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ECONOMIC COMMISSION FOR EUROPE

EXECUTIVE BODY FOR THE CONVENTION ON  
LONG-RANGE TRANSBOUNDARY AIR POLLUTION

Nineteenth session  
(Geneva, 11–14 December 2001)  
Item 5 of the provisional agenda

**THE FOURTH REPORT OF THE IMPLEMENTATION COMMITTEE**

**Introduction**

1. At its seventeenth and eighteenth sessions the Executive Body elected the following members to the Implementation Committee: Mr. Harald DOVLAND (Norway); Mr. Ramón GUARDANS (Spain); Mr. Masud HUSAIN (Canada); Mr. Dieter JOST (Germany); Ms. Tine KJAERULF (Denmark); Mr. Tuomas KUOKKANEN (Finland); Mr. Ivan MOJÍK (Slovakia); Mr. Cristiano PIACENTE (Italy); and Mr. Patrick SZÉLL (United Kingdom). Mr. Széll was elected Chairman of the Committee (ECE/EB.AIR/68, para. 31 (c) and ECE/EB.AIR/71, para. 27 (f)).

2. The Implementation Committee held two meetings in 2001. Its seventh meeting was held in Bratislava on 2-4 May and its eighth meeting in Geneva on 17-19 September. Mr. Piacente did not participate in the seventh meeting. Mr. Henning WUESTER participated in both meetings on behalf of the secretariat.

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## I. SUBMISSIONS CONCERNING COMPLIANCE WITH THE VOC PROTOCOL

### A. Submission by Norway

#### 1. Background

3. In a letter received by the secretariat on 25 September 2000, Norway presented a submission to the Implementation Committee under paragraph 4 (b) of the structure and functions of the Committee (Executive Body decision 1997/2, annex) concerning its compliance with the emission reduction obligation under article 2, paragraph 2 (b), of the 1991 Geneva Protocol on the Control of Emissions of Volatile Organic Compounds or their Transboundary Fluxes.

4. Mr. H. DOVLAND (Norway) presented the submission by Norway. VOC emissions in Norway's Tropospheric Management Area (TOMA), defined by annex I to the Protocol, should have been reduced by 30% between 1989 and 1999, but instead, they increased from 275.8 kt to 291.9 kt. In addition, total national annual emissions by the year 1999 should not have exceeded the 1988 levels and, instead, they increased from 249 to 350.6 kt.

5. Mr. Dovland explained that the main reason for this failure was the delay in developing the necessary technologies to control VOC emissions in the offshore oil sector, which was responsible for a large share (more than 40%) of Norway's VOC emissions. In contrast to his country's expectations when it had signed the VOC Protocol, appropriate technology to reduce VOC emissions from offshore loading of crude oil had become commercially available only very recently. Oil production had been expected to remain more or less stable at the time of the negotiation of the VOC Protocol, but it had grown from 86 million Sm<sup>3</sup> in 1989 to 168.6 million Sm<sup>3</sup> in 1999. VOC emissions from mobile sources had decreased by a third, while those in other sectors had remained constant or increased moderately. A licensing system for VOC emissions from offshore loading was at present being applied in a manner that would bring about emission reductions in this sector so that Norway would be back in compliance by 2005 or 2006.

6. Norway had implemented or was in the process of implementing relevant EC regulations to reduce VOC emissions. At a new oil terminal (in western Norway), new technology had been introduced to reduce emissions from crude oil vapour by 60%. Implementation of reduction technology offshore was essential for Norway to achieve its VOC reduction obligations. An assessment of additional measures in other sectors showed that such measures would have much higher costs per ton abated and would not have the necessary effect on total emissions.

7. The situation for other Parties with major offshore oil and gas industries was not comparable to the situation of Norway. For instance, the importance of VOC emissions from

offshore loading was much lower in the United Kingdom (only some 7% of total emissions). The United Kingdom's oil production in the period in question had been decreasing and moreover most of its offshore oil was transported by pipeline rather than by tanker, avoiding the emission problems encountered by Norway.

## **2. Consideration**

8. The Committee considered carefully all the arguments presented by Norway and, in this regard, looked closely at the pertinent provisions of the VOC Protocol. It identified that the relevant legal obligation was article 2, paragraph 2 (b). According to this provision, Norway had the obligation to take effective measures to reduce its annual emissions within the TOMA specified under annex I by at least 30% by 1999 using 1989 as its base year, and to ensure that its total national annual emissions by 1999 did not exceed its 1988 levels. Norway considered itself to be in non-compliance because its national annual total emissions in 1999 were 41% above its 1988 levels and the emissions in its TOMA in 1999 were 6% above 1989 levels.

9. The Committee concluded that the wording of paragraph 2 was categorical in stating that effective measures had to be taken in order to meet the reduction targets by 1999. In this regard, it noted that nothing in the Protocol gave any reason to doubt the conclusion about Norway's non-compliance.

## **3. Recommendation to the Executive Body**

10. Based on the above consideration, the Implementation Committee recommends to the Executive Body that it adopt the following decision:

The Executive Body, acting under paragraph 11 of the structure and functions of the Implementation Committee (Executive Body decision 1997/2, annex):

(a) Welcomes the submission by Norway to the Implementation Committee concerning its compliance with the requirements of paragraph 2 (b) of article 2 of the 1991 Geneva Protocol on the Control of Emissions of Volatile Organic Compounds or their Transboundary Fluxes;

(b) Notes the report provided by the Implementation Committee on this matter (EB.AIR/2001/3, para. 3-9) and in particular its conclusion regarding Norway's non-compliance with the emission reduction obligation of the VOC Protocol;

(c) Expresses its concern at the failure by Norway to fulfil its obligation to take effective measures to reduce its annual emissions within the TOMA specified under annex I by at least 30% by 1999 using 1989 as its base year, and to ensure that its total national annual emissions by 1999 did not exceed its 1988 levels, as required by paragraph 2 (b) of article 2 of the VOC Protocol;

(d) Notes that Norway expects that the measures that it has adopted to implement the provisions of paragraph 2 (b) of article 2, in particular its licensing system for offshore oil loading facilities, will bring it into compliance not later than 2005 or 2006;

(e) Notes with concern that, if Norway reaches the required emission reductions only by 2006, it would be in non-compliance for seven years;

(f) Urges Norway to fulfil its obligation under the VOC Protocol as soon as possible; and

(g) Invites Norway to report to the Implementation Committee by 30 April 2002 on the progress that it has made with regard to the implementation of measures to reduce its VOC emissions, including information on:

- (i) The legislative and administrative steps that it has taken to reduce emissions, in particular through the implementation of its licensing system and the progress made in introducing abatement technology in the offshore sector, as well as measures taken to reduce emissions from the use of solvents and other products;
- (ii) The further reductions in its VOC emissions since 1999; and
- (iii) Data on economic activities in its main VOC-emitting sectors since 1999;

(h) Requests the Implementation Committee to review the progress made by Norway and report to it thereon at its twentieth session.

## **B. Submission by Finland**

### **1. Background**

11. In a letter received by the secretariat on 30 April 2001, Finland presented a submission to the Implementation Committee under paragraph 4 (b) of the structure and functions of the Committee (Executive Body decision 1997/2, annex) concerning its compliance with the emission reduction obligation under article 2, paragraph 2 (a), of the 1991 Geneva Protocol on the Control of Emissions of Volatile Organic Compounds or their Transboundary Fluxes.

12. Mr. T. KUOKKANEN (Finland) presented the submission by Finland. VOC emissions should have been reduced by 30% by the year 1999 using 1988 levels as a basis, but according to the latest emission estimates by Finland, they had been reduced only by 24%. Finland presented on 15 August 2001 a detailed report of its emissions data for the period 1988 to 1999, including a recalculation of earlier submitted data to take account of advances in emission inventory methodologies. This report had been submitted to EMEP so

that it was incorporated into the emission database of EMEP after consistency checks conducted by the Meteorological Synthesizing Centre-West of EMEP. It was subsequently presented to the Implementation Committee.

13. Mr. Kuokkanen stated that Finland had strived to introduce all cost-effective measures to implement its obligations. According to him, several national measures adopted in the 1990s had contributed to reducing emission levels at large. With regard to the road transport, which was the largest source of VOC emissions in Finland, the three-way catalytic converters had been required for new cars by national emission standards since 1991, and Finland had implemented all EC exhaust gas regulations for motor vehicles. Although the reduction rate of the transport sector from 1988 to 1999 was 29%, a much higher rate of some 42% was expected when Finland ratified the VOC Protocol. Mr. Kuokkanen explained that due to the economic recession in Finland in the first half of the 1990s the renewal of his country's car fleet had been slower than anticipated, so that emission reductions in this important sector had fallen behind expectations. Thus, still in 1999, 48% of the car mileage was driven by cars without catalytic converters.

14. Mr. Kuokkanen also explained that due to climatic conditions, the cold start of passenger cars was a relatively serious problem in Finland. It reduced the efficiency of the catalysts, leading to higher VOC emissions. The cold-start effect had been taken into account in the Finnish calculation system for traffic emissions. An additional reason for lower reductions than estimated was the unexpectedly large growth in the use of non-road machinery and water-borne traffic. It had been difficult to introduce regulations on those sectors because emissions had been underestimated and relevant EC legislation was pending. A new calculation model for machinery had been introduced in Finland in 2000. Mr. Kuokkanen stated that while the model calculated the 1999 emissions accurately, the emission figure for the base year was based on rough approximations only, due to great uncertainties in the emission factors, fleet rates, sales data and use. In the inventory, emissions from wood burning were also a factor of uncertainty.

15. Finland was using its best endeavours to reach the 30% reduction target as soon as possible but at the latest by 2004 or 2005. This was estimated on the basis of an assumed renewal of the car fleet and other reduction measures that were presented to the Implementation Committee.

## **2. Consideration**

16. The Committee considered carefully all the arguments presented by Finland and, in this regard, looked closely at the pertinent provisions of the VOC Protocol. It identified that the relevant legal obligation was article 2, paragraph 2 (a). According to that provision, Finland had the obligation to take effective measures to reduce its national annual emissions

by at least 30% by 1999 using 1988 as its base year. Finland recognized that it had not reached the 30% reduction because its national annual total emissions in 1999 were only 24% below its 1988 levels.

17. Concerning the methodology used for emission estimation, the Committee noted that it was not constituted to determine which methodology was the best. It recognized that there could be a difference of opinion among experts concerning this question and that knowledge about the methodologies was evolving constantly. Moreover, the exact percentage might differ depending on what methodology was used and how uncertainties had been taken into account. In the present case, the Committee based its consideration on the emission data submitted by Finland.

18. The Committee concluded that the wording of paragraph 2 was categorical in stating that effective measures had to be taken in order to meet the reduction targets by 1999. In this regard, it noted that nothing in the Protocol gave any reason to doubt the conclusion about Finland's non-compliance.

### **3. Recommendation to the Executive Body**

19. Based on the above consideration, the Implementation Committee recommends to the Executive Body that it adopt the following decision:

The Executive Body, acting under paragraph 11 of the structure and functions of the Implementation Committee (Executive Body decision 1997/2, annex):

(a) Welcomes the submission by Finland to the Implementation Committee concerning its compliance with the requirements of paragraph 2 (a) of article 2 of the 1991 Geneva Protocol on the Control of Emissions of Volatile Organic Compounds or their Transboundary Fluxes;

(b) Notes the report provided by the Implementation Committee on this matter (EB.AIR/2001/3, para. 11-18) and in particular its conclusion regarding Finland's non-compliance with the emission reduction obligation of the VOC Protocol;

(c) Expresses its concern at the failure by Finland to fulfil its obligation to take effective measures to reduce its national annual emissions by at least 30% by 1999 using 1988 as its base year, as required by paragraph 2 (a) of article 2 of the VOC Protocol;

(d) Notes that Finland expects that the measures that it has adopted to implement the provisions of paragraph 2 (a) of article 2 will bring it into compliance not later than 2004 or 2005;

(e) Notes with concern that, if Finland reaches the required emission reductions

only by 2005, it would be in non-compliance for six years;

(f) Urges Finland to fulfil its obligation under the VOC Protocol as soon as possible; and

(g) Invites Finland to report to the Implementation Committee by 30 April 2002 on the progress that it has made with regard to the implementation of measures to reduce its VOC emissions, including information on:

- (i) The legislative and administrative steps that it has taken to reduce emissions, in particular with respect to its mobile source (road and non-road) sectors;
- (ii) The further reductions in its VOC emissions since 1999; and
- (iii) Data on economic activities in its main VOC-emitting sectors since 1999;

(h) Requests the Implementation Committee to review the progress made by Finland and report to it thereon at its twentieth session.

## C. Submission by Italy

### 1. Background

20. In a letter received by the secretariat on 8 May 2001, Italy presented a submission to the Implementation Committee under paragraph 4 (b) of the structure and functions of the Committee (Executive Body decision 1997/2, annex) concerning its compliance with the emission reduction obligation under article 2, paragraph 2 (a), of the 1991 Geneva Protocol on the Control of Emissions of Volatile Organic Compounds or their Transboundary Fluxes.

21. Mr. G. VIALETTO (Italy) presented the submission by Italy. VOC emissions should have been reduced by 30% between 1990 and 1999, but according to the latest emission estimates by Italy, they had only been reduced by 18% (or 24% taking the emission data submitted to EMEP). With some delay in reporting, Italy had prepared a detailed assessment of its emission data for the period 1996 to 1999 based on the 1997 emission reporting guidelines (EB.AIR/GE.1/1997/5). Using the same methodology, its emissions for 1990 would be 2041 kt, whereas the figure reported to EMEP, based on previous methodology, was 2213 kt. Its 1999 emissions were estimated at 1671 kt.

22. The submission explained that developments in the mobile source sectors, about 60% of total emissions, were responsible for Italy's problems. Emissions in these sectors were reduced by only 15%, whereas those in other sector were cut by 25-35%. One reason for this

was that, in contrast to other countries, in Italy the demand for petrol increased during the 1990s, while diesel consumption remained stable. Furthermore, there was wide use of mopeds with two-stroke engine and of motorcycles and this had further grown over the 1990s. Given that emissions from these vehicles were not regulated, their contribution to total VOC emissions (constituting 16% of total transport emissions in 1999) had increased. Finally, two-stroke engines used in the non-road sector, including marine and agricultural activities, which were not covered by European Community legislation, had contributed to the problem.

23. Italy had adopted additional measures since 1997. Car and moped/motorcycle scrappage schemes had been introduced with a view to accelerating the renewal of the vehicle fleet. Vehicle inspection and maintenance frequency had been increased. Special measures had been taken to reduce urban transport by private cars. For marine transport, two-stroke engines were starting to be replaced by four-stroke engines. Through these and other measures, Italy expected to reach the 30% reduction target by 2001 or 2002.

## **2. Consideration**

24. The Committee considered carefully all the arguments presented by Italy and, in this regard, looked closely at the pertinent provisions of the VOC Protocol. It identified that the relevant legal obligation was article 2, paragraph 2 (a). According to this provision, Italy had the obligation to take effective measures to reduce its national annual emissions by at least 30% by 1999 using 1990 as its base year. Italy considered itself to be in non-compliance because its national annual total emissions in 1999 were only 18% (or 24% taking the emission data submitted to EMEP) below its 1990 levels.

25. Concerning the methodology used for emission estimation, the Committee recognized that it was not constituted to determine which methodology was the best. It recognized that there could be a difference of opinion among experts concerning this question and that knowledge about the methodologies was evolving constantly. It noted that the conclusion that Italy had reached based on its methodology would not change fundamentally, although the exact percentage might differ if another methodology was used.

26. The Committee concluded that the wording of paragraph 2 was categorical in stating that effective measures had to be taken in order to meet the reduction targets by 1999. In this regard, it noted that nothing in the Protocol gave any reason to doubt the conclusion about Italy's non-compliance.

## **3. Recommendation to the Executive Body**

27. Based on the above consideration, the Implementation Committee recommends to the Executive Body that it adopt the following decision:

The Executive Body, acting under paragraph 11 of the structure and functions of the Implementation Committee (Executive Body decision 1997/2, annex):

(a) Welcomes the submission by Italy to the Implementation Committee concerning its compliance with the requirements of paragraph 2 (a) of article 2 of the 1991 Geneva Protocol on the Control of Emissions of Volatile Organic Compounds or their Transboundary Fluxes;

(b) Notes the report provided by the Implementation Committee on this matter (EB.AIR/2001/3, para. 20-26) and in particular its conclusion regarding Italy's non-compliance with the emission reduction obligation of the VOC Protocol;

(c) Expresses its concern at the failure by Italy to fulfil its obligation to take effective measures to reduce its national annual emissions by at least 30% by 1999 using 1988 as its base year, as required by paragraph 2 (a) of article 2 of the VOC Protocol;

(d) Notes that Italy expects that the measures that it has adopted to implement the provisions of paragraph 2 (a) of article 2 will bring it into compliance not later than 2001 or 2002;

(e) Urges Italy to fulfill its obligation under the VOC Protocol as soon as possible; and

(f) Invites Italy to report to the Implementation Committee by 30 April 2002 on the progress that it has made with regard to the implementation of measures to further reduce its VOC emissions, including information on:

- (i) The legislative and administrative steps that it has taken to reduce emissions, in particular with respect to its mobile source sector (road and non-road, especially the use of two-stroke engines);
- (ii) The further reductions in its VOC emissions since 1999; and
- (iii) Data on economic activities in its main VOC-emitting sectors since 1999;

(g) Requests the Implementation Committee to review the progress made by Italy and report to it thereon at its twentieth session.

## **II. COMPLIANCE WITH REPORTING OBLIGATIONS**

### **A. Follow-up to Executive Body decision 2000/2**

28. At its eighteenth session, as part of decision 2000/2, the Executive Body requested the Implementation Committee to review the progress made by the Parties mentioned in that

decision with their reporting obligations and report to it thereon at its nineteenth session. Decision 2000/2 named five Parties that had repeatedly been identified as being in non-compliance with their reporting obligations under the Protocols, either in respect of reporting on their emission data or on their strategies and policies, or both. It had urged these Parties to comply with their reporting obligations as soon as possible but no later than 31 January 2001.

29. On 5 January 2001, the secretariat sent letters to the five Parties concerned, reminding them of this Executive Body decision and the deadline. The Implementation Committee, at its seventh meeting, noted with concern that four of the five Parties had not submitted information that would bring them into full compliance with their reporting obligations. It requested its Chairman to draft and send, through the secretariat, a letter to the Parties concerned explaining the seriousness of their continuing failure to fulfil their reporting obligations and soliciting urgent action to ensure that the Committee was sent the missing information for its meeting in September 2001. The Committee returned to this matter at its eighth meeting.

30. The following progress had been made by the time of the Committee's eighth meeting:

(a) France submitted in April 2001 the completed questionnaire for the 2000 review on strategies and policies;

(b) Greece submitted some of the missing emission data in March 2001 and provided the remainder of the data in September 2001;

(c) Liechtenstein responded to the two letters in February and September 2001, informing the Implementation Committee that it was not in a position to report any accurate emission data, but was in the process of compiling an emission register, based on state-of-the-art methodologies. The register was expected to be in full operation by the end of 2002, but it would report preliminary data for past years at the beginning of 2002 and submit final data at the beginning of 2003. Concerning the reporting on strategies and policies, Liechtenstein declared that it would report fully on these in the questionnaire for the 2002 review on strategies and policies;

(d) Luxembourg submitted emission data for 1999 in March 2001, but not the required emission data for the base year or the earlier reporting years of the NO<sub>x</sub> Protocol. Nor did it submit any information on its strategies and policies. In response to the letter from the Chairman of the Committee, Luxembourg informed the Committee that it had just requested the missing information to be compiled and was confident that it would be able to submit this information by 1 December 2001;

(e) The European Community has not submitted the required emission data for

the base year or for the other reporting years of the NO<sub>x</sub> Protocol. In response to the letter from the Chairman of the Committee, the European Community informed the Committee that it was working hard to obtain a complete picture, that data from all its member States were not yet available, but that it would try to provide the Committee with them as soon as possible.

31. The Implementation Committee informs the Executive Body that Liechtenstein, Luxembourg and the European Community have, despite two reminder letters, not met the Executive Body's request and were still in non-compliance with their reporting obligations. The Committee has, therefore, included in its recommended decision for the Executive Body concerning compliance with reporting obligations (para. 45 below), a sub-paragraph in which the Executive Body would express its serious concern over this situation and a further sub-paragraph in which the Executive Body would urge the three Parties to comply with their reporting obligations and provide as soon as possible, but no later than 31 January 2002, all the missing information on their national emissions and, if they could not comply fully within this timeframe, to draw up a precise timetable in agreement with the secretariat before 31 January 2002 for the provision of that information. At its nineteenth session, the Executive Body will be informed whether the situation has improved and may wish to modify the draft decision if appropriate.

#### **B. Emission data**

32. The Implementation Committee reviewed the emission data presented to, and taken note of by, the EMEP Steering Body at its twenty-fifth session. In reaching its conclusions, the Committee took into account its previous conclusions regarding emission data (EB.AIR/1998/4, EB.AIR/1999/4, para. 28, and EB.AIR/2000/2, para. 21).

33. The Committee noted that, whilst the emission data reported were more complete than in previous years, there was still much room for improvement in this regard. This was well illustrated by the information presented in tables 10, 11 and 13 of EB.AIR/GE.1/2001/7, which showed that some Parties' emission reporting was incomplete. Given that the data referred to in those tables fell under the requirements of the adopted guidelines, late or incomplete presentation of the data constituted a case of non-compliance for Parties to the 1991 VOC and the 1994 Sulphur Protocols that were within the geographical scope of EMEP with the reporting requirements of those Protocols, in particular, article 8, paragraph 3, of the 1991 VOC Protocol and article 5, paragraphs 1 (b) and 2, of the 1994 Sulphur Protocol.

34. The Implementation Committee evaluated the completeness and timeliness of reporting, based on the information presented in the report on the present state of emission data (EB.AIR/GE.1/2001/7) covering emission data reported up to 17 June 2001, while the deadline for reporting was 31 December 2000.

35. Table 1 below, updating the information previously presented by the Committee to the Executive Body (EB.AIR/2000/2, table 1), gives an overview of emission data reporting by the Parties to the 1985 Sulphur Protocol. It shows the date of entry into force of the Protocol for each Party and whether data were reported for the base year and successive years starting with the year of entry into force for that Party. 96% of the required annual total emission data have been reported and 91% of the data were reported as final and as covering all emission source categories.

36. Table 2 below, updating the information previously presented by the Committee to the Executive Body (EB.AIR/2000/2, table 2), gives an overview of emission data reporting by the Parties to the 1988 NO<sub>x</sub> Protocol. It shows the date of entry into force of the Protocol for each Party and indicates whether data were reported for the base year and the years starting with the year of entry into force for that Party. 93% of the required annual total emission data have been reported and almost 92% of the data were reported as final and as covering all emission source categories.

37. Table 3 below reviews the reporting on VOC emissions by Parties to the 1991 VOC Protocol, updating the information previously presented by the Committee to the Executive Body (EB.AIR/2000/2, table 3). It shows the date of entry into force of the Protocol for each Party and indicates whether data were reported for the base year and the years since entry into force. 90% of the required annual total emission data have been reported and 87% of the data were reported as final and as covering all emission source categories.

38. Table 4 reviews the reporting on sulphur emissions by Parties to the 1994 Sulphur Protocol, updating the information previously presented by the Committee to the Executive Body (EB.AIR/2000/2, table 4). It shows the date of entry into force of the Protocol for each Party and indicates whether data were reported for the one year since entry into force. Besides annual total emission data, the 1994 Sulphur Protocol requires its Parties to report emission data for specified source categories. 86% of the required data have been reported.

39. The Committee tried, for the first time, to evaluate the timeliness of emission data reporting. Parties were required to submit the emission data for 1999 by 31 December 2000 to the secretariat. Tables 1 to 4 show (by an index "T") which of the 1999 emission data were submitted on time. Cases where a Party made a preliminary submission on time, and followed this by a final submission received after the deadline, have not been marked as timely. For the 1985 Sulphur Protocol, 9 of the 21 Parties (43%) submitted the data on time. For the 1988 NO<sub>x</sub> Protocol the figure is 38%, for the 1991 VOC Protocol 41% and for the 1994 Sulphur Protocol also 36%.

40. In its submission (see paras. 20-23 above), Italy raised the question whether it should recalculate the emissions and correct the emission data that it had previously submitted to

EMEP. It pointed to a change in methodology that had been recommended in 1997 which required it to exclude natural emissions from its inventory. The Implementation Committee reviewed the legal basis for this question and noted that:

- (a) The VOC Protocol and the other Protocols to the Convention referred specifically to anthropogenic emission;
- (b) The VOC Protocol explicitly encouraged Parties to revise previously submitted data.

41. The Committee reached the following conclusions, which it draws to the attention of the Executive Body:

(a) The Committee noted the continued improvement in the completeness of emission data reported by Parties to the 1988 NO<sub>x</sub>, 1991 VOC and 1994 Sulphur Protocols in comparison to the previous years. It was noted that some Parties had improved their record significantly. On the whole the coverage of emission data reporting (expressed as the percentage of required emission data submitted in the table below) had improved since the Implementation Committee started examining the completeness of reported data:

	Final and complete emission data reported for:			
	1985 Sulphur Protocol (%)	1988 NO <sub>x</sub> Protocol (%)	1991 VOC Protocol (%)	1994 Sulphur Protocol (%)
First report (1998)	86	82	-	-
Second report (1999)	89	86	76	-
Third report (2000)	90	89	82	81
Fourth report (2001)	91	92	87	86

Nevertheless, while these improvements showed the average over all years for which emission data had to be reported, for the most recent year (1999) a number of Parties had not complied with their reporting obligations on time and to date had submitted merely preliminary or incomplete data or no data at all;

(b) The Committee stressed the importance of reporting on time, but also noted that there might in some cases be a trade-off between partial but timely reporting on the one hand and complete but delayed reporting on the other hand. In the 2000 reporting round, 11 Parties to Protocols had submitted their reports by the deadline, but only 8 of them had presented final and complete emission data reports. Less than half of the Parties that were subject to a legal emission data-reporting requirement under one of the Protocols had reported emission data on time. This was not satisfactory and led to a significant waste of resources in the secretariat and the responsible EMEP centre, the Meteorological Synthesizing Centre-West (MSC-W), in handling the submissions. It also made the Implementation Committee's work more difficult, as data compilations often reached it too

late to receive adequate attention and very late submissions made it necessary for the Committee to do this work a second time;

(c) The Committee remained concerned that a few Parties were consistently in non-compliance with their emission data reporting obligations:

- (i) For the 1985 Sulphur Protocol, the **Russian Federation** still had not submitted emission data covering all relevant sources for the base year. **Liechtenstein** had still not submitted any data for years after 1994. **Luxembourg** had still not provided any data for the years 1987-89 and 1991-92. **Ukraine** had not submitted data for 1998-99;
- (ii) For the 1988 NO<sub>x</sub> Protocol, there were still two Parties (**Luxembourg** and **European Community**) that had not even reported emission data for the base year. Moreover, for the **Russian Federation** the base year data still did not cover all relevant sources. **Liechtenstein** had not reported data for years after 1994 and **Spain** and **the European Community** for years after 1996. **Ukraine** had not submitted data for 1998-99;
- (iii) For the 1991 VOC Protocol, **Liechtenstein** and **Spain** had still not submitted any data for the years 1997-99;
- (iv) For the 1994 Sulphur Protocol, **Liechtenstein**, **Spain** and the **European Community** had still not reported any of the required emission data.

The Implementation Committee wished to remind Parties of the importance of complying fully and on time with their reporting obligations.

### **C. Questionnaire for the 2002 Review on strategies and policies for air pollution abatement**

42. The secretariat presented the draft questionnaire for the 2002 review on strategies and policies for air pollution abatement to the Committee. It had added a new section on the Gothenburg Protocol, responding to which would be optional until the Protocol entered into force. The secretariat had also drawn up an optional section on general information on the basis of proposals from a Netherlands consultant. The draft also contained proposals for streamlining the processing of the information received through the questionnaire, in particular foreseeing that responses would be made available via the Internet and only a summary would be presented in the form of a printed document.

43. The Implementation Committee noted that, in line with its mandate, it must concentrate on the Protocol-specific parts of the questionnaire. It recognized with concern, however, that the increased volume of the general section would place a significant additional burden both on Parties and on the secretariat. This additional burden might affect the quality and timeliness of reporting to the mandatory sections of the report. The Committee recommended the secretariat to review this section and, in particular, examine which information might be covered under reporting schemes in operation under other environmental agreements, such as the United Nations Framework Convention on Climate Change.

44. The Committee expressed its satisfaction that the questionnaire had not changed significantly with respect to the questions regarding the specific Protocol obligations. It recommended that the secretariat include a statement in the introduction of the questionnaire to remind Parties of the availability of the responses that they had submitted for the previous review on strategies and policies when preparing their reply to the new questionnaire.

#### **D. Recommendation to the Executive Body**

45. In view of the continued non-compliance with reporting obligations by some Parties, the Implementation Committee recommends that the Executive Body adopt the following decision:

The Executive Body, acting under paragraph 11 of the structure and functions of the Implementation Committee (Executive Body decision 1997/2, annex):

(a) Takes note of the report of the Implementation Committee with respect to follow-up to Executive Body decision 2000/2 regarding compliance by Parties with their reporting obligations (EB.AIR/2001/3, paras. 28-31);

(b) Also takes note of the report of the Implementation Committee with respect to compliance by Parties with their emission data reporting obligations under the Protocols, prepared on the basis of information compiled by EMEP (EB.AIR/2001/3, paras. 32-41);

(c) Recalls that the Implementation Committee in its second (EB.AIR/1999/4, para. 28) and third (EB.AIR/2000/2, para. 21) reports drew attention to the fact that Luxembourg and the European Community had not reported emission data on the base year for the 1988 NO<sub>x</sub> Protocol;

(d) Also recalls that the Implementation Committee in its second report (EB.AIR/1999/4, para. 8) drew attention to the fact that Liechtenstein and Luxembourg had not submitted any report for the 1998 Major Review on Strategies and Policies and that in its third report (EB.AIR/2000/2, para. 23) it drew attention to the fact that Liechtenstein and

Luxembourg had not submitted any report for the 2000 Review on Strategies and Policies;

(e) Furthermore recalls that the Implementation Committee in its third report (EB.AIR/2000/2, para. 21) had identified the Russian Federation and Spain as not having fulfilled their emission data reporting obligations;

(f) Expresses concern that the Russian Federation and Spain continue to be in non-compliance with these reporting obligations;

(g) Urges:

- (i) The Russian Federation to comply with its reporting obligations under the 1985 Sulphur Protocol and the 1988 NOx Protocol; and
- (ii) Spain to comply with its reporting obligations under the 1988 NOx Protocol and the 1991 VOC Protocol,

and in these contexts to provide, as soon as possible, but no later than 31 January 2002, all the missing information on their national emissions;

(h) Expresses serious concern that Liechtenstein, Luxembourg and the European Community all remain in non-compliance with their reporting obligations and did not meet the request of the Executive Body in its decision 2000/2 to provide that information by 31 January 2001;

(i) Strongly urges:

- (i) Liechtenstein to comply with its reporting obligations under the 1985 Sulphur Protocol, the 1988 NOx Protocol and the 1991 VOC Protocol;
- (ii) Luxembourg to comply with its reporting obligations under the 1985 Sulphur Protocol, the 1988 NOx Protocol and the 1991 VOC Protocol; and
- (iii) The European Community to comply with its reporting obligations under the 1988 NOx Protocol,

and in these contexts to provide, as soon as possible, but no later than 31 January 2002, all the missing information on their national emissions and, if they cannot comply fully within this timeframe, to draw up a precise timetable in agreement with the secretariat before 31 January 2002 for the provision of the missing information;

(j) Requests the Implementation Committee to review the progress made by the

above-mentioned Parties with regard to their reporting obligations and to report to it thereon at its twentieth session.

### **III. IN-DEPTH REVIEW OF COMPLIANCE BY PARTIES WITH THE EMISSION REDUCTION REQUIREMENTS OF THE 1991 VOC PROTOCOL**

46. As requested by the Executive Body in its work plan (ECE/EB.AIR/71, annex IV, item 1.2), the Implementation Committee carried out an in-depth review of compliance by Parties with the 1991 VOC Protocol, focusing on their national emission obligations. It used as a basis the emission data reported by Parties to EMEP (EB.AIR/GE.1/2001/7) and corrections made to these data. The Committee limited its review to the emission reduction obligations and the related reporting obligations.

47. Article 2, paragraph 2, of the Protocol specifies three options for emission reduction targets that have to be chosen upon signature or upon ratification:

(a) 30% reduction in emissions of volatile organic compounds (VOCs) by 1999 using a year between 1984 and 1990 as a basis. This option has been chosen by Austria, Belgium, Estonia, Finland, France, Germany, the Netherlands, Portugal (not Party), Spain, Sweden and the United Kingdom with 1988 as base year, by Denmark with 1985, by Liechtenstein, Switzerland and the United States (not Party) with 1984, and by the Czech Republic, Italy, Luxembourg, Monaco and Slovakia with 1990 as base year;

(b) The same reduction as for (a) within a Tropospheric Ozone Management Area (TOMA) specified in annex I to the Protocol and ensuring that by 1999 total national emissions do not exceed 1988 levels. Annex I specifies TOMAs in Norway (base year 1989) and Canada (base year 1988, not Party);

(c) Finally, where emissions in 1988 did not exceed certain specified levels, Parties may opt for stabilization at that level of emission by 1999. This has been chosen by Bulgaria, Greece (not Party) and Hungary.

48. Officially submitted emission data suggest that 12 Parties to the VOC Protocol met their emission reduction obligations by 1999. Table 5 below presents an overview of emission reductions of VOCs between 1984 and 1999 for Parties to the VOC Protocol relative to their respective base years. In addition, Norway has informed the Committee that emissions in its TOMA, defined in annex I to the Protocol, increased from 275.8 kt in 1989 to 291.9 kt in 1999. For Belgium and Monaco, the necessary data to calculate their emission reductions by 1999 are missing, but as the Protocol entered into force for these two Parties only in 2001, they had no obligations in 1999.

49. Under article 8, paragraph 2 (a), Parties have to report VOC emission levels for the

previous calendar year (see also chap. II, sect. B, above). Due to their non-compliance with this reporting obligation, it is not possible to evaluate whether **Liechtenstein** and **Spain** have complied with their emission reduction obligations.

50. Five Parties have not met their emission reduction obligation. Instead of reducing emissions by at least 30%, **Finland, Italy** and **Sweden** reduced emissions by only 24%, **Luxembourg** by only 21%. Instead of stabilizing, **Norway's** emissions increased by 41%, and instead of falling by 30%, emissions in its TOMA increased by 6%. For **Liechtenstein** and **Spain**, no data were submitted for 1999 and the most recent data submitted cast doubt on the ability of those Parties to comply with the emission reduction obligation. Finland, Italy and Norway have brought submissions before the Implementation Committee in view of their failure to comply with the VOC Protocol obligations. These cases are addressed in detail in chapter I above.

51. In conclusion, the Committee noted that seven Parties (Finland, Liechtenstein, Luxembourg, Italy, Norway, Spain and Sweden) were failing to comply with the VOC Protocol. It was regrettable that as many as a third of the Parties to the Protocol were in this situation. This was also in stark contrast to the situation for the Helsinki and Sofia Protocols as reviewed in the third report by the Implementation Committee (EB.AIR/2000/2, chapter III).

#### IV. COOPERATION WITH OTHER BODIES

52. A member of the Committee participated in the first meeting on 22 June 2001 of the Task Force on Environmental Compliance and Enforcement, mandated by the Committee on Environmental Policy and led by the Netherlands. The Task Force was established to develop guidelines on environmental compliance and enforcement for adoption at the fifth Ministerial Conference "Environment for Europe" in Kiev in 2003. At its first meeting the Task Force had recognized that the guidelines should focus on UNECE environmental conventions and that the design of compliance and enforcement regimes of each of these instruments would need to be tailor-made to the circumstances of the individual treaty. It appeared that much of the emphasis of the work would be placed on enforcement.

53. The Implementation Committee agreed that it would be useful if at least one of its members could continue to participate in the meetings of the Task Force. Practical experience of the compliance regime under the Convention on Long-range Transboundary Air Pollution was much further advanced than those of the other UNECE conventions and the Committee should, therefore, be prepared to contribute to the work of the Task Force as far as the compliance aspects were concerned.

## V. ORGANIZATIONAL MATTERS

54. The Executive Body at its eighteenth session requested the Implementation Committee to examine procedures for the selection of its members and for replacing them, in particular in the event that any of them become unavailable during their term of office. In this regard, the Committee discussed whether its members participated in the Committee's work in their personal capacity or as representatives of their Party. The Committee recognized that experience gained with the operation of other compliance regimes in the environmental field demonstrated that the quality and expertise of individuals and the continuity with which they participated was crucial to their efficient functioning. It also recognized that there was a need to choose Committee members in a way that reflected a broad geographical representation on the Committee. The Committee understood that there was a need for a clear and proper understanding of the rules governing its operation in accordance with decision 1997/2 in order to prevent time-consuming procedural debates hampering the work of the Committee when more contentious cases arose.

55. There was a need to deal with the problem that occurred if an individual member of the Committee became unavailable during the term of his or her office. The Committee considered that the Executive Body should delegate to its Bureau the authority to select a replacement member for the Implementation Committee from the same Party in a case where, due to exceptional circumstances, a member had become permanently unavailable.

56. The Committee agreed that any textual changes that it might propose to decision 1997/2 should be kept to a minimum. It noted that the Executive Body's practice in selecting individual Committee members representing a Party elected to the Committee was in line with the terms of the decision. A departure from the terms of the decision text had been the practice of electing nine, rather than eight, members. The Committee agreed to recommend to the Executive Body that in this respect the text of its structure and functions should be amended, the reasons being historical, to facilitate achievement of a quorum and to reflect the recent increase in the number of Parties to the Convention.

57. During the course of its deliberations, the Implementation Committee identified an issue pertaining to its terms of reference as established under the annex to Executive Body decision 1997/2 in relation to paragraph 3 (c) that would benefit from clarification. The language of the current text seemed to require an evaluation of the data provided by a Party as a condition precedent for the Committee to consider every submission or referral under paragraphs 4 and 5. Some members of the Committee recollected that the original intent of paragraph 3 (c) had been to allow the Committee to seek an evaluation from technical bodies or experts if it felt that one was required, for example, in situations where uncertainty existed about the quality of the data. It was not believed that the intent had been to have an outside evaluation of data in every case as a precondition to the Committee starting consideration of a

submission or referral where no questions about the data existed.

58. The Committee recognized that this had not affected the Committee's work so far but, for presentational purposes, it might be helpful to correct the wording. A particular reason for making such a change was that other environmental agreements were increasingly looking at the Convention's compliance regime as a model to follow. A simple amendment of the opening words of paragraph 3 (c) would remedy the situation.

59. The Implementation Committee, therefore, recommends to the Executive Body to amend the annex to its decision 1997/2 by:

(a) Replacing paragraph 1 by: "The Committee shall consist of nine Parties to the Convention; each member of the Committee shall be Party to at least one protocol. The Executive Body shall elect Parties for terms of two years. Outgoing Parties may be re-elected for one consecutive term, unless in a given case the Executive Body decides otherwise. The Committee shall elect its own Chairman and Vice-Chairman."

(b) Replacing paragraph 3 (c) by: "Where it deems it necessary, be satisfied, before it adopts a report or recommendation on such a submission or referral, that the quality of data reported by a Party has been evaluated by a relevant technical body under the Executive Body and/or, where appropriate, by an expert nominated by the Bureau of the Executive Body; and"

## **VI. FURTHER WORK**

60. The Implementation Committee reviewed its work plan for 2002 and made suggestions to the secretariat for inclusion in the proposal to be presented to the Executive Body at its nineteenth session.

61. The Committee agreed that it would be logical to address in 2002 the 1994 Sulphur Protocol in its in-depth review. Furthermore, it added to its draft work-plan reference to the work that it conducts in reviewing progress made by the Parties in response to the decisions taken by the Executive Body based upon the Committee's recommendations.

62. The Committee noted that it had not yet been able to consider compliance issues related to obligations in the Protocols that were not subject to specific reporting requirements, such as provisions dealing with research and monitoring (addressed briefly in its first report, EB.AIR/1998/4, para. 25). It noted that it might be useful, as a starting point, to obtain an overview of the participation by Parties in the monitoring work, programmes, scientific workshop, etc. and to discuss this matter with the bureaux of EMEP and the Working Group on Effects.

63. It tentatively scheduled its ninth meeting for the last week of April or the first week of May 2002 and its tenth meeting for the end of September 2002. Both meetings would be held in Geneva.

**Table 1. National total annual emissions reported by Parties to the 1985 Sulphur Protocol (a)**

	Entry into force	Emission data reported for:														
		Base year, 1980	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	
Austria	02/09/1987	X	X	X	X	X	X	X	X	X	X	X	X	X	X <sup>T</sup>	
Belarus	02/09/1987	X	X	X	X	X	X	X	X	X	X	X	X	X	X <sup>T</sup>	
Belgium	07/09/1989	X	X	X	X	X	X	X	X	X	X	X	X	P	P	
Bulgaria	02/09/1987	X	X	X	X	X	X	X	X	X	X	X	X	X	X <sup>T</sup>	
Canada	02/09/1987	X	X	X	X	X	X	X	X	X	X	X	X	X	X <sup>T</sup>	
Czech Republic	01/04/1993	X	n/a	n/a	n/a	n/a	n/a	n/a	X	X	X	X	X	X	X <sup>T</sup>	
Denmark	02/09/1987	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Estonia	05/06/2000	X	n/a													
Finland	02/09/1987	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
France	02/09/1987	X	X	X	X	X	X	X	X	X	X	X	X	X	P <sup>T</sup>	
Germany	02/09/1987	X	X	X	X	X	X	X	X	X	X	X	X	X	X <sup>T</sup>	
Hungary	02/09/1987	X	X	X	X	X	X	X	X	X	X	X	X	X	P	
Italy	06/05/1990	X	n/a	n/a	n/a	X	X	X	X	X	X	X	X	X	X	
Liechtenstein	02/09/1987	X	X	X	X	X	X	X	X	X	-	-	-	-	-	
Luxembourg	22/11/1987	X	-	-	-	X	-	-	X	X	X	X	X	X	X	
Netherlands	02/09/1987	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Norway	02/09/1987	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Russian Federation	02/09/1987	P	P	P	P	P	P	P	P	P	P	X	X	X	X	
Slovakia	26/08/1993	X	n/a	n/a	n/a	n/a	n/a	n/a	X	X	X	X	X	X	X <sup>T</sup>	
Sweden	02/09/1987	X	X	X	X	X	X	X	X	X	X	X	X	X	X <sup>T</sup>	
Switzerland	20/12/1987	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Ukraine	02/09/1987	X	X	X	X	X	X	X	X	X	X	X	X	-	-	
Total:	22 Parties	100%	94%	94%	94%	100%	95%	95%	100%	100%	95%	95%	95%	90%	90%	<b>96%</b>
Total (final, complete data):		95%	89%	89%	89%	95%	89%	89%	95%	95%	90%	95%	95%	86%	76%	<b>91%</b>

Notes:

Information based on emission data in EB.AIR/GE.1/2001/7, updated by a submission from Finland. T Submission received on time.

X Final and complete data available for that year.

- No emission data were reported for that year.

P Preliminary or partial data available for that year.

n/a Not applicable.

(a) Protocol to the 1979 Convention on Long-range Transboundary Air Pollution on the Reduction of Sulphur Emissions or their Transboundary Fluxes by at least 30 per cent, adopted 8.7.1985 in Helsinki.

**Table 2. National total annual emissions reported by Parties to the 1988 NO<sub>x</sub> Protocol (a)**

	Entry into force	Emission data reported for:										
		Base year	1991	1992	1993	1994	1995	1996	1997	1998	1999	
Austria	14/02/1991	X	X	X	X	X	X	X	X	X	X	X <sup>T</sup>
Belarus	14/02/1991	X	X	X	X	X	X	X	X	X	X	X <sup>T</sup>
Belgium	29/01/2001	X	n/a									
Bulgaria	14/02/1991	X	X	X	X	X	X	X	X	X	X	X <sup>T</sup>
Canada	25/04/1991	X	X	X	X	X	X	X	X	X	X	X <sup>T</sup>
Czech Republic	01/04/1993	X	X	X	X	X	X	X	X	X	X	X <sup>T</sup>
Denmark	30/05/1993	X	X	X	X	X	X	X	X	X	X	X
Estonia	05/06/2000	X	n/a									
Finland	14/02/1991	X	X	X	X	X	X	X	X	X	X	X <sup>T</sup>
France	14/02/1991	X	X	X	X	X	X	X	X	X	X	P <sup>T</sup>
Germany	14/02/1991	X	X	X	X	X	X	X	X	X	X	X <sup>T</sup>
Greece	28/07/1998	X	n/a	X	X	X						
Hungary	10/02/1992	X	n/a	X	X	X	X	X	X	X	X	P
Ireland	15/01/1995	X	n/a	n/a	n/a	n/a	X	X	X	X	X	X
Italy	17/08/1992	X	X	X	X	X	X	X	X	X	X	X
Liechtenstein	22/06/1994	X	X	X	X	X	-	-	-	-	-	-
Luxembourg	14/02/1991	-	-	-	-	X	X	X	X	X	X	X
Netherlands	14/02/1991	X	X	X	X	X	X	X	X	X	X	X
Norway	14/02/1991	X	X	X	X	X	X	X	X	X	X	X
Russian Federation	14/02/1991	P	X	X	X	X	X	X	X	X	X	X
Slovakia	26/08/1993	X	n/a	n/a	X	X	X	X	X	X	X	X <sup>T</sup>
Spain	04/03/1991	X	X	X	X	X	X	X	-	-	-	-
Sweden	14/02/1991	X	X	X	X	X	X	X	X	X	X	X <sup>T</sup>
Switzerland	14/02/1991	X	X	X	X	X	X	X	X	X	X	X
Ukraine	14/02/1991	X	X	X	X	X	X	X	X	-	-	-
United Kingdom	14/02/1991	X	X	X	X	X	X	X	X	X	X	X
United States	14/02/1991	X	X	X	X	X	X	X	X	X	X	X
European Community	17/03/1994	-	n/a	n/a	n/a	X	X	X	-	-	-	-
Total:	28 Parties	93%	95%	95%	95%	100%	96%	96%	88%	85%	85%	<b>93%</b>
Total (final and complete):		89%	95%	95%	95%	100%	96%	96%	88%	85%	77%	<b>92%</b>

Notes: Information based on emission data in EB.AIR/GE.1/2001/7, updated by a submission from Greece.

X Final and complete data available for that year.

P Preliminary or partial data available for that year.

T Submission received on time.

- No emission data available for that year.

n/a Not applicable.

(a) Protocol to the 1979 Convention on Long-range Transboundary Air Pollution concerning the Control of Emissions of Nitrogen Oxides or their Transboundary Fluxes, adopted 31.10.1988 in Sofia.

**Table 3. National total annual emissions reported by Parties to the 1991 VOC Protocol (a)**

	Entry into force	Base year	Emission data reported for:				
			Base year	1997	1998	1999	
Austria	29/09/1997	1988	X	X	X	X <sup>T</sup>	
Belgium	29/01/01	1988	-	n/a	n/a	n/a	
Bulgaria	28/05/1998	1988	X	n/a	X	X <sup>T</sup>	
Czech Republic	29/09/1997	1990	X	X	X	X <sup>T</sup>	
Denmark	29/09/1997	1985	X	X	X	X	
Estonia	05/06/2000	1988*	X	n/a	n/a	n/a	
Finland	29/09/1997	1988	X	X	X	X <sup>T</sup>	
France	29/09/1997	1988	X	X	X	P <sup>T</sup>	
Germany	29/09/1997	1988	X	X	X	X <sup>T</sup>	
Hungary	29/09/1997	1988	X	X	X	P	
Italy	29/09/1997	1990	X	X	X	X	
Liechtenstein	29/09/1997	1984	X	-	-	-	
Luxembourg	29/09/1997	1990	X	X	X	X	
Monaco	24/10/2001	1990	X	n/a	n/a	n/a	
Netherlands	29/09/1997	1988	X	X	X	X	
Norway	29/09/1997	1988	X	X	X	X	
Slovakia	14/03/2000	1990	X	n/a	n/a	n/a	
Spain	29/09/1997	1988	X	-	-	-	
Sweden	29/09/1997	1988	X	X	X	X <sup>T</sup>	
Switzerland	29/09/1997	1984	X	X	X	X	
United Kingdom	29/09/1997	1988	X	X	X	X	
Total:	21 Parties		95%	88%	88%	88%	<b>90%</b>
Total (final and complete):			95%	88%	88%	76%	<b>87%</b>

Notes: Information based on emission data in EB.AIR/GE.1/2001/7.

X Final and complete data available for that year.

P Preliminary or partial data available for that year.

T Submission received on time.

- No emission data available for that year.

n/a Not applicable.

\* To be confirmed.

(a) Protocol to the 1979 Convention on Long-range Transboundary Air Pollution concerning the Control of Emissions of Volatile Organic Compounds or their Transboundary Fluxes, adopted 18.11.1991 in Geneva.

**Table 4. Emission data reported by Parties to the 1994 Sulphur Protocol (a)**

	Entry into force	Annual totals reported for:		Sectoral emission reported for:		
		1998	1999	1998	1999	
Austria	25/11/1998	X	X <sup>T</sup>	Y	Y <sup>T</sup>	
Belgium	29/01/2001	n/a	n/a	n/a	n/a	
Canada	05/08/1998	X	X <sup>T</sup>	Y	Y <sup>T</sup>	
Croatia	26/07/1999	n/a	X	n/a	Y	
Czech Republic	05/08/1998	X	X <sup>T</sup>	Y	Y <sup>T</sup>	
Denmark	05/08/1998	X	X	Y	Y	
Finland	06/09/1998	X	X	Y	Y	
France	05/08/1998	X	P <sup>T</sup>	Y	Y <sup>T</sup>	
Germany	01/09/1998	X	X <sup>T</sup>	Y	Y <sup>T</sup>	
Greece	05/08/1998	X	X	Y	Y	
Ireland	03/12/1998	X	X	Y	Y	
Italy	13/12/1998	X	X	Y	Y	
Liechtenstein	05/08/1998	-	-	-	-	
Luxembourg	05/08/1998	X	X	Y	Y	
Netherlands	05/08/1998	X	X	Y	Y	
Norway	05/08/1998	X	X	Y	Y	
Slovakia	05/08/1998	X	X <sup>T</sup>	Y	Y <sup>T</sup>	
Slovenia	05/08/1998	X	X <sup>T</sup>	Y	Y <sup>T</sup>	
Spain	05/08/1998	-	-	-	-	
Sweden	05/08/1998	X	X <sup>T</sup>	Y	Y <sup>T</sup>	
Switzerland	05/08/1998	X	X	Y	Y	
United Kingdom	05/08/1998	X	X	Y	Y	
European Community	05/08/1998	-	-	-	-	
<b>Total:</b>	<b>23 Parties</b>	<b>86%</b>	<b>86%</b>	<b>86%</b>	<b>86%</b>	<b>86%</b>

**Notes:**

Information based on emission data in EB.AIR/GE.1/2001/7, updated by submissions from Finland and Greece.

X Final and complete data available for that year.

Y Sectoral emission data reported for that year.

P Preliminary or partial data available for that year.

T Submission received on time.

- No emission data were reported for that year.

n/a Not applicable.

(a) Protocol to the 1979 Convention on Long-range Transboundary Air Pollution on Further Reduction of Sulphur Emissions, adopted 14.6.1994 in Oslo.

Table 5. Anthropogenic emissions of non-methane volatile organic compounds (kt p.a.) and their change relative to the Party's base year (in bold) of the VOC Protocol

Party/Year	Entry into force	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Austria	29/9/97	361.4 -4%	359.8 -5%	373.3 -1%	376.1 -1%	<b>378.3</b> 0%	367.8 -3%	344.7 -9%	314.2 -17%	280.4 -26%	269 -29%	259.2 -31%	260.2 -31%	249.4 -34%	245.6 -35%	236.3 -38%	230.7 -39%
Belgium	29/1/01	-	688 <sup>a</sup>	-	-	-	-	354	313	313	311	305	294	274	270	277 <sup>a</sup>	271 <sup>a</sup>
Bulgaria*	28/5/98	-	-	-	-	<b>309</b> 0%	-	217 -30%	178 -42%	179 -42%	208 -33%	175 -43%	173 -44%	147 -52%	120 -61%	132 -57%	118 -62%
Czech Republic	29/9/97	-	275 -37%	-	-	-	-	<b>435</b> 0%	398 -9%	359 -17%	338 -22%	310 -29%	286 -34%	284 -35%	272 -37%	269 -38%	248 -43%
Denmark <sup>d</sup>	29/9/97	206 5%	<b>196.7</b> 0%	198.5 1%	199.4 1%	195.5 -1%	194.3 -1%	169.3 -14%	167.2 -15%	161.7 -18%	158.6 -19%	150.9 -23%	146.9 -25%	146.5 -26%	136.8 -30%	133.9 -32%	128 -35%
Estonia	5/6/00	-	81 -4%	83 -1%	83 -1%	<b>84</b> 0%	87 4%	88.4 5%	81.9 -2%	45.4 -46%	41.6 -50%	44.65 -47%	47.5 -43%	50.2 -40%	53.92 -36%	53.7 -36%	42.33 -50%
Finland <sup>e</sup>	29/9/97	-	-	-	-	<b>222.1</b> 0%	226.3	224.4 1%	210.9 -5%	203.7 -8%	196.7 -11%	194.4 -12%	189 -15%	182.8 -18%	177.7 -20%	173.9 -22%	169.9 -24%
France <sup>df</sup>	29/9/97	-	-	-	-	<b>2707</b> 0%	2671 -1%	2459 -9%	2438 -10%	2389 -12%	2266 -16%	2133 -21%	2055 -24%	1991 -26%	1914 -29%	1860 -31%	1784 <sup>b</sup> -34%
Germany <sup>hi</sup>	29/9/97	3191 -2%	3190 -2%	3218 -1%	3273 1%	<b>3255</b> 0%	3202 -2%	3221 -1%	2796 -14%	2539 -22%	2326 -29%	2158 -34%	2024 -38%	1896 -42%	1805 -45%	1723 -47%	1653 -49%
Hungary <sup>*</sup>	29/9/97	-	232 8%	263 22%	228 6%	<b>215</b> 0%	205 -5%	205 -5%	149.6 -30%	141.8 -34%	149 -31%	142.4 -34%	150.3 -30%	150.1 -30%	145.4 -32%	140.6 -35%	149 <sup>b</sup> -31%
Italy	29/9/97	2007 -9%	1992 -10%	2019 -9%	2088 -6%	2124 -4%	2215 0%	<b>2213</b> 0%	2293 4%	2338 6%	2344 6%	2349 6%	2368 7%	1934 -13%	1861 -16%	1764 -20%	1671 <sup>i</sup> -24%
Liechtenstein	29/9/97	<b>1.509</b> 0%	1.517 1%	1.525 1%	1.533 2%	1.54 2%	1.548 3%	1.556 3%	1.492 -1%	1.428 -5%	1.364 -10%	1.3 -14%	-	-	-	-	-
Luxembourg	29/9/97	-	15 -21%	-	-	-	-	<b>19</b> 0%	-	-	18 -5%	18 -5%	16 -16%	16 -16%	15 -21%	13 -32%	14.92 -21%
Monaco	24/10/01	-	-	-	-	-	-	<b>0.7</b> 0%	0.805 15%	0.926 32%	0.829 18%	0.825 18%	0.755 8%	0.702 0%	0.643 -8%	0.586 -16%	-
Netherlands	29/9/97	513 -5%	502 -7%	489 -9%	485 -10%	<b>538</b> 0%	468 -13%	502 -7%	462 -14%	438 -19%	405 -25%	389 -28%	365 -32%	362 -33%	317 -41%	298 -45%	282 -48%
Norway <sup>*</sup>	29/9/97	212.3 -15%	231.4 -7%	249.4 0%	256 3%	<b>249</b> 0%	275.8 11%	301.7 21%	294.9 18%	323.5 30%	339.6 36%	354.2 42%	368.8 48%	373.2 50%	368.5 48%	350.3 41%	350.6 41%
Slovakia	14/3/00	-	-	-	-	-	-	<b>148</b> 0%	-	124 -16%	122 -18%	108 -27%	107 -28%	104 -30%	90 -39%	87 -41%	79 -47%
Spain <sup>d</sup>	29/9/97	2551 -6%	2594 -4%	2622 -3%	2679 -1%	<b>2711</b> 0%	2759 2%	2790 3%	2737 1%	2649 -2%	2485 -8%	2697 -1%	2635 -3%	2515 -7%	-	-	-
Sweden <sup>n</sup>	29/9/97	-	600 8%	-	-	<b>555</b> 0%	-	526 -5%	517 -7%	485 -13%	483 -13%	478 -14%	457 -18%	458 -17%	417 -25%	413 -26%	421 -24%
Switzerland	29/9/97	<b>324</b> 0%	324 0%	318 -2%	311 -4%	305 -6%	298 -8%	279 -14%	261 -19%	242 -25%	226 -30%	213 -34%	200 -38%	191 -41%	182 -44%	173 -47%	165 -49%
United Kingdom	29/9/97	2462 -8%	2475 -7%	2531 -5%	2594 -3%	<b>2662</b> 0%	2693 1%	2657 0%	2592 -3%	2491 -6%	2387 -10%	2340 -12%	2215 -17%	2152 -19%	2050 -23%	1917 -28%	1744 -34%

Based on emission data in table 4 of document EB.AIR/GE.1/2001/7, except for Finland (later submission). For notes, see table 4 of EB.AIR/GE.1/2001/7.

\* Bulgaria, Hungary and Norway are required to stabilize their national annual total emissions. Norway, in addition, has to reduce emissions by 30% in itsTOMA.