and HCFCs for destruction	+	0	-	+[1,3]
4. Introducing export licensing per shipment	0-130	0.17	0	+[1]

5. Extending the ban on exports of products and equipment to HCFCs and MB and licensing remaining products and equipment	0-95	+	+	+[1,2]
Total impacts related to preferred options	**0-100**	**+**	**0**	**+[1,2]**

1. Reduction in illegal/harmful trade

2. Reduced ODS banks in developing countries

3. Possible job increase

Option 2 was discarded as it is likely to impose high administrative costs with comparably low benefits. Options 1 and 3 are recommended as low cost options which would strengthen the EU ability to control illegal and harmful trade. Non-regulatory option 4 is likely to be the most effective for improving control over exports. It would entail an administrative cost, but would also lead to savings in terms of reduced reporting requirements on exports for companies.

As illegal trade is currently one of the main challenges for enforcing the Montreal Protocol, option 5 is recommended, with exemptions limited to ships and aircraft where necessary to avoid excessive economic costs, and licensing for controlling the remaining exports under these exemptions.

7. ENSURING FUTURE CHALLENGES ARE BEING ADDRESSED

7.1. Avoiding Emissions of ODS "Banked" in Products and Equipment

7.1.1. Definition and Drivers of the Problem

By 2010, ODS "banked" or contained in products and equipment within the EU could amount to 700 000 ODP-tonnes.[35] Assuming an overall leakage rate of 3.5 % (derived from the 2005 TEAP reports), EU ODS emissions from such banks could potentially range around 24 000 ODP tonnes p.a. for the period until 2015 (or 170 million tonnes of $CO2_{eq}$ p.a.).[36]

In principle, most emissions from banks could be avoided based on existing provisions in the EU Waste Framework Directive (WFD)[37], the Waste from Electric and Electronic Equipment ("WEEE") Directive[38], the Directive on the landfill of waste[39], related Member States' national waste legislation as well as provisions contained in the Regulation (Articles 16 and 17). Recent assessments of waste management policies in the EU, however, point at generally weak recycling rates, below 30%, for products and equipment.

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35 Experts acknowledge that these estimates contain a relatively large degree of uncertainty.

36 These estimates were derived by extrapolating from best available global estimates contained in a 2005 TEAP report and according to which global banks amounted to 3.5 million ODP tonnes (20 billion tonnes CO2eq) in 2002 whilst the projected amounts for 2015 would be reduced to 2 million ODP tonnes (13.4 billion tonnes of CO2eq).

37 Directive 2006/12/EC of the European Parliament and of the Council of 5 April 2006 on waste, OJ L 114, 27.4.2006, p 9.

38 Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003 on waste from electrical and electronic equipment (WEEE), OJ L 37, 13.2.2003, p. 24. Directive as amended by Directive 2003/108/EC (OJ L 345, 31.12.2003, p. 106).

39 Council Directive 1999/31/EC on the landfill of waste

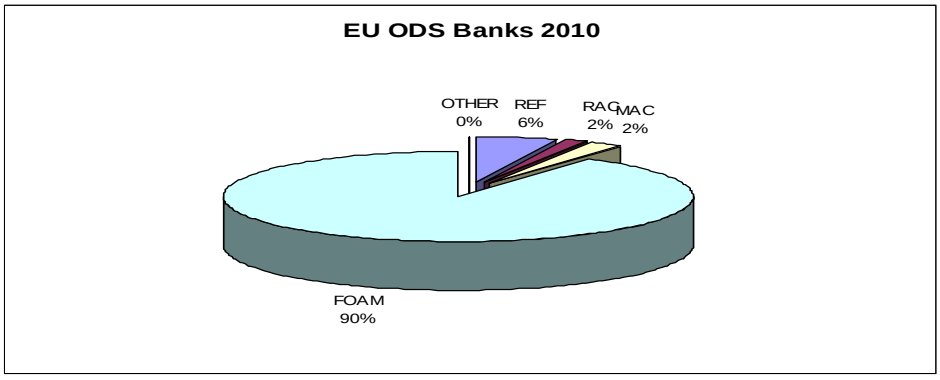
Considering these low recycling rates, annual emission from ODS banks would amount to approximately 17 000 ODP-tonnes (122.5 million tonnes of $CO2_{eq}$ p.a.).

With projected annual emissions from ODS banks of 17 000 - 24 000 ODP-tonnes, in comparison to emissions from post-2010 controlled uses of ODS of approximately 1.000 ODP tonnes, improving recovery of banked ODS is a key issue to address within the EU. Overall emissions during the period 2010-2020 are expected to be around 200 000 ODP-tonnes.

Figure 4 shows that, in 2010, 90% of banked ODS will be in CFC- and HCFC-blown foams, with the remainder being mainly CFCs in refrigeration and air conditioning systems, including mobile air containing systems.

Whilst Austria and Sweden commissioned studies on the amounts of ODS in building foams,[40] no clear action to recover ODS from building wastes is expected in the immediate future. There exists no EU legislation specifically targeting ODS in building and demolition waste streams. In Member States, the level of recycling and re-use of building waste varies greatly (between 5% and 90%).[41] Furthermore, current practice in managing building and demolition waste recovery is not appropriate for addressing ODS contained in (insulation) foams. After some basic on-site separation (bricks and concrete) building and demolition waste is transported in bulk to the waste treatment plants where it is sorted through sieving machines. ODS are emitted from the foams when they are damaged during collection, sorting and shredding processes. Existing provisions should therefore be strengthened, or new measures developed, to ensure that insulation foams are separated from building waste at an early stage and delivered, with minimum damage, to appropriate waste management sites for subsequent ODS recovery, recycling, reclamation, or destruction.

Figure 4: Banked ODS by substance



Other banks of ODS are, to a large extent, covered by the WEEE Directive which establishes producer responsibility for the collection and recovery at end of product life. However, a recent study for the review of the WEEE Directive suggests that, for the EU27 in 2005, only 27% of refrigerators and freezers were collected at their end-

40 Richard Obernosterer, Roman Smutny and Erika Jäger, *Nachhaltige FCKW – Bewirtschaftung Österreich***,** Final report to Österreichisches Bundesministeriums für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft (BMLFUW), June 2005; Peter Norderg, EcoManagement, *Kartläggning av kvarvarande områden med ozonnedbrytande ämnen och uppföljning*, 2002.

41 Report on Data gathering and impact assessment for a review and possible widening of the scope of the IPPC Directive in relation to waste treatment activities) –Factsheet E3 – Sorting of construction and demolition waste, VITO and BIO, with IEEP and IVM, 2007

of-life.[42] Where "best practice" is implemented, about 90% of the ODS is recovered from the fridges and freezers and sent to recycling plants but, according to estimates by RAL, an organisation that establishes standards for refrigerator recovery, only a few Member States reach those standards.[43]

Finally, the analysis undertaken in the context of this review revealed that costs associated with the recovery, recycling, reclamation, and destruction vary significantly (ranging between 4.5 and 100 €/kg ODS) depending on the recycling levels achieved.

7.1.2. Description of Options

The considered options aim to mitigate emissions from ODS Banks. Whilst some options relate to the Regulation, it is clear from the analysis that action should also be taken to improve the implementation and enforcement of other EU waste legislation[44].

Option 0: No EU action
Option 1: Adapting the ODS Recovery Provisions in the Regulation
Option 2: Strengthening Policies on Building and Demolition Waste
Option 3: Strengthening the WEEE Directive
Option 4: Developing Incentive Mechanisms for Promoting the Implementation of Waste Legislation.

Option 0: No EU action

ODS "banked" in products and equipment would be gradually emitted to the atmosphere, at an average estimated rate of about 17 000 ODP-tonnes per year (equal to 122.5 million tonnes of $CO2_{eq}$ p.a.).

Option 1: Adapting the ODS Recovery Provisions in the Regulation

This option would “fine tune” the Regulation, notably through the following changes to Articles 16 and 17 on recovery of used controlled substances and leakage:

(1) For the purpose of clarifying the Regulation and streamlining with relevant provisions in other chemical and waste legislation, a revised Article 16 will include a cross-reference to the relevant chemical and waste legislation.[45] For

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42 United Nations University *et al, 2008 Review of Directive 2002/96 on Waste Electrical and Electronic Equipment (WEEE)*, 5 August 2007, p. iv and elsewhere. The study used a top-down approach to estimate the share of refrigerators and freezers based on the level of overall WEEE waste collection.

43 Although Member States report ODS recovery data annually to the Commission, detailed data are not available, as reported data do not refer to the specific sources of the ODS recovery.

44 For the purpose of the review of the Regulation, the development of options for avoiding emissions from banks focuses on domestic EU options. It is acknowledged that international action is equally important. The issue of banks already featured during Parties’ dialogue on the future of the Protocol. The European Commission and Member States will actively contribute to developing suitable international solutions in this context and, where relevant, also in the context of the UNFCCC/KP. Some international policy options that are emerging in the context of the Montreal Protocol, include establishing a dedicated seed capital window under the Multi-Lateral Fund or using flexible off-set mechanisms to fund ODS recovery and destruction projects in developing countries.

45 Possible acts for cross-referencing include Commission Decision 2000/532/EC establishing a list of waste following Council Directive (91/689/EEC) on hazardous waste, or Council Directive 1999/31/EC on the landfill of waste.

the purpose of raising awareness on available technologies for destroying ODS, a revised Article 16 will be complemented by an Annex listing the technologies approved by the Parties to the Protocol.

(2) To gradually strengthen the provisions in line with technological progress, a legal basis will be introduced for listing products, installations, and equipment for which the recovery of ODS is considered "practicable", i.e. technically and economically feasible.

(3) For the purpose of increasing synergies across EU legislation, a legal basis should be created to align requirements for personnel qualifications for leak-checking and handling of substances under the Regulation to similar requirements in other EU legislation (e.g. Regulation (EC) No 842/2006 on certain fluorinated gases).

Option 2: Strengthening Policies on Building and Demolition Waste

From the problem analysis, it clearly emerges that solutions to the problem of banks are to be found in the waste policy area, notably through improving the implementation of recycling and recovery of ODS in the construction and demolition waste stream.

Whilst pursuing such policy options falls outside the scope of the present review, some actions taken outside the EU can offer guidance for increasing the recovery of ODS from foams. For example, Norway amended its legislation on recovery and treatment of waste, now requiring producers of waste from the demolition of large building sites to prepare plans for the adequate separation and treatment of waste components such as insulation foams containing ODS.[46] These plans are expected to include the destruction of ODS in such foams[47]. The issue has also been studied in Japan. This has lead to provisions for promoting voluntary actions under the Japanese Construction Material Recycling Law.[48]

Option 3: Strengthening the WEEE Directive

Whilst the nature of the banks clearly points towards the need for urgent action related to ODS-blown foams, there is also a need to improve the recovery of ODS contained in electric equipment such as fridges and freezers. This could be achieved by strengthening the provisions contained in the WEEE directive, notably by inserting a standard in the form of a minimum recovery rate for ODS contained in waste products and equipment and by enlarging the scope of WEEE to include larger installations, such as commercial refrigeration and air conditioning systems.

Option 4: Developing incentive mechanisms for promoting the implementation of the waste legislation.

The low recycling rates of waste in general and ODS in particular may be partly explained by the costs involved in meeting the stated policy objectives. The high variation in costs mentioned in section 7.1.1 points towards the need to consider using incentive mechanisms for improving the implementation of waste management policies. Examples that merit further study include making destruction facilities

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46 Outline of Chapter 15 of the Norwegian Regulation on Recovery and Treatment of Waste ("Waste Regulation" – "Avfallsforskriften").

47 Sophia Mylona, Norwegian Pollution Control Authority: personal communication, November 2007

48 TEAP, Report of the Rigid and Flexible Foams Technical Options Committee, 2006.

eligible for financial support from the regional funds, and developing offset systems for the quantities of ODS recovered and destroyed. Despite the high GWP of the ODS involved, emissions of these substances are not covered by the Kyoto Protocol. Therefore the EU Emission Trading Scheme cannot readily offer a solution. Nevertheless, emissions trading schemes and other incentive mechanisms could be useful to promote the most cost-effective projects by compensating for high implementation costs.

7.1.3. Impact Analysis

Option 1 is not expected to generate significant environmental benefits, unless a listing of products, installations, and equipment for which the recovery of ODS is considered "practicable" is introduced. If such a listing was introduced, it is estimated that up to 14 000 ODP tonnes could be recovered (10% of the expected emissions from foams over the period considered). In any case it will contribute to overall awareness on the scale of the ODS bank problem. In addition, this option is likely to ensure a more uniform application of destruction technologies across Member States. The process of updating the list of approved technologies through Comitology will incur some limited administrative costs. Benefits will also accrue should personnel qualified to handle other related hazardous materials be allowed also to handle ODS under the Regulation.

Impacts related to options 2 and 3 are not included in the present impact assessment as these options will have to be pursued separately. However, some estimates are available on the total costs related to bringing actual levels of recovered and destroyed ODS in line with current objectives and provisions in the waste legislation. Costs of better handling of waste ODS-blown foams may range around € 2 billion.[49]

Impacts related to the use of market-based incentive mechanisms as suggested in option 4 are not fully developed at present. Based on the experience with the EU ETS, and also considering the large variability in costs for the various products (ranging from €4.5 for simple destruction to €100 per ODP kg for recovery and destruction of ODS contained in insulation foams), it is clear that market-based incentive mechanisms may offer significant reductions in the cost of complying with present or strengthened waste treatment standards. Hence options for developing such systems, both at the national and EU level, should be further explored as a follow-up to the present review.

7.1.4. Comparison of the Options and Emerging Preferences

The preference is to pursue the amendment to the Regulation in option 1, with parallel follow-up actions mainly in the areas of waste management and associated incentive mechanisms. The latter actions are outside the scope of the present review exercise. The amendment to the regulation alone could bring benefits of up to 14 000 ODP tonnes, or 112 million tonnes of CO_{2eq}.

Table 12: Avoiding Emissions of ODS "Banked" in Products and Equipment

[49] http://ec.europa.eu/environment/ozone/review.htm

POLICY OPTIONS **Bold:** preferred regulatory option *Italics:* preferred non-regulatory option ~~Strikethrough~~: discarded option *option implemented through other EC legislation	**Environmental Impacts 2010-2020 (ODP tonnes)**	**Administrative Costs (€million, NPV 2010)**	**Direct Economic Impacts (€million, NPV 2010)**	**Social and Other Impacts**
1. Adapting ODS recovery provisions in the Regulation	0-14000	+	0	0(1)
2. Strengthening policies on building and demolition waste*****	0-7000	+	+	0
3. Strengthening the WEEE directive*****	0-27000	+	0	0(1)
4. Use of incentive mechanisms to promote implementation of waste legislation*****	0-46000	0	+	+(1)
Total impacts related to preferred options	**0-14000**	**+**	**+**	+(1)

1. Significant additional climate change benefits

7.2. Avoiding the Marketing of New and Short-lived ODS

7.2.1. Definition and Drivers of the Problem

A number of ODS are currently not controlled by the Montreal Protocol. There are two categories: (a) substances with a known, significant, ODP which have remained uncontrolled because of small production volumes, and (b) substances with an uncertain, but low, ODP (because of their short atmospheric lifetimes) and uncertain production levels. The substances are being, or could be, marketed as alternatives to controlled ODS and, without appropriate measures, production levels may increase to the level at which further substantial harm to the ozone layer could result.

The current text of the Regulation permits controls to be introduced for any new substance identified by the Scientific Assessment Panel as having significant ODP, and refers to Annex II for this list. However, this annex was deleted in 2003[50]. Simple re-instatement of the Annex II would allow controls to be implemented for these substances but would not address any rise in the production and use of short-lived substances with a low ODP.

The second issue is which specific substances should be included. In their responses to the questionnaire, Member States proposed four new ODS for inclusion under the Regulation. One is a halon with a significant ODP. The three others are short-lived in the atmosphere and have low ozone depleting potentials. Concern would arise only if these substances came to be produced in large quantities.

7.2.2. Description of Options

Option 0: No EU action
Option 1: Monitoring of new short-lived ODS with low ODP and prohibition of new ODS with a significant ODP

[50] Regulation (EC) No. 1804/2003 deleted Annex II and moved the sole ODS there listed, bromochloromethane, to Annex I (as Group IX), stating in its recital (9) that the Annex "does not provide the same level of control" for this ODS as for others.

Option 2: Non regulatory measure: establishing links with REACH

Option 0: No EU action

Without any restriction the market for new and short-lived ODS would rise to its full potential value. The projected total unrestricted production of the three short-lived new substances for the period 2010 to 2020, is 20 600 tonnes[51], with a global market value of €17 billion (2010 NPV) and an EU market value of €3.7 billion. A scenario with a significant impact could potentially reduce the production to 16 400 tonnes, with a decrease of the market value to €3 billion.

Option 1: Monitoring new ODS and prohibition of ODS with a significant ODP

This option involves re-establishing the former Annex II, with two parts:

(1) Part A would include new ODS that have been identified by the Scientific Assessment Panel as having a "significant ozone-depleting potential". The production, release for free circulation in the Community, inward processing and placing on the market or use of these substances would be prohibited (as per the current Article 22 for Annex II).

(2) Part B would include substances which have been identified under REACH notification and registration processes as having a non-zero ODP. Producers and importers of substances listed in Part B would be required to report each year on the quantities produced, imported, exported and destroyed.

Listing of substances in either part of the new Annex II would be subject to Comitology. In this review, one new ODS (dibromodifluoromethane - or halon 1202) would be included in Annex II.A and three new ODS would be included in Annex II.B: n-propyl bromide; ethyl bromide; and trifluoroiodomethane (trifluoromethyl iodide or CF_3I).

Option 2: Establishing links with REACH (Non regulatory measure)

This option would require an appropriate level of information exchange to ensure consistency between REACH and the ODS Regulation and an efficient use of the data generated under the REACH authorisation process.

7.2.3. Impact Analysis

Option 1 would generate an environmental benefit by reducing the risk of further depletion of the ozone layer, by banning the production of one new substance of significant ODP, and by allowing the monitoring of production of three other new short-lived substances to inform the taking of further measures at a later date if that proves to be necessary. Option 2 would facilitate the identification of any new substances with a non-zero ODP.

Option 1, including halon 1202 in Annex II.A, would have no economic impact as there is no known production or use in the EU. On Annex II.B, the key question is whether the listing of a substance would influence its market potential. As Directive 67/548/EEC already requires any substance with an ODP to be labelled as a dangerous substance, this additional listing is considered not likely to have a significant impact. Any impact on the market potential would, in any case, not be a dead-weight loss, as alternatives would be developed to replace these substances.

[51] Estimated assuming an ODP of 0.01

Administrative costs related to the new reporting requirements are estimated to be € 0.05 million for industry, and € 0.03 million for the Commission. Additional subsequent studies may be required to monitor new ODS contained in imported products and equipment. Option 2 would cause negligible administrative costs.

No significant social impact was identified.

7.2.4. Comparison of the Options and Emerging Preferences

Table 14: Avoiding the Marketing of New and Short-lived ODS

POLICY OPTIONS **Bold:** preferred regulatory option *Italics:* preferred non-regulatory option ~~Strikethrough~~: discarded option *option implemented through other EC legislation	**Environmental Impacts 2010-2020 (ODP tonnes)**	**Administrative Costs (€million, NPV 2010)**	**Direct Economic Impacts (€million) (NPV 2010)**	**Social and Other Impacts**
Re-establish former Annex II, part A and B	+	0.12	+	0
Establishing links with REACH	+	+	0	0
Total impacts related to preferred options	**+**	**0.12**	**+**	**0**

Both options appear beneficial compared to business as usual, and are not mutually exclusive. Option 1, in particular, provides environmental benefits in terms of reduced risks of ozone depletion, without a significant economic impact on industry.

7.3. Avoiding Using Methyl Bromide (MB) for Quarantine and Pre-shipment purposes

7.3.1. Definition and of Drivers of the Problem

Though the placing on the market and use of MB for controlled uses in the EC have been phased out, quarantine and pre-shipment (QPS) applications of this ODS are still allowed under the Regulation. QPS applications are mainly for phytosanitary purposes, to prevent the spread of plant diseases and pests through exports of plants and plant products. Such phytosanitary treatments are governed by the International Plant Protection Convention (IPPC).

Several decisions of the Parties under the Montreal Protocol and a Recommendation under the IPPC call for reducing QPS use of MB. Alternatives exist for many types of QPS treatments: in a 2004 survey, Parties to the Montreal Protocol reported widespread availability of alternatives. However, the same study noted that "cost, location of facilities, and lack of acceptance by trading partners are impediments to their implementation".

Specific concerns regarding the use of MB for QPS in the EC include its misuse when QPS conditions are met, and the continuation of emissive uses even though both a Decision of the Parties and the current ODS Regulation call for minimising emissions of MB during QPS treatments.

MB is currently under review under the Plant Protection Products Directive (PPPD). It is highly likely that a decision for not including it in the list of authorised pesticides will be taken by the end of 2008. If this is the case, all phytosanitary applications of MB, including QPS, will have ended by the beginning of 2010.

Description of Options

Option 0: No EU action
Option 1: End QPS uses of MB in 2010
Option 2: Require mandatory recapture and recovery during 2010-2020
Option 3: Require mandatory recapture up to 2015, and phase out thereafter
Option 4: Cap QPS use at the Effective level
Option 5: Awareness raising and action at international level

Option 0: No EU action

Under the baseline scenario, it is assumed that the use of MB for QPS, which has been relatively stable from 2004 to 2006, remains at the current level, around 220 ODP tonnes per year. If MB is de-registered under PPPD, the base line is 0 use of MB for QPS, and not of the options considered would have an impact.

Option 1: End QPS uses of MB by 2010

This option would ban the use of MB for QPS uses when the new regulation enters into force, leaving heat treatment as the only method meeting the international standard under the International Plant Protection Convention.

Option 2: Require Mandatory Recapture and Recovery from 2010 to 2020

The Regulation specifies that all precautionary measures practicable shall be taken to prevent and minimise leakages of MB. Recapture and recovery of MB is however not widely implemented in the EU, which could therefore be made mandatory.

Option 3: Require mandatory recapture up to 2015, and phase out thereafter

This option would phase out the use of MB for QPS in 2015, and require mandatory recapture and recovery when MB is used up to 2015.

Option 4: Cap QPS use at the Effective level

While the overall cap for QPS use of MB in Annex III is currently set to 607 ODP tonnes, Article 4(2)(iii) sets limits on individual imports which resulted in an effective cap of 515 ODP tonnes in 2006. This option would set the cap in Annex III of the ODS Regulation to this lower effective cap.

Option 5: Awareness raising and action at international level

This option comprises two non-legislative measures:

(1) Developing guidelines for best practice based on a Commission study of current QPS uses of MB within the Community. The study should review the situation in third countries for the purpose of establishing a clear list of situations where MB is required. The resulting guidelines could ultimately help specifying a limited list of permitted QPS situations in which MB can be used and for reviewing the cap contained in the regulation.

(2) Support efforts underway, both under the Montreal Protocol and the IPPC, to reduce QPS uses of MB. This support could be provided both through international negotiations and by supporting international studies, standards and guidelines on the topic.

7.3.2. Impact Analysis

Option 1: During the consultation, three Member States proposed an end to QPS uses, arguing that alternatives existed, and two other Member States underlined that they had phased out the use of MB. If MB is de-registered under the Plant Protection Products Directive (PPPD), all QPS uses would end. The TEAP's Methyl Bromide Technical Options Committee has identified many alternative treatments for various perishable and durable commodities. The most important use of MB is for the treatment of wood packaging, for which the international standard under the IPPC (ISPM 15) specifies only two types of treatment: MB and heat treatment. For the assessment, heat treatment of containers is therefore considered as the sole alternative.

Estimates of the costs of heat treatment for QPS range from approximately €75 to €150 per container, which should be compared to an average cost of €105 per container for treatment with MB. Assuming an average quantity of MB used per container of 3 kg, an average cost of €110 per container, and the continuation of the current use of 220 ODP tonnes, the additional cost of heat treatment instead of MB would be €7.4 million (NPV at 2010), for a net amount of MB saved over that ten year period of 2200 tonnes.

However, in their comments on the preliminary study for this Impact Assessment, the European Methyl Bromide Association stated that some of the shipments that arrived in ports directly on untreated pallets could not be effectively heat-treated, MB being then the only solution. If this is the case, the overall cost of this option could be significantly higher.

Option 2: Belgium specifically requires the recovery of MB from all QPS applications. Based on this experience, costs of an EC-wide mandatory requirement for recapture and recovery can be estimated. In Belgium, the costs for MB treatment vary from winter (when the substance needs to be heated before application) to summer. Treatment methods with recapture are competitive with winter prices, though significantly higher than summer prices. As a high estimate, costs for treatment with recapture may be 25% above current treatment costs.

Under current international phytosanitary rules, at least 50% of the MB applied should remain in the container 24h after fumigation. It is assumed that this is therefore the minimum quantity that can be recovered for new use. Current systems can recapture over 99% of this share – however, doing so requires several hours, and the resulting personnel costs are not competitive with simple degassing and release to the atmosphere. Belgium requires a recapture rate of 80%, which current equipment can achieve in under an hour. The effective recapture is therefore 40% of the MB originally placed in the container. The estimated cost of treatment with recapture is therefore €135.75 per container, with a net use of MB of 1.8 kg per container, compared to a cost without recapture of €105, and a net use of 3 kg. The additional cost of recapture and recovery over the ten year period is therefore €26 million (NPV 2010), for a MB emissions reduction of 880 ODP tonnes. In practice, the higher cost of recapture and recovery would make heat treatment competitive in many situations, and the likely switch to this alternative would reduce the overall cost to industry. Assuming that 20% of containers are not heat-treated, the overall cost to industry would be €11.15 million over the period 2010-2020, with MB emissions reduced by 1 850 ODP tonnes.

Option 3: This option would combine the impacts of option 2 up to 2015, and of option 3 from 2015 to 2020. However, more alternatives are likely to be available by 2015, and adopted as agreed measures under ISPM-15, thereby reducing the overall costs of the measure. It is estimated that the amount of MB saved would be 2000 ODP tonnes over the whole period considered, and the cost to industry would be €9.5 million. Although companies may be reluctant to invest in a technology if MB for QPS is likely to be phased out in the short to medium term, recapture technologies are generally designed to operate with other fumigants, and development is under way to widen the range of fumigants for which they are operational.

Option 4: Because current use (slightly over 200 ODP tonnes in 2006) is below the level of the effective cap, this would not create direct costs for EC exporters or fumigators. It would mainly clarify the cap on the use of MB, should there be increases under ISPM-15 due to further development of trade. Additional environmental benefits would be accrued through the existing provision in the Regulation for the cap to be further adjusted by comitology

Option 5: By setting EU guidelines for best practice, standards of use should rise, and the associated health and safety risks fall. This impact may be limited, as the standards would be voluntary. At the same time, EU best practice may have a wider impact by influencing practices in other parts of the world. Developing guidelines would represent an administrative cost for the Commission. The impact of action at international level is difficult to evaluate in terms of economic cost, but would have an effective environmental impact both in the EU and globally.

7.3.3. Comparison of the Options and Emerging Preferences

Table 13: Avoiding Emissions of ODS "Banked" in Products and Equipment

POLICY OPTIONS **Bold:** preferred regulatory option *Italics:* preferred non-regulatory option ~~Strikethrough~~: discarded option *option implemented through other EC legislation	**Environmental Impacts 2010-2020 (ODP tonnes)**	**Administrative Costs (€million, NPV 2010)**	**Direct Economic Impacts (€million, NPV 2010)**	**Social and Other Impacts**
1. ~~End QPS uses of MB by 2010~~	0-2200	-	++	+(1)
2. ~~Require mandatory recapture and recovery from 2010 to 2020~~	0-1850	0	0-11.1	+(1
3. Require mandatory recapture up to 2015, and phase out thereafter	0-2000	-	0-9.5	+(1)
4. Cap MB for QPS to effective level	+	-	0	+
5. Guidelines and awareness raising	+	+	0	+(1)
Total impacts related to preferred options	**0-2000**	**-**	**0-9.5**	**+(1)**

1. Reduced health and safety risks

Options 1 and 2 are mutually exclusive. Although heat treatment seems generally to be more cost-effective than recapture and recovery of MB, it is not recommended to end the use of MB for QPS immediately as heat treatment does not cover all cases where treatment is needed. By 2015 however, more alternatives are likely to be available, reducing the cost of a phase out. Making recapture and recovery mandatory would increase the cost of MB use, and make heat treatment competitive in many situations. Option 3, which is a combination of options 1 and 2, is the preferred option, with MB still being allowed for QPS up to 2015 under the condition of recapture and recovery, and a complete phase out by 2015, with more alternatives likely to be available by then.

For all options, if MB is no longer authorised for phytosanitary purposes in early 2010, as is currently likely, the impact would be 0.

In their response to the consultation on the review study, the European Methyl Bromide Association stated that they would not be opposed to recapture and recovery being a condition for QPS uses.

Option 5 would be a low cost measure to be taken outside the Regulation.

8. MONITORING AND EVALUATION

The monitoring and evaluation of the revised Regulation will continue to rely on the proven reporting mechanism that is in place to date, both at the EU level and under the Montreal Protocol.

Data indicating the progress in the phase out and related matters will continue to be posted, both on the web portals of the Commission, Member States, and UNEP (in its capacity of the Montreal Protocol's Secretariat).

In addition, regular meeting of the Management Committee established under the Regulation will continue to serve as a very useful information exchange platform and as the forum for consulting Member States on specific implementing decision for which powers have been given to the Commission. For the latter purpose, the new scrutiny rules that will come into place will offer further consultation opportunities, also with the European Parliament.

In cases of non-compliance, infringement cases might be launched in line with or independently from the compliance regime that is in place at the global level and governed by the Implementation Committee of the Montreal Protocol.

9. SUMMARY AND CONCLUSIONS

Appendix VI summarises all the options considered and their impacts (quantitative or qualitative depending on available data), whilst highlighting the preferred options. The latter are described below in relation to the specific objectives.

Simpler and better regulation

The package of preferred options to reduce unnecessary administrative burden and to clarify and simplify the Regulation, includes removing obsolete regulatory provisions, simplifying the structure of the text, improving definitions and clarifying links with other policies, as well as removing perceived regulatory uncertainties and loopholes. Simplification opportunities were also identified in terms of reporting. To streamline the reporting and enable further gains through the Commission

centralising reporting obligations to UNEP, it is proposed that destruction facilities report directly to the Commission. Finally, ending a number of exemption and related processes, due to the phase out of substances and greater availability of alternatives would further simplify the implementation of the Regulation. Overall, the proposed package would result in a much simplified Regulation, and net savings in terms of administrative costs of nearly €4 million (NPV 2010).

Ensuring continued compliance with the Montreal Protocol

This package includes the implementation of decision XIX/6 on the accelerated phase out of HCFCs by moving forward the production phase out of HCFCs from 2025 to 2020 and a combination of further actions for strengthening enforcement of the Regulation, and reducing the risk of illegal and harmful trade. Rather than further advancing the production phase out date, voluntary agreements with industry should be explored. To reduce the risk of illegal use of virgin HCFCs, restricting the use of HCFCs to reclaimed HCFCs only was the preferred option. Preferred options for strengthening enforcement include a move towards a risk-based inspection regime, labelling provisions for ODS for feedstock use, and for products and equipments while servicing, and a non regulatory measure on training and awareness raising. Options to control illegal and harmful trade include closing a loophole for imports of products and equipments relying on HCFCs, while ending the transitory exemption on the import ban for products and equipments manufactured before a certain date. In addition, a better control of exports would be obtained through extending the existing general ban on ODS (and on products and equipments containing and relying on ODS) to HCFCs, as well as extending the current licensing procedure. The overall administrative burden of the package is estimated at €0.9 million

The overall package enables better compliance with the Montreal Protocol, and in particular better control over illegal and harmful trade. By maintaining certain targeted exemption provisions any undue or excessive costs to industry are avoided.

Ensuring future challenges are being addressed

Options to address future challenges focus on avoiding emissions of ODS banked in products and equipments, avoiding the placing on the market of new and short-lived substances with a significant ODP, and reducing quantities of methyl bromide used for quarantine and pre-shipment purposes. Proposed options to address the issue within the Regulation include strengthening the provisions on the recovery and destruction of ODS in products and equipment, potentially yielding environmental benefits of up to 14 000 ODP tonnes (112 million tonnes of CO_{2eq}). It was established that the most effective measures involved strengthening the implementation and enforcement of the waste policy framework, in particular regarding construction and demolition waste, and better implementation of the WEEE directive, bringing potential additional benefits of 34 000 ODP tonnes (270 million tonnes of CO_{2eq}). Given the wide ranging costs depending on the type of banks (from €4.5 for simple destruction to €100 per ODP kg for recovery and destruction of ODS contained in insulation foams), the use of incentive mechanisms would be appropriate, for which practical details need to be further explored.

For reducing methyl bromide use for QPS purposes, the option preferred to a straightforward ban from 2010 is to make recapture and recovery mandatory during a transition period, thereby making the alternative method of heat treatment more competitive, while still allowing methyl bromide treatment if required in specific situations. MB use for QPS would be fully phased out in 2015, when more

alternatives are likely to be available. This measure would yield overall savings of 2000 ODP tonnes. Finally, monitoring of new substances with an ODP as they come on the market, and banning the ones with a significant ODP is the preferred option for new and short-lived substances.

Overall policy package

In conclusion, the review of a wide range of options led to a package aiming to ensure continued compliance with the Montreal Protocol, while addressing future challenges and simplifying the current regulation. Building on past successes and opportunities for simplification, overall reductions in terms of administrative costs total nearly €3 million (NPV at 2010), with about €2 million accruing to industry, € 0.7 million to Member State authorities and the remainder to the European Commission. Excessive direct costs to industry were at the same time avoided, with quantified impacts expected to stay below €13 million, mainly related to measures to reduce methyl bromide use for QPS purposes. [52] Simplification is expected to be particularly beneficial to SMEs which have less access to specialist knowledge for implementing the Regulation.

The most tangible environmental benefits in the package are those related to reduced consumption and increased recovery mostly stemming from policy actions on banks and QPS. These could add up to a net gain of 16 000 ODP tonnes, or 112 million tonnes of CO_{2eq}.[53] Further translation in terms of reduced cancer risk would not be meaningful considering the small quantities involved compared to the global scale of the problem, and the large uncertainties around the dose-response function linking a unit ODP tonne to the final human and environmental health impacts. This net reduction in ODP emissions would however contribute to reducing the risk of further depletion of the ozone layer, whilst also bringing real climate change benefits.

[52] Costs would be significantly lower if taking into account the likely decision to deregister Methyl Bromide on health grounds.

[53] In terms of global warming potential, this is equivalent to about 2% of greenhouse gas emissions in 1990. For comparison only, reductions are equivalent to $1/10^{th}$ of the reductions necessary to achieve the 2020 objective of cutting greenhouse gas emissions by 20% under the climate and energy package.

Appendix I –Glossary

A5	Developing countries (i.e. Parties to the Montreal Protocol operating under paragraph 1 of Article 5).
Annex VII	… to Regulation EC No 2037/2000. Lists permitted critical uses of halons, all other uses being prohibited.
Assessment Panel	A committee of experts established by the MP to advise the Parties. There are three: the TEAP, the SAP and the Environmental Effects Assessment Panel. Each has a number of subsidiary specialist committees.
Bank	The entirety of the quantity of one or more ODS currently in existence, whether incorporated in equipment (refrigerators) or products (foams), or recovered and stored ready for use.
BDN	Production of ODS by developed countries solely to meet the Basic Domestic Needs of A5 developing countries which have no production capacity of their own.
Cap	An upper limit on the quantity of ODS that can be produced, imported or used.
CFC	Chlorofluorocarbon, a controlled substance, used as a refrigerant, solvent and foam blowing agent. Different examples are distinguished by a number that describes their chemical composition.
CO_{2eq}	The quantity of a gas in metric tonnes multiplied by its associated global warming potential (GWP). This is used to compare the emissions from various greenhouse gases based upon their global warming potential.
Consumption	The quantity of ODS produced plus imported, minus exported minus destroyed.
Controlled substance	An ODS which has its production and consumption controlled by the Montreal Protocol and, consequently, the Regulation.
Critical Use	A vital use of an ODS for which no alternative is available, but for which sufficient stocks of ODS are available.
Emissive use	A use of an ODS that results in significant emissions to atmosphere.
Essential Use	A vital use of an ODS for which no alternative is available. Exiting stocks are insufficient to meet needs and production, subject to limits agreed by a MOP, is permitted.
Feedstock	A substance (in this case an ODS) which is transformed or

	consumed as an ingredient in a production process.
GWP	Global Warming Potential - the relative potency, molecule for molecule, of a greenhouse gas, taking account of how long it remains active in the atmosphere. The global warming potentials (GWPs) currently used are those calculated over 100 years. Carbon dioxide is taken as the gas of reference and given a 100-year GWP of 1.
HCFC	Hydrochlorofluorocarbon, a controlled substance, used as a refrigerant, solvent and foam blowing agent. Different examples are distinguished by a number that describes their chemical composition. The ODP of HCFCs is lowr than that of CFCs.
Halon	A controlled substance, used as a fire extinguishant. Different examples are distinguished by a number that describes their chemical composition. The ODP of halons is higher than that of other ODS.
IPPC	International Plant Protection Convention (not to be confused with IPPC = Integrated Pollution Prevention and Control).
IPR	Inward Processing Relief (for ODS that are imported, but not placed on the market). ODS subject to IPR do not count as imported under the MP and Regulation.
ISPM	International phytosanitary measure developed by IPPC. ISPM-15 is a standard for import requirements of wooden packages
Laboratory use	Use of an ODS as a necessary component or part of a laboratory process.
MB	Methyl bromide, a controlled substance, used as a pesticide in farming and food storage facilities and for QPS fumigation.
MDI	Metered-dose inhaler. CFCs used as the propellant in delivery of pharmaceutical products via an inhaler are considered to be essential uses in some cases because of stringent safety approvals necessary for alternatives. However, alternatives are increasingly becoming available.
MOP	Annual Meeting of the Parties to the Montreal Protocol.
MP	The Montreal Protocol on Substances that Deplete the Ozone Layer, established in 1987, now signed by about 190 countries. The MP controls production and consumption of ODS.
Non-A5	Developed countries (i.e. Parties to the Montreal Protocol not operating under Article 5, but operating under Article 2).

NPV	Net Present Value
nPB	n-propyl bromide, an ODS which is not controlled by the MP, but which is marketed and finding increased use as a solvent.
ODP	Ozone-Depleting Potential, quantified in relation to a certain CFC (CFC-11) that has by definition an ODP of 1.
ODP tonne	The quantity of an ODS in tonnes multiplied by its ODP. The value gives an ODP-weighting to quantities produced or emitted.
ODS	Ozone-depleting substance and a substance with ODP > 1.
PIC	Prior Informed Consent procedure which governs international trade in waste and hazardous substances.
POM	Placing on the market. The supply of an ODS to third persons in return for payment or free of charge.
Processing agent	Use of an ODS as a catalyst or solvent or otherwise as a "facilitator" of a chemical or industrial process where the ODS is not consumed or emitted but recovered and re-used. The MP and the Regulation list the uses that can be defined in this way.
QPS	Quarantine and Pre-shipment use. The use of MB in the fumigation of products in shipping containers to eliminate pests before export of goods, notably timber. Importing authorities require certification according to IPPC, which mandates MB as one of only two options).
Reclaim	The industrial process by which used or contaminated ODS is returned to "as-new" quality.
Recover	The process of capturing ODS for recycling, reclaim, re-use or destruction, thus preventing emissions to atmosphere.
Recycle	The process of basic cleaning of recovered ODS so that it is fit for re-use.
SAP	Scientific Assessment Panel, established to advise the Parties on scientific aspects of ozone layer protection.
TEAP	Technology & Economic Assessment Panel, established to advise the Parties on technical and economic issues relating to ODS phase-out
SME	Small and medium enterprises
Use	Utilisation of an ODS in the production or maintenance of equipment or products, or in processes other than as feedstock or processing agents.

UNFCCC	The UN Framework Convention on Climate Change, which aims to prevent harmful human-induced climate change. The UNFCCC spawned the Kyoto Protocol, which set limits on emissions of a basket of greenhouse gases for developed countries
Virgin HCFC	HCFC of new-production standard that has not been used, recycled or reclaimed.

Appendix II –Key Principles and Features of Regulation (EC) N° 2037/2000

The Regulation (EC) N° 2037/2000 on Ozone Depleting Substances is the Communities' main instrument for implementing the provisions of the Montreal Protocol.

The Regulation follows the principles embedded in the Montreal Protocol by banning the production and consumption of the most damaging ODS, i.e. emissive uses of ODS. [54] Likewise, non-emissive uses of ODS are largely exempted from control measures notably ODS used for feedstock. The Regulation is stricter than the Protocol where it sets quantitative limits for the use or "placing on the market" of ODS and of products and equipment containing or relying upon banned ODS and for Quarantine and Pre-Shipment use of Methyl Bromide.

Similar principles apply to all quantitative controls contained in the Regulation: ODS production and/or use is capped at an agreed baseline level that is then step-wise reduced at agreed intervals, and ultimately banned. Where a full-phase out or ban is in place (currently for all but for HCFCs in the EC), exemptions exist in line with the Protocol's provisions. “Essential" or "critical" use exemptions have served the need for flexibility in specific cases and are granted only if, following a review process, there is satisfactory proof that no technical and economically viable alternatives exist. The EC regulatory processes build on the provisions and decision of the Protocol Parties and their assessment panels: the levels of exempted ODS uses are agreed each year by the Parties to the Protocol or based on caps contained in the Regulation. These "caps" guide the allocation of POM quota to EC producers and importers. Quotas are allocated through annual Commission decisions subject to requesting the opinion of the Management Committee. Producers and importers subsequently apply for import licences (and authorizations for essential use production) through the Commission's on-line ODS database.[55] To accommodate industrial rationalization, quotas can be transferred amongst companies.

Annual reporting of actual production, imports, and placing on the market of ODS by EC-companies enables the monitoring of the Regulation's implementation by the Commission and Member States, including EC compliance with the Montreal Protocol.

Finally, the Regulation provides the legal basis for opening infringement procedures against Member States in case non-compliance is observed.

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54 In the context of the Protocol, consumption equals "production + import –export –destruction of ODS".

55 The EC licensing requirement also covers the production and import of Methyl Bromide for the purpose Quarantine and Pre-Shipment treatment of pests. The present Regulation contains a dual cap, i.e. 607 ODP tonnes 515 ODP tonnes based on average 1996-97-98 production levels. This provision goes beyond the Montreal Protocol which to date requires only reporting of methyl bromide use for QPS purposes. Furthermore, in areas where the Protocol demands reporting of ODS only (e.g. production of ODS for export to developing countries that are not yet subject to full phase-out regimes), EC companies have to declare planned ODS transactions which subsequently serve as caps for authorizing exports in the subsequent year through the ODS licensing system.

Appendix III –The 2010 Outlook Regarding Controlled Ozone Depleting Substances in the EU –the Baseline for Finishing the Job

This appendix summarizes the outlook for 2010 with respect to ozone depleting substances in the EU. The outlook has also served as the policy baseline, i.e. the business as usual scenario against which other policy options are evaluated.

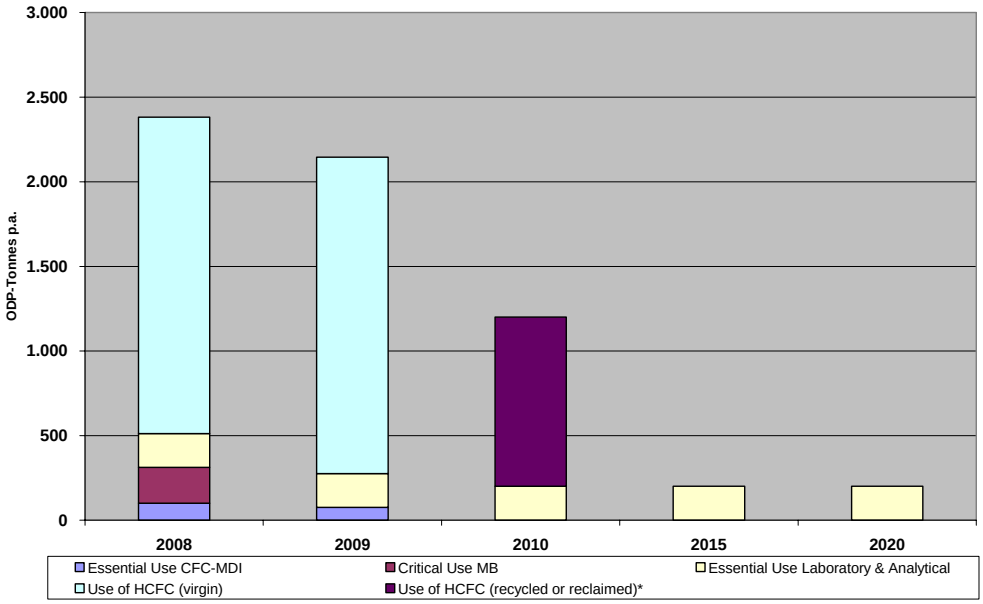
By 2010, the EC will have reached a full phase-out of controlled ODS, save for approximately 1 200 ODP tonnes p.a. (compared to baseline consumption levels of 400 000 ODP tonnes). The amount of 1 200 ODP tonnes includes an estimated 1 000 ODP tonnes of recycled or reclaimed HCFCs which will be banned as of 2015, thus leaving a tail of less than 200 ODP tonnes p.a. of ODS "consumption" as defined by the Montreal Protocol.

In addition, there will be a remaining use of "emissive ODS uses" that are covered by the regulation (yet not accounted for as consumption under the Protocol) amounting to an estimated 1 400 ODP tonnes for the period beyond 2010 (assuming that current levels would be maintained in the absence of further measures).

ODS production in the EC will have reached less than 4 000 ODP tonnes p.a. by 2010 (comparing to baseline production levels of 700 000 ODP tonnes).

Further details on the 2010 outlook are provided below for the respective categories as well other features of the Regulation, such as expected trends in the licensing volumes processed through the online ODS database hosted by the Commission, trends in the so-called Inward Processing Regime.

Figure 2: Remaining Emissive Uses of the ODS in the EU (Base Case Estimates for the period ending in 2020)



The figure above illustrates the nature of the first category of remaining emissive uses other, notably showing that:

(1) Critical use of Methyl Bromide for fumigation purposes will end in 2008.

Following the agreement reached with Member States in 2007, the EC has not

submitted nominations to the Ozone Secretariat for the use of Methyl Bromide from 2009 onwards.

(2) Production of CFCs for essential use in Metered Dose Inhalers will end after 2009.

Following the agreement reached with Member States in 2007, the EC will not submitted nominations to the Ozone Secretariat for the production of CFCs for essential use in Metered Dose Inhalers from 2010 onwards.[56]

(3) The use of "virgin" HCFCs for the purpose of servicing remaining equipment relying on HCFCs will be banned after 2010.

For the period ending in 2009, the annual placing on the market of virgin HCFC is capped at 1.870 ODP tonnes.

(4) The use of recycled or reclaimed HCFCs will be allowed until 2015 with estimated demand decreasing steadily from less then 1 000 ODP tonnes.

In the context of the Regulation, the "use" of HCFCs refers to the refilling or recharging of equipment relaying on HCFCs. Whilst the use of HCFCs for refilling has been gradually banned for equipment manufactured between 2001 and 2004 (depending on the type and capacity of the equipment) there remain a few categories for which the use ban enters into force after 2010 (e.g. commercial air conditioning and refrigeration units). Demand for recycled or reclaimed HCFCs for the period starting in 2010 is estimated to amount to less than 1 000 ODP tonnes, decreasing to about 200 ODP tonnes towards the ban date starting in 2015.[57] It is noted that the use of recycled or reclaimed ODS does not count as consumption as defined by the Montreal Protocol.

(5) Essential uses for the purpose of analytical and laboratory uses will stay at current levels amounting to less than 200 ODP tonnes per year.

This level is conservatively assumed to be maintained in the absence of further measures. TEAP regularly informs Parties on laboratory and analytical process that no longer require the use of ODS. Parties may therefore take additional decisions whereby more processes are listed for which ODS are no longer authorised. Such decisions will reduce the EC's annual consumption of ODS for laboratory and analytical uses through the existing quota and licensing procedure.

The figure below furthermore illustrates the "other" emissive uses that will remain beyond 2010 albeit at equally low levels which were conservatively estimated to stay around present levels.

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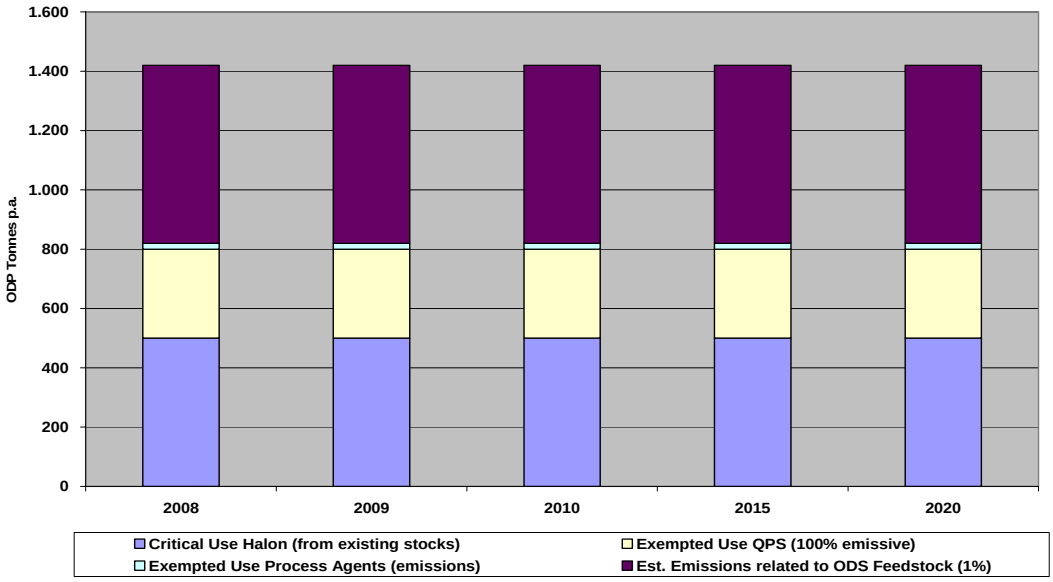
56 This commitment is reflected in Decision XIX/13 adopted at the 19th meeting of the Parties in 2007.

57 ICF international, Supply and demand or recycled HCFCs in existing refrigeration and air conditioning equipment beyond 2009: analysis of regulatory phase-out scenarios, August 2006.

Figure 2: Other Uses of the ODS in the EU (Base Case Estimates for the period ending in 2020)



From this figure, it follows that:

(1) Critical uses of Halons will continue beyond 2010 at the current levels of ca. 500 ODP Tonnes

Whilst production of Halon for emissive uses is banned, approximately 500 ODP tonnes per year are taken from (official) EC and international "Halon banks" to serve specific critical (fire-fighting) uses in military, aviation, maritime, and oil and gas applications. These critical uses are listed in Annex VII of the Regulation. Whilst the present Annex VII contains no phase out dates for these applications, consultations with relevant stakeholders held in the context of the review of this Annex (based on Article 4(4)iv of the Regulation) have confirmed that phase out dates ranging from 2015 to 2030 for the most difficult sectors are feasible. Hence, assuming that the revised Annex VII will be adopted before 2010, the levels of "critical" Halon uses are expected to gradually come down to zero before 2030.

(2) The exempted use of Methyl Bromide for Quarantine and Pre-Shipment is expected to stay at the current level of ca. 200 ODP tonnes.

In addition to the obligation to report on the use of Methyl Bromide for the purpose of Quarantine and Pre-Shipment (QPS) purposes, its use if capped by the Regulation. Following the latest available data for 2006, present amounts of Methyl Bromide used for QPS in the EU have come down to just above 200 ODP tonnes per annum or about 300 ODP tonnes below the current cap of 515 ODP tonnes based on average 1996-97-98 production levels (and 400 ODP tonnes below the second cap of 607 ODP tonnes contained in the Annex of the Regulation. This reduction has been achieved although 12 Members States joined the EU and trade volumes significantly increased between the EC and other countries over the same period.

(3) Emissions related to exempted uses of ODS for process agents are expected to stay at currently estimated levels of less than 20 ODP tonnes.

Uses of ODS as process agent are limited so specific applications, defined in the Montreal Protocol and further restricted in Annex VI of the Regulation. The list of authorised uses may progressively be reduced in the light of progress in the availability of alternative processing agents.

(4) Emissions from ODS use for feedstock are assumed to remain "insignificant" with levels assumed to stay around 600 ODP-tonnes.

Both the Montreal Protocol and the Regulation exempt emissions of ODS from feedstock reactions which treated as non emissive uses of ODS. However, as a total consumption of ODS for emissive uses reaches very low levels, emissions from feedstock (estimated to less than 1% of the material used in the chemical reaction) become significant in relative terms. Best way to address emissions of ODS from feedstock in the EC would be to take measures for further minimising emissions in the framework of industrial pollution policies. Modifying the scope of the Regulation on ODS to cover feedstock emission would be inconsistent with the Montreal Protocol approach.

With respect to 2010 outlook for production of ODS in the EU, the following is noted:

(5) Production of HCFCs for export to serve needs of non-EU Parties to the Protocol is expected to decrease from current levels of less than 4 000 ODP tonnes to zero by 2020.

Albeit that the current Regulation allows for the production of HCFCs within the EU for exports to non-EU countries (where there is no ban in place yet) till 2025, the actual baseline date will be brought forward to 2020 as part of need to align the Regulation with the MOP19 Decision on the accelerated phase out of HCFC. Until then production levels for export to non-EU countries is conservatively estimated to stay at current levels amounting to approximately 4 000 ODP tonnes. In reality, these volumes tend to go down more rapidly as the ban date approaches and companies adapt their production schedules to the new market reality ahead of time.

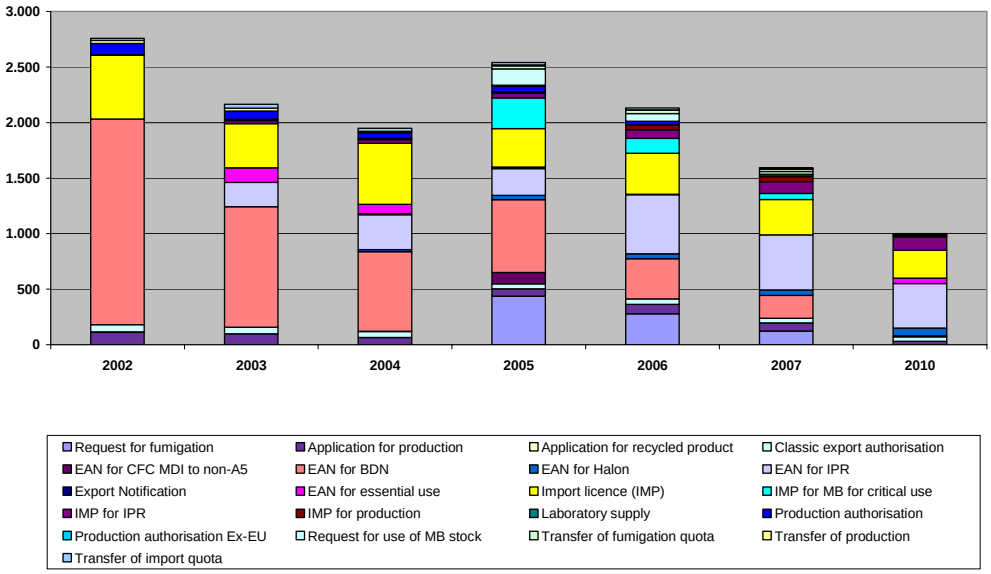
(6) As of 2010 the EC production of ODS to serve so called "basic domestic needs" (BDN) will have decreased to less than 100 ODP tonnes.

Whilst the EC companies currently produced and exported CFCs (several types) and carbon tetrachloride (CTC) for basic domestic needs, those BDN regimes will end in accordance with the provisions of the Montreal Protocol. As of 2010, EC companies could continue producing and exporting 1,1,1-trichloroethane until the BDN regime for this substance will also end in 2015. Current low levels of BDN 1,1,1-trichloroethane exports (at less than 100 ODP tonnes) are expected to drop beyond 2010 as the number of countries requiring imports continues to decrease.[58]

[58] Exact data are not provided as less than three companies produce and export this substance for BDN.

As a final consideration related to the 2010 outlook, it is noted from the figure below that the number of licenses that are processed annually through the on-line ODS data base system is expected to decrease to an estimated 1 000 (from almost 3 000 in 2002 when the system was first launched). Of this remaining total, more than 50% is related to so called inward processing, i.e. the importing and exporting of ODS (mainly Methyl Bromide) without those goods entering the EC customs area. Whilst in transit, goods may undergo minor transformations usually (re)packaging according to the requirements of the destination country.

Figure 3: Trends in Licences Processed through the ODS licensing System (For the period since its launching in 2002 estimated volumes for 2010)



Appendix IV –Methods and Criteria For Assessing the Impacts

The impacts of the different policy options were considered according to the three general impact assessment criteria recommended by the Commission's impact assessment guidelines: economic, social and environmental impacts. In these three main areas, 16 specific categories were identified based on an initial review of the options and of the information and comments gathered during the review study (see table [8] below).

The full list of 16 impact categories was used in the qualitative analysis of options retained during the review study. A short list of the 10 most important impact categories was also identified, as presented in the table above. Quantified assessments were prepared for 6 of the 10 categories (these six are listed are in bold in the short list). The other four categories remain important. Wherever possible, the main stakeholders potentially affected by a revision to the Regulation were also identified, as well as areas where options are most likely to affect them.

Since this Review takes place in the context of the 'Better Regulation' initiative, special emphasis was put on the evaluation of the impact of proposed policy options on administrative costs. The methodology recommended by the impact assessment guidelines was adopted. Details of the assessments can be found in the study commissioned to support this impact assessment[59].

Table 3: Impact Analysis Criteria

General categories	**Full qualitative analytical list**	**Short list of categories**
Economic	Direct costs (or benefits) to EU industry (with particular consideration of SMEs)	**Direct costs for EU industry**
	Admin. costs (or benefits) on EU business	**Administrative costs for EU industry**
	Costs (or benefits) to downstream users	Other economic impacts
	International competitiveness	
	Competition in the internal market	
	Specific sectors and regions	
	Innovation and research	
	Public authorities: administration and Enforcement	**Admin. costs for Member States**
		Administrative costs for the COM
Social	Employment	Social impacts
	Health and safety	
	Crime: especially illegal trade	
Environmental	Ozone layer	**Ozone depleting emissions**
	Climate change	**Greenhouse gas emissions**
	Waste management	Other environmental impacts
	Local impacts (on biodiversity, flora and fauna and water quality)	
	EC Leadership in international negotiations	EC position in global negotiations

[59] See http://ec.europa.eu/environment/ozone/review.htm

Appendix V –Stakeholders' Suggested Areas for Further Improvement

Whilst the stakeholders' response to the survey was generally very positive, several suggestions were submitted related to areas where further improvements areas could be pursued. Considering also the international challenges (see section 1.3), the following remaining problem areas have been defined:

(1) Complex Regulation

The main comments resulting from the survey related to the Regulation's complexity and a desire for simplification and clarification. Many stakeholders commented that the current legislation is complex mainly in terms of structure (i.e. ban provisions and exemptions treated in various sections), the presence of numerous obsolete provisions, and provisions that require significant knowledge of the (international) context also due to definitions that are considered lacking clarity.

(2) Extensive Reporting Requirements

In their responses to the survey for the review of the Regulation, a few Member States called for measures to reduce their administrative costs related to reporting also indicating that the administrative costs associated with reporting appears to be one of the more burdensome aspects of implementing the Regulation requirements for Member States. In contrast, responses from business and industry did not cite major concerns with reporting.

(3) Synergies with other policies

Many surveyed stakeholders called for more synergies with related policies such as the regulations on F-gases, waste, chemicals, plant protection and sanitation.

(4) Inflexible quota and licensing procedures

In their responses to the survey for the review of the Regulation, a few companies suggested that the quota and licensing procedures where offering insufficient flexibility, notably where ODS production, import and/or export volumes deviated from forecasted amounts that had served the basis for establishing the EU maximum quota ("cap").

(5) (Re)inforcing Import and Export Bans

Nearly half of the Member States that responded to the survey called for strong enforcement of import and export requirements across the EC. Likewise, several industry respondents reported cases of illegal imports of ODS, hence expressing equal concerns. A further concern related to the upcoming phase-out of the use of "virgin" HCFCs for the maintenance and servicing of refrigeration and air conditioning equipment could fuel illegal trade in "virgin" HCFCs.

(6) Uncontrolled Substances

Some Member States suggested that action be considered to introduce measures for currently uncontrolled ODS production and trade (e.g. DE, NL), and ODS banked in products and equipment. These suggestions echo the concerns expressed in the 2006 Report of the Scientific Assessment Panel established by the Parties to the Montreal Protocol.

Appendix VI –List of options considered and their impacts

POLICY OPTIONS **In bold:** preferred regulatory option *In italics:* preferred non-regulatory option ~~Strikethrough~~: discarded option Marked with *: implemented through other EC legislation	**Environmental impact**		**Administrative Costs** € million (NPV2010) Or qualitative assessment	**Direct economic impact** € million (NPV2010) Or qualitative assessment	**Other impacts:** Social impacts; Trade-offs / synergies
	ODP tonnes (2010-2020)	CO_2. tonnes [1] (2010-2020)			
1. OPTIONS FOR ACHIEVING SIMPLER AND BETTER REGULATION					
Clarifying and simplifying the Regulation					
Combined options	+	+	-2.35	0	+ (Reduced burden on SMEs)
Streamlining reporting					
Simplified and online reporting for companies and users	0	0	-0.50	0	0
Streamlining reporting on ODS destruction	0	0	-0.07	0	Condition for streamlined UNEP reporting
Cancelling MS reporting on ODS recovery, recycling and reclamation, and on exempted uses of HCFCs replacing Halons	0	0	-0.42	0	0
Streamlining UNEP reporting	0	0	-0.06	0	0
Exemption regimes and related administrative processes					
Ending production of ODS for Basic Domestic Needs	0-22 [2]	0-32 000 [2]	-	+ (confidential)	- (Possible small job loss)

Ending IPR for MB and HCFCs in 2010	0-6475 [2]	0-8.7 million [2]	-0.92	+ (confidential)	- (Possible small job loss)
Ending exempted uses of HCFCs for replacing halons	0	0	-	0	0
~~Ending exempted uses of HCFCs where no alternatives available~~	+	+	-0.12	+	0
Inserted a new exempted use clause for critical uses of Halons	-	-	+	--	0
Updating the essential use process for laboratory and analytical uses	+	+	-0.09	0	0
SUBTOTAL FOR ACHIEVING BETTER AND SIMPLER REGULATION	0-6500 [2]	8.73 million	-3.85	3.3 (including confidential data)	- (Possible job loss)
2. OPTIONS FOR ENSURING FULL COMPLIANCE WITH THE MONTREAL PROTOCOL					
Options related to the accelerated HCFC phase out					
Advancing production phase out to 2020	De facto base case				
~~Advancing production phase out to 2010 or 2015~~	0-18000	0-455.2 million	-	2.3 -9.5	+ (Synergy with 'simplification')
Options related to the HCFC use phase out					
~~Expedited phase out from the use of recycled and reclaimed HCFCs~~	0-600 [2]	0-10.9 million [2]	-	++	+ (Reduced risk of illegal use of virgin HCFCs)
Voluntary agreement on phase out strategy with industry	+	+	0	+	0

~~Certification of recycled and reclaimed HCFCs~~	+	+	++	0	+ (Reduced risk of illegal use of virgin HCFCs)
Use of reclaimed HCFCs only after 2010	+	+	+	+	+ (Reduced risk of illegal use of virgin HCFCs)
Options related to strengthening enforcement					
Updating inspections provisions	+	+	+	0	+ (Reduced risk of illegal trade/use)
Adapting labelling requirements for ODS for feedstock use	+	+	+	0	+ (Reduced risk of diversion for other uses)
~~Extending labelling requirements to sales of products and equipment~~	+	+	0.16	0	+ (Reduced risk of illegal trade; Increased consumer choice)
Labelling requirements for existing products and equipment during servicing	+	+	0.92	0	+ (Reduced risk of illegal trade; Increased consumer choice)
Awareness raising and training programmes	+	+	0.08	0	+ (Reduced risk of illegal trade)
Options related to avoiding illegal imports and remaining loopholes					
Ending the import of products and equipments relying on ODS	+	+	-	+	Synergy with 'Simplification'
Ending the import of products and equipments containing or relying on ODS manufactured before the specific use ban date	+	+	-	-2.78	+ (Reduced risk of illegal trade. Possible job increase). Synergy with 'Simplification'
Extending licensing to entry under customs procedures or for customs-approved treatments	+	+	+	0	+ (Reduced risk of illegal trade)

Options related to avoiding harmful exports					
Preventing the issuing of export licenses for unwanted ODS	+	+	+	0	+ (reduced risk of illegal trade)
~~Establishing an export notification procedure for all ODS~~	+	+	++	0	+ (reduced risk of illegal trade)
Extending the ban on ODS exports to methyl bromide and HCFCs for destruction	+	+	0	- (EU destruction facilities)	+ (Reduction in harmful trade; Possible job increase)
Introducing export licensing per shipment	+	+	0.17	0	+ (Reduced risk of illegal trade)
Extending the ban on exports of products and equipment to HCFCs and methyl bromide; licensing remaining products and equipments	+	+	+	+	+ (Reduction in harmful/illegal trade/Reduced ODS banks in dev. countries)
SUBTOTAL FOR ENSURING FULL COMPLIANCE WITH THE MONTREAL PROTOCOL	++	++	0.92	+	+ (Reduced risk of illegal trade; reduced ODS banks in dev. Countries)
3. OPTIONS FOR ENSURING FUTURE CHALLENGES ARE ADDRESSED					
Avoiding emissions of ODS banked in products and equipments					
Adapt the provisions related to the recovery of ODS	0-14000	0-112 million	+	0	+ (significant additional climate change benefits)
Strengthening policies on building and demolition waste*	0-7000	0-56 million	0	+	0
Strengthening the WEEE directive*	0-27000	0-216 million	+	0	+ (significant additional climate change benefits)

Use of incentive mechanisms*	0-46000	0-368 million	0	+	+ (significant additional climate change benefits)
Options related to new and short-lived ODS					
Re-establish former Annex II, part A and B	0-500	0-15 500	0.12	+	0
Establishing links with REACH	0-20	0-10 000	+	0	0
Options related to QPS					
~~End QPS uses of MB by 2010~~	0-2200	0-18 300	-	++	+ (Reduced health and safety risks); synergy with 'simplification'
~~Require mandatory recapture and recovery 2010-2020~~	0-1850	0-15 400	0	0-11.1	+ (Reduced health and safety risks)
Recapture up to 2015 and phase out thereafter	0-2000	0-16 000	-	0-9.5	+ (Reduced health and safety risks); synergy with 'simplification'
Cap MB for QPS to effective level	+	+	-	0	0
Awareness raising and action at international level	+	+	+	0	+ (Reduced health and safety risks)
SUBTOTAL FOR ENSURING FUTURE CHALLENGES ARE ADDRESSED	0-16 500	0-112 million	0.12	0-9.5	+ (Reduced health and safety risks)
TOTAL FOR PREFERRED OPTIONS (including quantified impacts of preferred regulatory options only)	0-23 000	0-120 million	-2.8	3.3-13	+ (reduced risk of illegal trade; reduced health and safety risks) - (possible job losses)

1 Assuming an average GWP of 1000 when considering a basket of ODS.

2 The global environmental impact depends on the degree of relocation of the activity in third countries.

Appendix VII –Comments from the Impact Assessment Board

As explained in Chapter 1, a draft of this report was submitted to the Commission's Impact Assessment Board on 30 April 2008. The draft impact assessment was presented and discussed at the 21 May 2008 meeting of the Impact Assessment Board. On 27 May 2008, the Impact Assessment Board issued its opinion which is reproduced in Appendix VII. This appendix also explains how the Board's comments were accounted for in the present document.

(A) Context

The Montreal Protocol on Substances that Deplete the Ozone Layer (1987) mandated the phase-out of production of ODS by all signatory Parties according to a specific time-table (that has been modified five times to include additional ODS and to accelerate the production phase-out). The EU regulations implementing the Montreal Protocol have often been more ambitious than the MP schedule. As of 2010, production and consumption of the most harmful (known) ODS should be completely banned in industrialized countries, except for a very limited number of exempted or non-controlled uses and a declining "tail" of hydrofluorocarbons. Full bans in developing countries typically come into effect within 5 to 10 years following the bans in industrialized countries, although an increasing number of developing countries now align their policies with industrialized countries such as those of the EU. The revised Regulation aims at simplifying the regulatory environment.

(B) Positive aspects

The IA report contains a robust analysis of costs and potential ODS reductions. There is an appropriate range of policy options and a detailed analysis of their impacts. Simplification gains are well demonstrated.

(C) Main recommendations for improvements

The recommendations below are listed in order of descending importance. Some more technical comments have been transmitted directly to the author DG and are expected to be incorporated in the final version of the impact assessment report.

General recommendation: While the IA report contains a robust analysis of impacts, a number of issues deserve further clarification: scope of the problem and in particular the distinction between problems remaining at global level and those which are specific to the EU; policy objectives, trade offs and synergies among the sub-options. Additionally, the report should make a monetised estimate where relevant of expected environmental benefits, and clarify who will bear administrative costs.

(1) The problem definition section should better explain the difference between global and EU specific problems. The IA should where possible describe the problems in more concrete terms – e.g. by assessing each of them in terms of administrative costs or tonnes of ODS. This should be reflected in a clearer prioritisation of the problems which in turn should be reflected in the objectives.

(2) **Analysis of benefits and certain impacts could be strengthened**. The report is based on a cost effectiveness analysis rather than a full cost-benefit analysis. the IA report should nevertheless attempt to provide monetised estimates of the expected environmental benefits. Given the links to broader climate change policies, it should also express these benefits in terms of CO_2 reductions. Discussion on methodological difficulties, and experience in third countries (US) should be included in the IA report. Additionally, the administrative costs should be broken down to show who will bear them (companies, SMEs, public authorities, etc). The IA should also explain what is included under the category "direct economic impacts".

(3) Objectives need to be redrafted. The objectives contained in section 3.1 should rather be moved to the section on the context, so that the IA report makes it clear that proposed actions concern only the EU. Additionally, one should consider developing SMART objectives (section 3.2), in order to facilitate future evaluation of the policy.

(4) Synergies and trade-offs between options should be more clearly presented. The disaggregation of the general policy options into a large number of sub-options makes it difficult to follow the potential synergies and trade-offs among them. The IA report could aggregate some of the individual options, in particular in cases where all of them relate to the same action and are retained in the final policy

package, and expand information contained now in the table in the annex. Additionally, options that are not compatible with the Montreal Protocol should not be analysed.

(D) Procedure and presentation

The report exceeds 30-page limit. All other procedural requirements seem to be complied with.

All recommendations for improvements have been accounted for in the final version of this impact assessment, as described below:

General recommendation: the scope of the problem, policy objectives, trade-offs and synergies were clarified, as explained in more detail below. Environmental benefits were quantified as far as possible, and the distribution of administrative costs across categories was highlighted in the conclusion.

(1) The problem definition section should better explain the difference between global and EU specific problems.

The contextual description of global challenges was moved to the section describing the background. Problems at the EU level were quantified in terms of administrative costs or tonnes of ODS, and prioritised accordingly.

(2) Analysis of benefits and certain impacts should be strengthened.

Environmental impacts were further quantified where meaningful and both ODP tonnes and CO_2 equivalents were included in appendix VI. The difficulty of monetising the benefits was described in section 3.3. More information was also given on the methodology for estimating direct economic impacts. Administrative costs were broken down in different categories and the distribution was summarised in the conclusion.

(3) Objectives need to be redrafted.

Section 3 was re-organised to highlight that objectives focus on the EU level, and objectives were redrafted to make them more operational.

(4) Synergies and trade-offs between options should be more clearly presented.

The range of options considered was simplified by removing options that were not compatible with the Montreal Protocol, and individual options were further aggregated when relevant (e.g. sections 5.2, 5.3, 6.1 and 6.4). Synergies and trade-offs were summarised in the last column of the appendix VI table. In one instance, this analysis led to considering a third option, combining two mutually exclusive options in separate periods of time (section 7.3).