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Aggregated data reported by companies on the production, import, export, destruction and use of ozone-depleting substances in the European Union

— Summary

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Summary

In 1989 the Montreal Protocol on Substances that Deplete the Ozone Layer entered into force. It has the objective of protecting the stratospheric ozone layer by phasing out the production of substances that contribute to ozone depletion. The Protocol covers over 200 individual substances with a high ozone-depleting potential, including chlorofluorocarbons (CFCs), halons, hydrochlorofluorocarbons (HCFCs), hydrobromofluorocarbons (HBFCs), carbon tetrachloride (CTC), methylbromide (MB), bromochloromethane (BCM) and trichloroethane (TCA), all of which are referred to as 'controlled substances'.

Within the European Union (EU), the use and trade in controlled substances is regulated by EU regulation (EC) 1005/2009 (ODS Regulation). This regulation stipulates that each company producing, importing and/or exporting into the EU, feedstock user, process agent user and destruction facility must annually report their activities concerning controlled substances. The ODS Regulation also extends to 5 additional substances having an ozone-depleting potential (new substances) for producers, importers and exporters. These new substances are halon 1202, methylchloride (MC), ethylbromide (EB), trifluoroiodomethane (TFIM) and n-propyl bromide (n-PB).

2011 was the second reporting year under the recast ODS regulation, but the first for which the European Environment Agency (EEA) has taken over the collection, data storage and quality control, and analysis of the companies' reports as well as responsibility for the provision of support to the reporting companies. In total, 189 companies reported ODS activities while 104 companies reported they had no ODS activities in 2011. In some cases, companies had to submit more than one report type — these 189 companies submitted a total of 220 reports, a similar level to 2010.

This report summarises the most recent data reported under the ODS regulation. Data submitted by companies are commercially confidential and for this reason, only aggregated data are provided in this executive summary for all substances, both virgin and non-virgin. Values are not provided where only three companies or fewer report information. Results are expressed in both metric tonnes and ozone depletion potential (ODP) ([1]) tonnes. Depending on the unit used, the observed trends can differ significantly.

Key findings

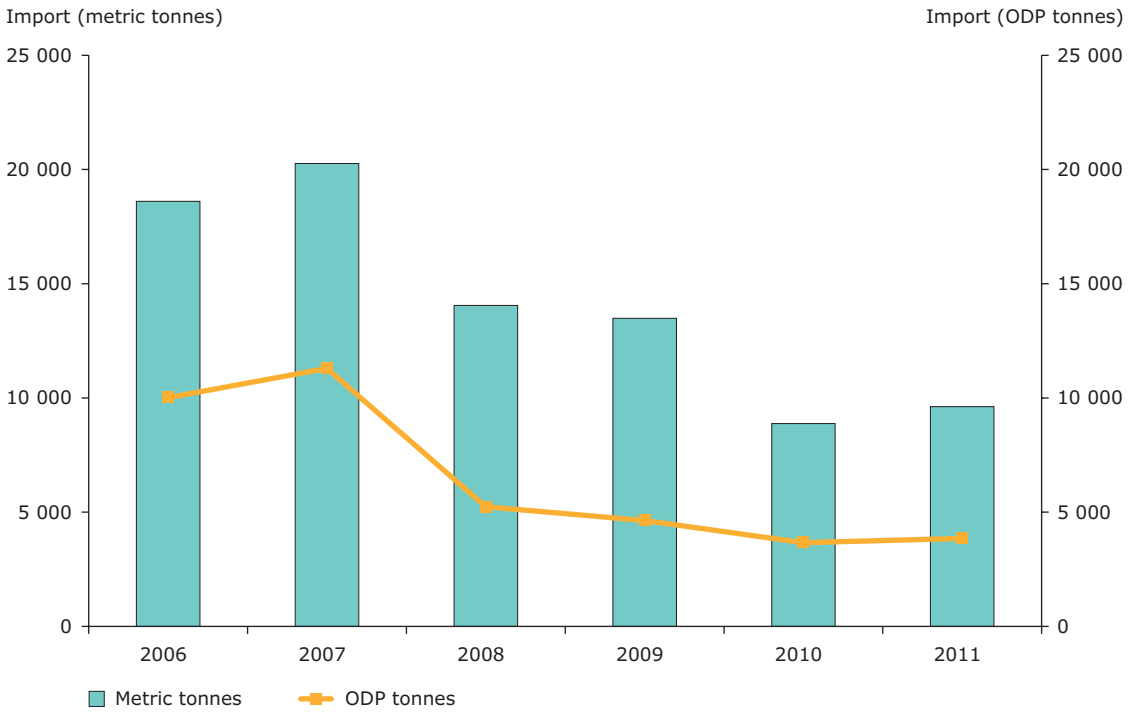
Imports

In the period 2006–2011, the quantity of ODS controlled substances imported into the EU has declined (Figure ES.1), although imports in 2011 were 8.3 % higher than for the previous year when expressed in metric tonnes (5 % higher when expressed in ODP tonnes). The controlled substances imported in the largest quantities were HCFCs (3 956 metric tonnes), MB (fewer than 3 companies), CFCs (1 714 metric tonnes) and BCM (633 metric tonnes). Except for HCFCs, these imported substances are not produced in the European Union. The imported quantities were predominantly intended for feedstock use and re-export, e.g. for quarantine and pre-shipment (QPS).

Imports of controlled substances originated from a limited number of source countries (Figure ES.2): 98 % of the imported controlled substances come from China, the United States of America, Israel and India (expressed in metric tonnes).

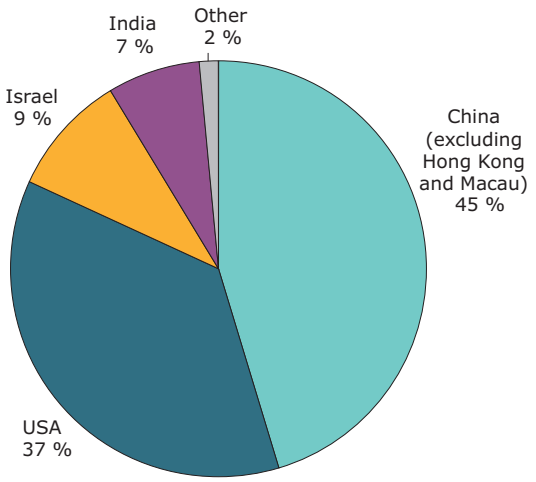
([1]) The ozone depletion potential (ODP) of a substance is calculated by multiplying the quantity in metric tonnes with its respective ODP value. The ODP values express the relative amount of degradation to the ozone layer relative to trichlorofluoromethane (CFC-11) which has an ODP of 1.0.

Figure ES.1 **Trend in the imports of aggregated controlled substances within the European Union (expressed in metric tonnes and ODP tonnes)**



Source: 2006–2010: previous ODS reports (BiPRO); 2011: EEA.

Figure ES.2 **Quantity of controlled substances imported in 2011 per source country (percentages expressed based on quantities in metric tonnes)**

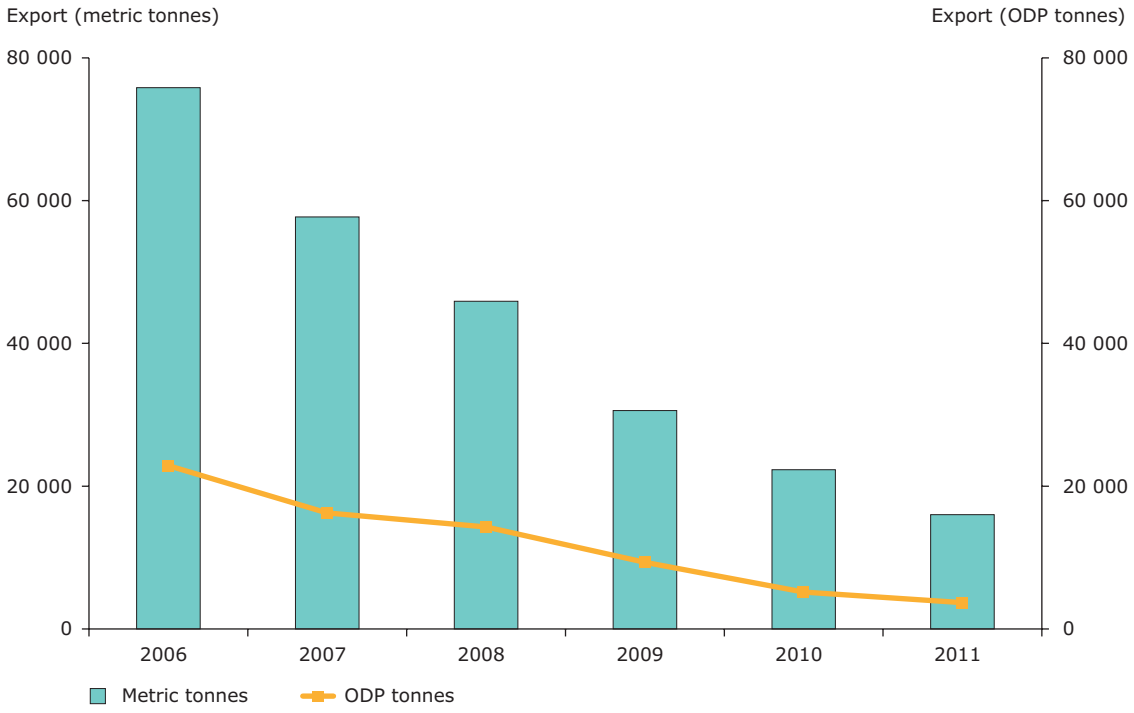


Exports

The 2011 export (including re-export) of controlled substances from the European Union has continued the steep decline observed since 2006 (Figure ES.3). The total quantity exported in 2011 was approximately 6 300 metric tonnes lower than in 2010 (1 500 ODP tonnes). For the period 2006–2011, the annual average decrease is 27 % (expressed in metric tonnes). The most important controlled substances exported were HCFCs (12 331 metric tonnes) and MB (fewer than 3 companies).

There are two main explanatory reasons for the declining exports. For substances produced in the European Union, the decrease is linked to the decline in production and an increase in the subsequent use of this lower production for internal EU feedstock and process agent use. For substances not produced in the European Union (e.g. MB) the decline in exports corresponds with the decline in imports.

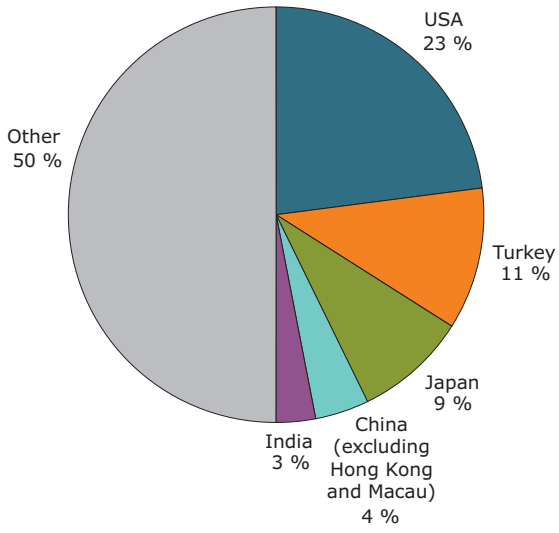
Figure ES.3 **Trend in the exports of aggregated controlled substances within the European Union (expressed in metric tonnes and ODP tonnes)**



Source: 2006–2010: previous ODS reports (BiPRO); 2011: EEA.

Quantities of controlled substances are exported to numerous destination countries. The most significant destinations are the United States of America, Mexico, Turkey, Japan, China and India (Figure ES.4).

Figure ES.4 **Quantity of controlled substances exported in 2011 per destination country (percentages expressed based on quantities in metric tonnes)**



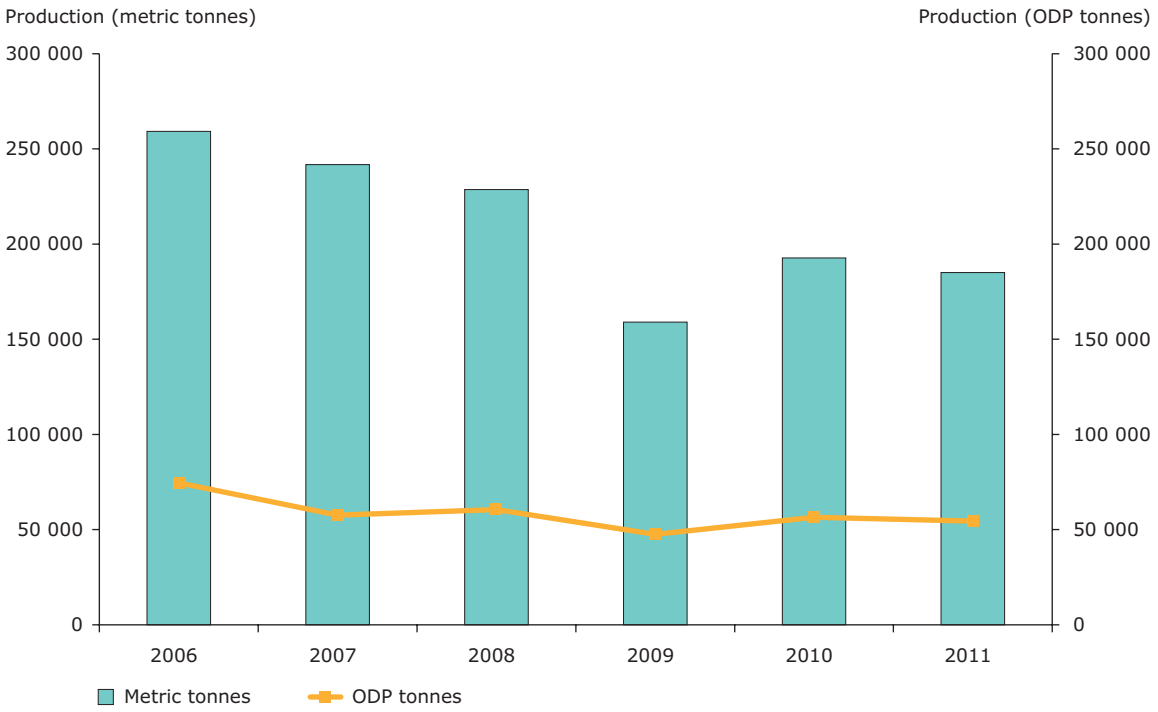
Note: Mexico, the second most important export country of controlled substances expressed in metric tonnes, was included in the category 'Other' for confidentiality reasons.

Production

The production of ODS controlled substances has declined steadily since 2006 (Figure ES.5). A significant dip in production occurred in 2009, most likely linked to the lower rates of European business activity in that year as a result of the economic crisis. In 2011, total production of controlled substances was 185 000 metric tonnes or 54 500 ODP tonnes, 4 % and 3 % lower, respectively, than in 2010. The most important controlled substances produced in the European Union are HCFCs (127 561 metric tonnes), CTC (36 318 metric tonnes) and TCA (20 651 metric tonnes). Ozone depleting substances such as CFCs, MB and BCM are not produced in the European Union.

Despite the overall decreasing production in the European Union, production for feedstock use is increasing. In 2011, 95% of the controlled substances were produced for feedstock use (expressed in metric tonnes), most of which was intended for companies located within the European Union.

Figure ES.5 Trend in the production of aggregated controlled substances within the European Union (expressed in metric tonnes and ODP tonnes)

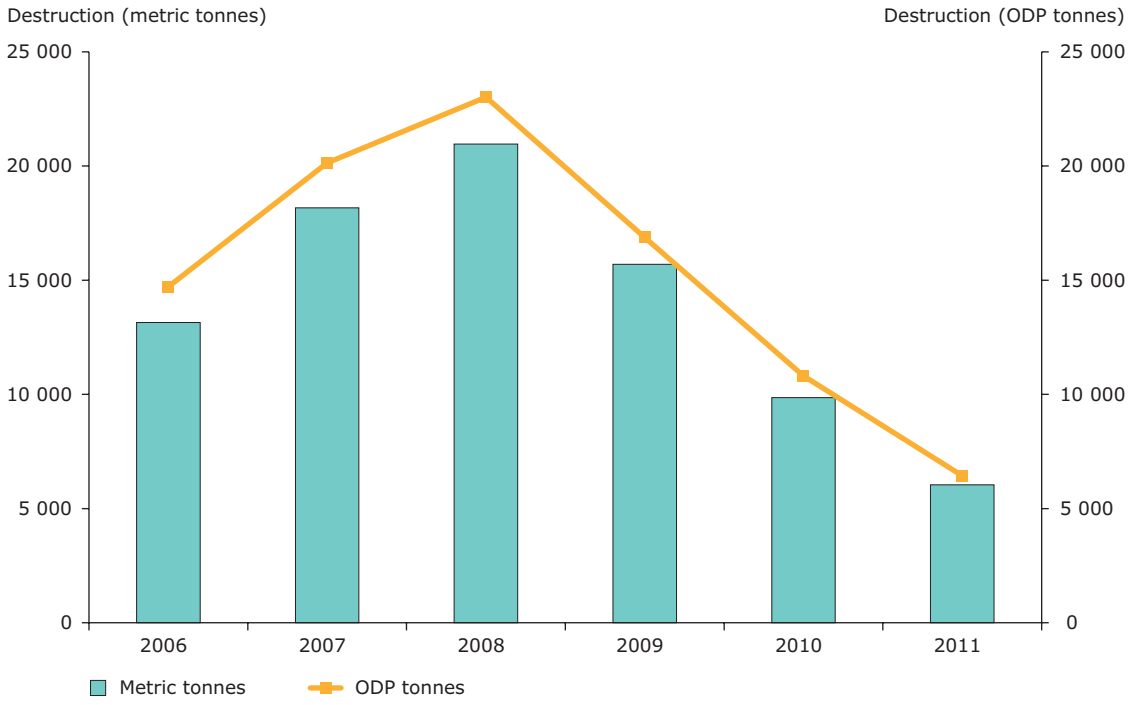


Source: 2006–2010: previous ODS reports (BiPRO); 2011: EEA.

Destruction

Destruction facilities are required to report the quantities of individual substances destroyed each year. In certain cases, companies have reported the destruction of a mixture of controlled substances having an unknown composition. Excluding quantities of mixtures, destruction in 2011 was 39 % lower than in 2010 (expressed in metric tonnes) (Figure ES.6). The difference is explained to a large extent by the declining unintentional by-production and subsequent destruction of CTC. It should also be noted that, prior to 2009, destruction facilities did not have to report directly to the European Commission and data collection and aggregation was done differently. Comparison of the results should therefore be done with care.

Figure ES.6 Trend in the destruction of aggregated controlled substances within the European Union (expressed in metric tonnes and ODP tonnes)



Source: 2006–2010: previous ODS reports (BiPRO); 2011: EEA.

Consumption

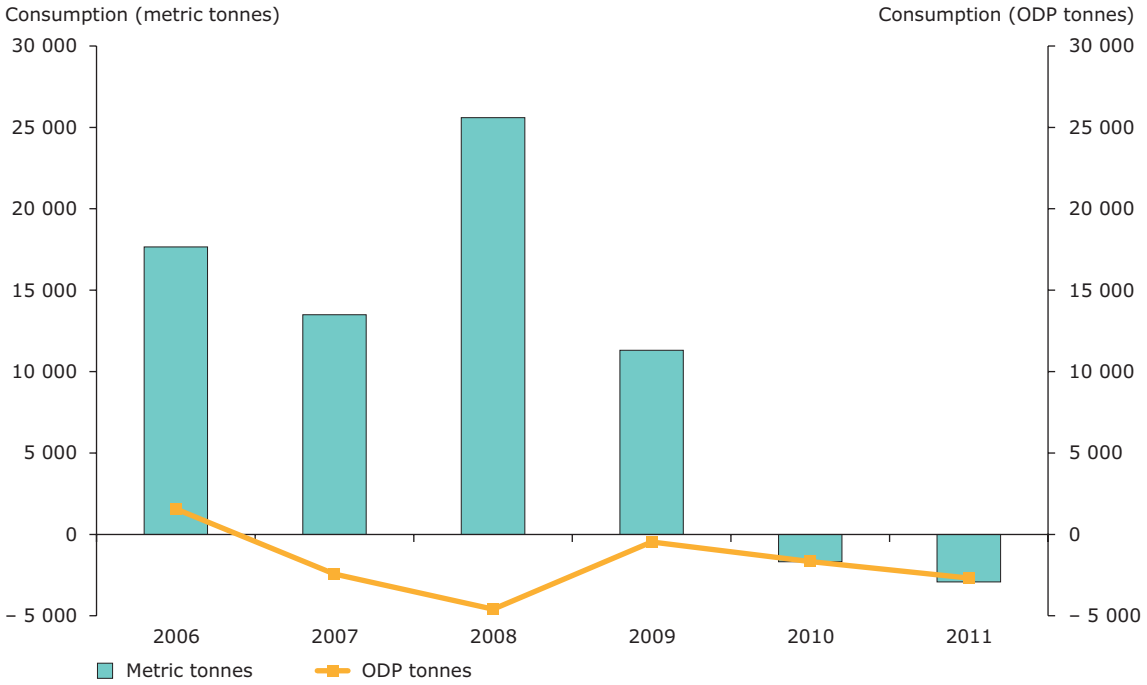
Following the methodology outlined in the Montreal Protocol and its subsequent amendments, consumption integrates the statistics on import, export, production and destruction into a single indicator. The time trend of consumption in the European Union is distinctly different when expressed in metric and in ODP tonnes, especially in the period 2006–2009 (Figure ES.7). This is due to controlled substances having a high ozone-depleting potential had a negative consumption (e.g. CTC and CFCs), and controlled substances with a lower ozone-depleting potential had a positive consumption (e.g. HCFCs), in the period 2006–2009.

Feedstock consumption and use

The reporting obligation of the ODS regulation allows for a direct assessment of the use of controlled substances as feedstock agents. *Feedstock use* can be calculated directly as the reported make-up (quantities of substances fed into the process cycle for the first time) minus the quantities sent for destruction by feedstock users. *Feedstock consumption* in contrast, may be calculated using data on production, import and export of controlled substances for feedstock use. Although the methodologies are different, in principle both should provide similar results.

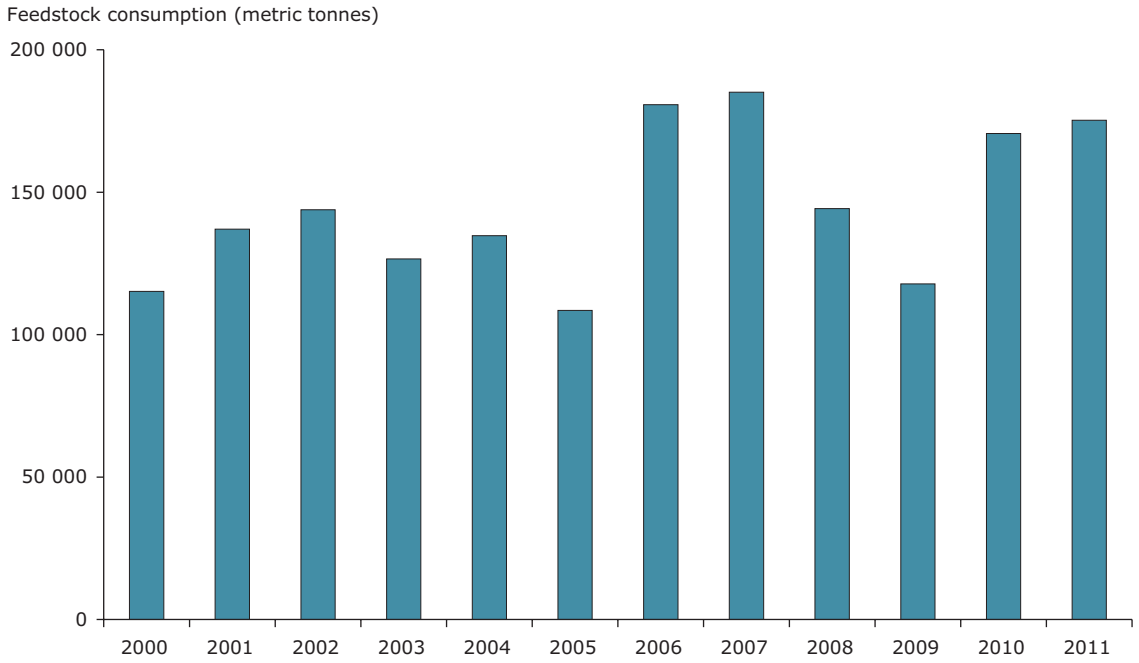
In 2011, feedstock consumption was approximately 5 000 metric tonnes (or 5 000 ODP tonnes) higher than feedstock use (Figure ES.8) i.e. 2.8 % of the total

Figure ES.7 Trend in the consumption of aggregated controlled substances within the European Union (expressed in metric tonnes and ODP tonnes)



Source: 2006–2010: previous ODS reports (BiPRO); 2011: EEA.

Figure ES.8 Trend in the feedstock consumption of aggregated controlled substances within the European Union (expressed in metric tonnes)



Source: 2000–2010: previous ODS reports (BiPRO); 2011: EEA.

feedstock consumption in that year. This increase was mainly caused by CTC, for which the respective feedstock consumption was more than 5 600 metric tonnes higher than feedstock use. In 2011, feedstock production was also higher than the use, resulting in significant increases in stocks. The stocks at CTC producers had for example increased by 5 300 metric tonnes by the end of 2011 compared to the start of that year.

Process agent use

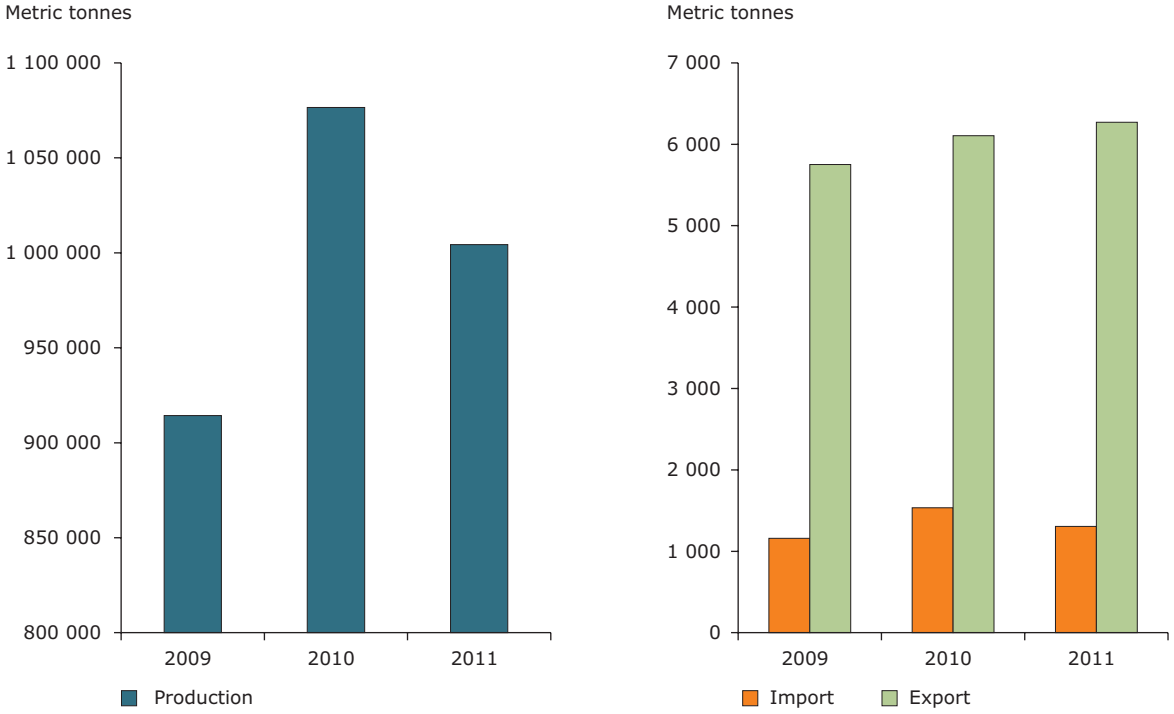
The use of controlled substances as process agents is limited to a certain set of processes. Moreover, the European Union imposes restrictions on the quantity used as make-up and resulting emissions for each registered process agent user. The total make-up of controlled substances (in effect only CTC, CFC-12 and CFC-113) was 164 metric tonnes lower in 2011 than in 2010, due to several companies that reported no activity or make-up in 2011. As a result, the quantity used make-up was well below the EU restriction in 2011, whereas in 2010 this was not the case. Emissions on the other hand were considerably higher than in previous years and exceeded the EU restrictions considerably, due to the reported data from one company.

New substances

Only producers, importers and exporters have to report information on new substances. The aggregated data show that quantities imported and exported are small compared to the production of both new substances (Figure ES.9) and to the import and export of controlled substances. Production of new substances in 2011 (expressed in metric tonnes) was more than five times higher than production of controlled substances. However due to the low ODP of the new substances ([2]), the picture is different when quantities are expressed in ODP tonnes (Figure ES.10). The vast majority of the new substances produced are used as feedstock (99.6 % when expressed in metric tonnes).

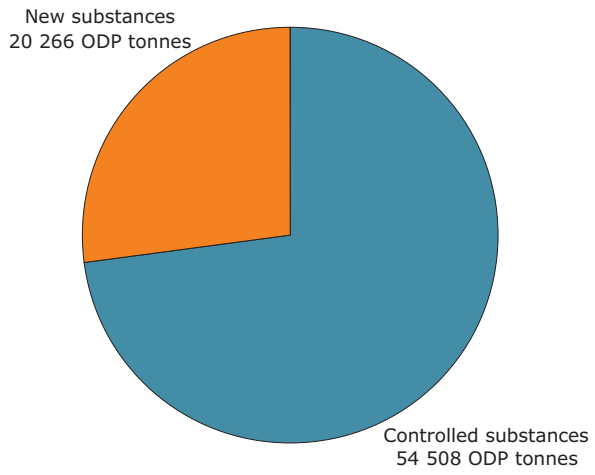
([2]) For certain new substances, the ozone-depleting potential is expressed as a range in the EU ODS Regulation. In such instances, the average of the range was used for converting from metric tonnes to ODP tonnes.

Figure ES.9 **Trend in the production, import and export of aggregated new substances within the European Union (expressed in metric tonnes)**



Note: The two charts have different y-axis scales.
Source: 2009–2010: previous ODS reports (BiPRO); 2011: EEA.

Figure ES.10 **Comparison of the production of aggregated new and controlled substances within the European Union (expressed in ODP tonnes)**



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