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COMMISSION ÉCONOMIQUE POUR L'EUROPE

ORGANE EXÉCUTIF DE LA CONVENTION SUR
LA POLLUTION ATMOSPHÉRIQUE TRANSFRONTIÈRE
À LONGUE DISTANCE

Organe directeur du Programme concerté de surveillance continue
et d'évaluation du transport à longue distance des polluants
atmosphériques en Europe (EMEP)
(Vingt-huitième session, Genève, 6-8 septembre 2004)
Point 4 g) de l'ordre du jour provisoire

ÉTAT DES DONNÉES D'ÉMISSION

Note du Centre de synthèse météorologique-Ouest
établie en liaison avec le secrétariat

Résumé

Le présent document récapitule les données officielles concernant les émissions anthropiques des polluants principaux (SO_2, NO_x, NH_3, COVNM et CO) pour la période 1980-2002, de métaux lourds et d'un certain nombre de polluants organiques persistants pour la période 1990-2002 ainsi que de particules (PTS, PM_{10}, $PM_{2,5}$) pour la période 2000-2002. En outre, les Parties ont communiqué des données d'activité (consommation d'énergie, transport et activité agricole) pour 1990, 1995 et 2000 et les projections correspondantes pour 2010, 2015 et 2020 ainsi que des projections concernant le volume total des émissions nationales à l'horizon 2010, 2015 et 2020. Seules les Parties qui ne les avaient pas soumises précédemment devaient fournir des données par maille (mailles de 50 km de côté du quadrillage de l'EMEP), notamment des données sur les grandes sources ponctuelles pour 1990, 1995 et 2000. Au 1er juin 2004, 35 Parties sur un total de 49 (soit 71 %) avaient fait parvenir leurs données au secrétariat. Les pays tiers ont établi leurs communications en se conformant à la version révisée des Directives pour l'estimation et la communication des données d'émission, adoptée par l'Organe directeur à sa vingt-sixième session (EB.AIR/GE.1/2002/7 et Corr.1) et publiée dans la série d'études sur la pollution atmosphérique (ECE/EB.AIR/80). Les données présentées dans l'annexe du présent document, de même que toutes les autres données d'émission communiquées en application de la Convention, peuvent également être consultées à l'adresse suivante: http://webdab.emep.int/; la base de données sera mise à jour à l'automne 2004.

Les documents établis sous les auspices ou à la demande de l'Organe exécutif de la Convention sur la pollution atmosphérique transfrontière à longue distance aux fins d'une distribution GÉNÉRALE doivent être considérés comme provisoires tant qu'ils n'ont pas été APPROUVÉS par l'Organe exécutif.

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I. COMMUNICATION DES DONNÉES RELATIVES AUX ÉMISSIONS, EN APPLICATION DE LA CONVENTION

1. Des données de qualité sur les émissions sont indispensables pour évaluer l'état de la pollution atmosphérique en Europe et mesurer les progrès accomplis dans la réalisation des objectifs environnementaux fixés dans les Protocoles à la Convention. Les Parties communiquent chaque année au secrétariat leurs données d'émission officielles et certaines informations connexes. Le secrétariat vérifie que, dans chaque cas, les données reçues émanent bien de l'autorité nationale compétente, puis s'assure de l'exhaustivité et de la cohérence des données communiquées et enregistre ces dernières à des fins de vérification du respect des dispositions. Il transmet ensuite les données au Centre de synthèse météorologique-Ouest (CSM-O) pour analyse, stockage et publication. Le secrétariat et le CSM-O font part de tout problème relevé dans les données aux experts des émissions désignés par les Parties, qui ont alors la possibilité de rectifier ou de compléter leurs données. Le CSM-O s'emploie également à mettre au point des méthodes de validation des données d'émission en coopération avec l'Équipe spéciale des inventaires et des projections des émissions, en particulier par l'intermédiaire de son groupe d'experts de l'examen des données.

2. L'objectif fixé pour la septième phase de l'EMEP (EB.AIR/GE.1/1998/3) était de parvenir à combler dès que possible et au plus tard lors de l'inventaire de 2005 toutes les lacunes relevées dans les séries chronologiques concernant les émissions nationales annuelles totales et sectorielles à partir des années de référence des Protocoles au moyen de méthodes harmonisées d'inventaire des émissions. Le but de l'EMEP est en outre de disposer d'une série complète de données par maille sur les émissions nationales totales et sectorielles tous les cinq ans, et, au besoin, de mises à jour pour les années intermédiaires.

3. Dans une lettre invitant les Parties à soumettre leurs données dans le cadre du cycle de notification de 2004, on a fait valoir qu'il était particulièrement important de fournir des projections concernant le niveau d'activité, car ce type d'information serait indispensable pour élaborer le scénario de référence appelé à alimenter les modèles d'évaluation intégrée construits aux fins de l'examen du Protocole de Göteborg. On a en outre souligné qu'il était important que les Parties communiquent des données sectorielles par maille afin de permettre au Centre de synthèse météorologique-Ouest (CSM-O) de répartir le transport transfrontière par maille et par secteur dans les travaux de modélisation et d'évaluation, et vu également les enseignements à tirer de ce type de donnée pour déterminer les politiques de maîtrise et de réduction des émissions envisageables par les Parties.

4. Pour la première fois, les Parties ont été priées de communiquer leurs données suivant la version révisée des Directives pour l'estimation et la communication des données d'émission, qui a été adoptée par l'Organe directeur à sa vingt-sixième session (EB.AIR/GE.1/2002/7 et Corr.1) et publiée dans la série d'études sur la pollution atmosphérique (n° 15, ECE/EB.AIR/80). Les résultats du cycle de notification de 2004 font apparaître que toutes les Parties déclarantes sauf trois ont pu suivre, à tout le moins en partie, les nouveaux modes de présentation.

II. DONNÉES OFFICIELLES COMMUNIQUÉES POUR 2002

5. Conformément aux Directives, les Parties devaient soumettre leurs données pour 2002 au secrétariat le 15 février 2004 au plus tard. Les données par maille étaient attendues pour le 1er mars 2004 et les révisions et rectifications définitives pour le 12 mars 2004. Au 1er juin 2004, 35 Parties sur un total de 49 (soit 71 %) avaient communiqué leurs données d'émission officielles au secrétariat. Vingt-six d'entre elles (soit 74 %) l'avaient fait dans les délais impartis, contre 29 (soit 81 %) l'année précédente. Toutes les Parties sauf trois (soit 91 % des Parties déclarantes) ont présenté au moins quelques données selon les tableaux de notification révisés; les autres ont suivi l'ancien mode de présentation ou le mode de présentation qui leur était propre ou encore ont opté pour une formule hybride. Comme l'année passée, 18 Parties, soit la moitié de celles qui ont communiqué des données d'émission, l'ont fait à la fois dans les délais et au moyen des tableaux de notification révisés.

A. Harmonisation des nomenclatures utilisées pour la communication des données

6. Les améliorations progressives constatées sur le plan de la communication des données d'émission au cours des deux dernières années sont dues, en partie, à l'utilisation de la version révisée des Directives ainsi qu'au fait que les Parties ont désormais une idée plus précise de ce que l'on attend d'elles et sont mieux à même de fournir les données demandées. Les Directives donnent des indications générales quant aux données minimales à communiquer et abordent aussi d'autres points − données supplémentaires qu'il est recommandé de fournir, nouveaux calculs, incertitudes et qualité des données. Les tableaux de notification des données annexés aux Directives visent à harmoniser les nomenclatures utilisées pour la communication des données en application de la Convention et celles employées en application de la Convention-cadre des Nations Unies sur les changements climatiques.

7. Les tableaux de notification présentés dans les Directives ont été mis à la disposition des Parties sous forme de fichiers électroniques sur la page d'accueil de l'EMEP à l'adresse suivante: http://www.emep.int/emis2004/reportinginstructions.html. Certains des problèmes et questions méthodologiques apparus à l'occasion de la première utilisation des Directives ont été examinés à la douzième session de l'Équipe spéciale des inventaires et des projections des émissions (Varsovie, 22-24 septembre 2003) et sont abordés dans le document EB.AIR/GE.1/2004/8.

B. Logiciel amélioré de validation des données (REPDAB)

8. Toutes les données d'émission officielles ont été envoyées par voie électronique au secrétariat, qui les a enregistrées et archivées. Celui-ci a procédé à une première opération de vérification et d'évaluation des communications au moyen, notamment, du logiciel de validation des données (REPDAB) mis au point par le CSM-O. Lorsque, grâce à l'application systématique de ce logiciel, des erreurs de formatage, des lacunes ou des incohérences ont été relevées, les Parties concernées ont eu la possibilité de soumettre de nouvelles données, ce qu'elles ont fait. Cette procédure a facilité la vérification du mode de présentation des données, leur exhaustivité et leur cohérence interne, et a permis d'améliorer la qualité des données fournies pendant le cycle de notification de 2004. On prévoit que les pays seront bien plus nombreux à valider eux-mêmes leurs données au moyen du logiciel REPDAB avant de les communiquer.

9. Les données officielles ont ensuite été transmises au CSM-O pour analyse, stockage et publication ainsi qu'aux fins de modélisation, de même qu'au Centre de synthèse météorologique-Est (CSM-E) pour analyse et modélisation des données sur les métaux lourds et les polluants organiques persistants. En outre, le secrétariat a transmis les données nationales à l'Agence européenne pour l'environnement (AEE), dans le cadre de la coopération établie avec l'Agence et son Centre thématique européen «Pollution atmosphérique et changements climatiques», aux fins de l'analyse des inventaires d'émission. L'Équipe spéciale des inventaires et des projections des émissions continuera d'évaluer l'utilité de cette procédure, dont elle poursuivra l'élaboration.

10. Le CSM-O, quant à lui, continuera à développer l'outil de vérification des données REPDAB en se fondant sur les réactions des Parties en 2004. L'outil aide les Parties à communiquer des données correctes. On compte que, l'année prochaine, un plus grand nombre de Parties seront en mesure de vérifier leurs données au moyen du logiciel REPDAB et, au besoin, de les rectifier avant de les envoyer au secrétariat. Elles devraient donc être beaucoup plus nombreuses, pendant le cycle de notification de 2005, à communiquer dans les délais impartis des données correctes et cohérentes en utilisant les tableaux de présentation voulus.

III. DONNÉES RELATIVES AUX PARTICULES, AUX MÉTAUX LOURDS ET AUX POP

11. Comme prévu au paragraphe 21 des Directives, les Parties devraient notifier des données d'inventaire pour les catégories de source indiquées dans la nomenclature de notification des données (NND) chaque année à partir de 2000 (annexe IV, tableaux IV 1A et IV 1B). Les Parties situées en dehors du champ géographique de l'EMEP sont encouragées à communiquer des informations analogues. Les Parties sont également encouragées à notifier des données remontant à 1990 selon une présentation appropriée. Outre des données sur les polluants principaux, les Parties sont priées de fournir des données sur: les particules (PM) (pour la période 2000-2002), les métaux lourds (pour la période 1990-2002) et les POP (pour la période 1990-2002). Sur les 35 Parties déclarantes, 27 (soit 77 %) ont pu fournir des données sur au moins un type de particules ($PM_{2,5}$, PM_{10} ou total des particules en suspension (TPS)), contre 25 (soit 70 %) l'année passée, et 18, sur les trois types de particules, contre 11 (soit 31 %) l'an dernier. En ce qui concerne les métaux lourds, 32 (soit 91 % des Parties déclarantes) ont fait parvenir des données sur au moins un des métaux prioritaires (plomb, cadmium et mercure), 30 (86 %) ont rendu compte des émissions des trois métaux prioritaires (contre 25, ou 69 %, l'an dernier) et 26 (74 %) ont soumis des données sur un métal supplémentaire au moins (arsenic, chrome, cuivre, nickel, sélénium ou zinc), contre 23 (64 %) l'année dernière. Dix-huit Parties (soit 51 %) − l'Autriche, la Belgique, le Canada, le Danemark, l'Espagne, l'Estonie, la Fédération de Russie, la Finlande, la France, la Hongrie, l'Irlande, la Lettonie, la Norvège, les Pays-Bas, le Portugal, la République de Moldova, la Suède et l'Ukraine − ont communiqué des données sur les trois métaux prioritaires et sur les trois types de particules, contre 10 Parties (28 %) l'an dernier. Vingt-neuf (soit 83 % des Parties déclarantes) ont rendu compte des émissions d'un polluant organique persistant au moins contre 22 (61 %) l'année passée. Bref, les Parties ont été plus nombreuses cette année que l'année précédente à communiquer des données sur les particules, les métaux lourds et les POP.

12. On aura de plus en plus besoin de données sur les POP et les métaux lourds pour préparer l'examen des Protocoles correspondants, puisque tous les deux sont entrés en vigueur. En outre,

tant l'Organe directeur de l'EMEP que le Groupe de travail des stratégies et de l'examen ont reconnu qu'il était nécessaire de réunir davantage d'informations sur les particules. L'Organe directeur voudra peut-être que l'Équipe spéciale se penche sur les obstacles qui empêchent encore les Parties de rendre compte de façon plus exhaustive des émissions de particules, de métaux lourds et de POP.

IV. DONNÉES PAR MAILLE, DONNÉES SUR LES GRANDES SOURCES PONCTUELLES, PROJECTIONS CONCERNANT LE NIVEAU D'ACTIVITÉ ET RAPPORTS D'INVENTAIRE

13. Comme prévu au paragraphe 22 des Directives, les Parties devraient communiquer tous les cinq ans des données par maille (mailles de 50 km de côté du quadrillage EMEP) sur les émissions nationales totales et sectorielles des polluants principaux, de particules, de plomb, de cadmium et de mercure, ainsi que des polluants organiques persistants suivants: hydrocarbures aromatiques polycycliques (HAP), hexachlorobenzène (HCB), dioxines et furannes (PCDD/PCDF). Au 1er juin 2004, ces données par maille avaient été fournies par les Parties suivantes: Allemagne, Belgique (données préliminaires uniquement), Bulgarie, Danemark, Espagne, Finlande, Hongrie, Lettonie, Serbie-et-Monténégro (données sur les émissions de soufre et d'oxydes d'azote uniquement), Slovaquie et Ukraine.

14. Comme prévu au paragraphe 23 des Directives, pour l'année 2000, puis tous les cinq ans, les Parties situées dans le champ géographique de l'EMEP devraient fournir les données suivantes sur les grandes sources ponctuelles: type, coordonnées géographiques (latitude et longitude), quantités de polluants émis (polluants principaux, particules, métaux lourds et POP) et, selon qu'il convient, hauteur réelle de la cheminée. Les Parties situées en dehors du champ géographique de l'EMEP sont encouragées à communiquer des informations analogues. Toutes les installations fixes qui rejettent plus de 500 tonnes métriques par an de soufre, d'oxydes d'azote, de composés organiques volatils non méthaniques ou de particules (TPS) quel que soit le type d'émetteur ou le secteur, y compris les grands aéroports qui remplissent au moins un de ces critères, sont considérées comme étant de grandes sources ponctuelles. Les 12 Parties énumérées ci-après (soit 34 %) ont présenté dans leur communication de 2004 des données sur les grandes sources ponctuelles (contre 8, ou 22 %, l'année dernière): Chypre (2000-2002), Espagne (1990-2001), Estonie (2000), ex-République yougoslave de Macédoine (2001), Finlande (2000), Lettonie (2002), Lituanie (2002), Monaco (2002), République de Moldova (2000), Slovaquie (2000), Slovénie (2002) et Ukraine (2002). Le Danemark a informé le secrétariat qu'il allait lui communiquer des données sur les grandes sources ponctuelles. Pour certaines Parties, les définitions des grandes sources ponctuelles et l'utilisation des fichiers informatiques ont soulevé des problèmes, sur lesquels l'Équipe spéciale se penchera.

15. Comme prévu au paragraphe 24 des Directives, les Parties situées dans le champ géographique de l'EMEP devraient communiquer des projections concernant le niveau d'activité − consommation d'énergie, production d'électricité et de chaleur, consommation d'énergie dans le secteur des transports et activité agricole − pour les années 2010, 2015 et 2020. Les 14 Parties suivantes (soit 40 %) ont fourni des projections pour au moins une de ces années et au moins un de ces secteurs (contre 12 Parties (33 %) l'année dernière): Allemagne, Autriche, Bulgarie, Chypre, Danemark, ex-République yougoslave de Macédoine, Finlande, Lituanie, Monaco, Portugal, République de Moldova, République tchèque, Slovaquie et Slovénie.

16. Au paragraphe 24 des Directives, les Parties sont également invitées à communiquer des projections concernant le volume total des émissions nationales d'oxydes de soufre, d'oxydes d'azote, de composés organiques volatils non méthaniques et d'ammoniac à l'horizon 2010, 2015 et 2020. Vingt-deux Parties (soit 63 %) ont soumis des projections pour au moins une de ces années et au moins un polluant (contre 21 Parties (58 %) l'année dernière): Allemagne, Bélarus, Bulgarie, Canada, Chypre, Danemark, Estonie, Finlande, Grèce, Hongrie, Lettonie, Lituanie, Monaco, Norvège, Pays-Bas, Portugal, République de Moldova, République tchèque, Royaume-Uni, Slovénie, Suède et Suisse.

17. Au paragraphe 38 des Directives, les Parties sont encouragées à communiquer au secrétariat, au plus tard trois mois après la présentation de leur rapport sur leurs données d'émission, un rapport d'inventaire renseignant sur les méthodes et les hypothèses appliquées dans chaque secteur, les références ou sources d'information, les coefficients d'émission, les nouveaux calculs qui ont pu être effectués, les mentions types, les incertitudes et le contrôle de la qualité des données. Elles sont encouragées en outre à publier leurs rapports sur leurs données d'émission et leurs rapports d'inventaire et, si possible, à les afficher sur l'Internet. Au 1er juin 2004, 11 Parties avaient fait parvenir leur rapport d'inventaire au secrétariat (contre 7 seulement l'année précédente): Autriche, Bélarus, Belgique, Danemark, Espagne, Fédération de Russie, Finlande, France, Lettonie, Norvège et République tchèque. L'Estonie et la Finlande, ainsi que certaines autres Parties, ont donné des précisions concernant la consultation de ces rapports sur l'Internet. Plusieurs Parties ont apporté dans les lettres d'accompagnement ou les notes de bas de page certains des renseignements qu'il leur était demandé de fournir dans les rapports. L'Équipe spéciale des inventaires et des projections des émissions se penchera sur la question de l'élaboration d'un mode de présentation standard pour les rapports d'inventaire nationaux lors de sa prochaine session, qui se tiendra les 19 et 20 octobre 2004 en Italie (EB.AIR/GE.1/2004/15-EB.AIR/WG.5/2004/9).

V. ASSURANCE DE LA QUALITÉ DES DONNÉES ET AMÉLIORATION DES INVENTAIRES

18. Conformément au plan de travail de l'Organe exécutif, l'Équipe spéciale des inventaires et des projections des émissions est appelée à collaborer avec les Parties pour améliorer la qualité, l'exhaustivité, la cohérence et la comparabilité des données communiquées sur les émissions en mettant l'accent sur la validation et les bonnes pratiques (ECE/EB.AIR/79/Add.2, annexe XII, élément 2.1). Un programme d'amélioration des inventaires sera proposé à cette fin (EB.AIR/GE.1/2004/15-EB.AIR/WG.5/2004/9). Le CSM-O publiera en collaboration avec l'AEE un rapport technique contenant les résultats de l'évaluation des inventaires pour 2004 (EMEP/MSC-W Technical Report 1/04), qui sera soumis à l'examen de l'Organe directeur de l'EMEP.

19. L'Organe directeur voudra peut-être réfléchir au moyen d'obtenir des inventaires des émissions atmosphériques de qualité qui répondent aux besoins de l'EMEP et qui, plus généralement, fournissent les données nécessaires aux fins, par exemple, de l'examen des protocoles, et notamment étudier des procédures d'évaluation des inventaires, en tenant compte des propositions du CSM-O. Il pourrait aussi envisager une harmonisation plus poussée avec le processus de notification et d'examen prévu au titre de la Convention-cadre des Nations Unies sur les changements climatiques et la Directive de la Commission européenne fixant des plafonds d'émissions nationaux pour certains polluants atmosphériques (Directive NEC).

VI. ÉVOLUTION DES ÉMISSIONS DANS LA ZONE DE L'EMEP

20. À condition que toutes les lacunes relevées dans les séries chronologiques communiquées par les Parties soient comblées, il est possible de calculer l'évolution du total des émissions dans l'ensemble de la zone de l'EMEP depuis 1980. Les figures I à IV montrent l'évolution des émissions de SO_2, NO_x, NH_3 et COVNM, respectivement.

21. À l'échelle de l'Europe, les émissions de dioxyde de soufre (fig. I) sont nettement en baisse. Entre 1980 et 2002, elles ont diminué globalement de 61 %. Au cours de la même période, les émissions d'oxydes d'azote (fig. II) ont diminué de 26 % dans la zone de l'EMEP.

22. À l'échelle de l'Europe, les émissions d'ammoniac (fig. III) ont reculé de 24 % entre 1990 et 2002; la quasi-stabilité des émissions avant 1990 tient essentiellement aux hypothèses retenues pour remplacer les données manquantes pour la plupart des pays. Les émissions de composés organiques volatils non méthaniques (COVNM) (fig. IV) correspondent uniquement aux rejets d'origine anthropique. Entre 1980 et 2002, elles ont diminué de 34 % mais entre 1988, année où elles ont marqué un pic, et 2001 la baisse a été de 36 %.

23. Un rapport expliquant les procédures suivies par le CSM-O pour compléter ou corriger les séries chronologiques de données d'émission sera présenté à l'Équipe spéciale lors de sa prochaine session. Les projections pour 2010 et 2020 (fig. I à IV) ont été fournies par le Centre pour les modèles d'évaluation intégrée (CMEI). Le scénario de référence fondé sur la législation actuelle a été utilisé pour toutes les Parties lorsqu'il était disponible. Pour les autres Parties et régions, on a utilisé les projections communiquées ou le dernier chiffre des émissions.

24. Les chiffres actuels sur les émissions indiquent que les Parties font des efforts et prennent des mesures en vue de réduire encore les émissions de composés pour lesquels les pays, escomptait-on précédemment, auraient le plus de difficulté à respecter les plafonds fixés dans le Protocole de Göteborg (Vestreng et Støren, 2000), à savoir les oxydes d'azote et les COVNM. La diminution de ces émissions-là a progressé de 1 % environ par rapport à l'an dernier, tandis que la réduction de celles d'autres composés est restée constante.

25. On compte que les émissions de SO_2 diminueront d'environ 4 téragrammes entre 2002 et 2010 (fig. I). Celles de NO_x, de COVNM et de CO devraient diminuer de 1,7, de 2,2 et de 13 téragrammes, respectivement (fig. II, IV et V). On s'attend à une augmentation de 0,3 téragrammes des émissions de NH_3 (fig. III).

26. L'évolution du volume total des émissions dans la zone de l'EMEP par rapport à l'an dernier est tout au plus de ± 2 %, mais moins de 1 % pour la plupart des années et des composés. Ce sont les émissions de COVNM qui ont évolué le plus, principalement en raison des diminutions importantes au cours des années 80 et des augmentations importantes au cours des années 90 selon les données d'émission communiquées par l'Italie, qui n'étaient pas disponibles l'an dernier.

27. Il est essentiel pour les travaux menés en application de la Convention de suivre les réductions des émissions obtenues par chaque Partie. Les figures V à VIII présentent la réduction des émissions en pourcentage ($100 \times E_{année1} - E_{année2})/E_{année1}$) entre 1990 (année de référence du Protocole de Göteborg) et 2002. Les réductions figurant au tableau 11 ont été calculées à partir

des données d'émission actualisées que chaque Partie a communiquées officiellement. Dans les figures, les pays qui n'ont pas signé le Protocole sont regroupés à droite. Au 9 juin 2004, le Protocole comptait 31 signataires et 11 États parties. Il faudra encore cinq ratifications avant que le Protocole ne puisse entrer en vigueur. Les Parties qui ne l'ont pas encore fait sont vivement encouragées à ratifier le Protocole.

28. Les résultats de l'examen réalisé à titre expérimental des données d'émission pour 1994 seront présentés dans un rapport technique qui sera soumis à l'Organe directeur à sa vingt-huitième session (EMEP/MSC-W Technical Report 1/04).

Table 1: Anthropogenic emissions of sulphur (1980-1994) in the ECE region (Gg SO_2 per year)

Party/ year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Armenia[1]	141	111	101	110	97	100	111	111	104	63	72	60	44	5.5	4.2
Austria	360	319	303	227	207	188	168	146	108	101	80	77	61	59	53
Azerbaijan[2]															
Belarus[3]	740	730	710	710	690	690	690	761	720	668	637	652	458	382	324
Belgium[4]	828	712	694	560	500	400	377	367	354	325	362	330	315	294	252
Bosnia and Herzegovina											480				
Bulgaria[5]	2050							2420	2228	2180	2008	1665	1115	1426	1480
Canada[6]	4643	4291	3612	3625	3955	3802	3366	3712	3812	3363	3259	3623	3136	2592	2514
Croatia[7]	150										180	108	107	114	89
Cyprus	28	28	33	30	33	35	38	39	42	42	46	33	39	43	42
Czech Republic	2257	2341	2387	2338	2305	2277	2177	2164	2066	1998	1881	1780	1543	1424	1275
Denmark	452	370	379	323	306	336	283	250	245	191	177	236	182	147	147
Estonia[8]	287					254	256	255	254	254	252	246	187	154	149
Finland	584	534	484	372	368	382	331	328	302	244	260	194	141	123	114
France[9]	3214	2529	2427	2001	1786	1497	1364	1350	1246	1408	1326	1444	1261	1093	1041
Georgia	230	242	250	267	267	273	255	258	255	249	248	194	135	71	47
Germany[10]	7514	7441	7440	7346	7633	7732	7641	7397	6487	6165	5326	3996	3307	2945	2473
Greece	400					500					493	532	546	545	517
Hungary	1633	1580	1545	1480	1440	1404	1362	1285	1218	1102	1010	913	827	757	741
Iceland[11]	18	18	18	18	19	18	18	16	18	17	24	23	24	25	24
Ireland	222	192	158	142	142	140	162	174	152	162	186	180	172	161	175
Italy	3440	3171	2924	2517	2220	2016	2017	2120	2057	1955	1748	1635	1533	1414	1332
Kazakhstan[12]											1156	1296	1296	1285	1093
Kyrgyzstan												52	41	32	21
Latvia[13]											96	71	59	58	71
Liechtenstein	0.31	0.29	0.27	0.25	0.23	0.2	0.18	0.17	0.15	0.13	0.11	0.11	0.1	0.09	0.08
Lithuania	311	312	304	310	303	304	316	316	300	298	222	234	139	125	117
Luxembourg	24			14		16					15			15	13
Malta															
Monaco[14]											0.06	0.09	0.09	0.1	0.09
Netherlands[15]	490	464	404	323	299	258	264	263	250	204	191	173	172	164	146
Norway[16]	136	128	111	104	96	98	91	73	68	58	52	44	36	35	35
Poland	4100					4300	4200	4200	4180	3910	3210	2995	2820	2725	2605
Portugal[17]	266			306		198	234	218	204		241	239	296	253	228
Republic of Moldova[18]	308	305	287	284	270	282	297	317	273	238	265	260	168	156	109
Romania[19]	1055	1095	1104	1229	1223	1255	1293	1305	1469	1517	1311	1041	951	928	912
Russian Federation[20]	7323	7110	7252	7095	6663	6350	5880	5806	5333	4875	4671	4603	4033	3637	3131
Serbia and Montenegro[21]	406	408	409	440	456	478	470	484	502	506	508	446	396	401	424
Slovakia[22]	780					613	604	614	589	573	542	445	380	325	238
Slovenia	234	254	256	274	250	241	247	222	210	211	196	180	186	183	177
Spain[23]	2913	2848	2811	2828	2583	2448	2323	2193	1845	2178	2178	2165	2135	2010	1964
Sweden	491	431	371	305	296	266	272	228	224	160	106	99	93	87	87
Switzerland[24]	116	108	100	92	84	76	68	62	56	49	42	41	38	34	31
TFYR of Macedonia[25]															
Turkey[26]	204	218	237	299	361	520	674	606	443	741	765	841	821	768	991
Ukraine[aa]	3849	3492	3427	3498	3470	3463	3393	3264	3211	3073	2783	2538	2376	2194	1715
United Kingdom	4852	4397	4184	3844	3696	3716	3876	3871	3808	3694	3721	3537	3463	3117	2676
United States	23501	22251	20993	20449	21292	21463	20795	20580	21005	21132	21478	20901	20687	20387	19840
European Community											16363	14825	13652	12429	11277

Table 1(continued): Anthropogenic emissions of sulphur (1995-2002, 2010, 2015, 2020) in the ECE region (Gg SO_2 per year)

	1995	1996	1997	1998	1999	2000	2001	2002	2010	2010	2015	2015	2020	2020
									CLE*	CRP**	CLE*	CRP**	CLE*	CRP**
Armenia	2.5	1.5	0.4	3.3	0.84	8.4	4.4	7.5						
Austria	52	49	45	41	38	35	38	36	39					
Azerbaijan							15		49		37		27	
Belarus	275	246	209	190	164	143	151	143	161		171		171	
Belgium	257	240	219	212	181	165	160	153		99				
Bosnia and Herzegovina														
Bulgaria	1476	1420	1365	1251	943	982	940		380	836	310	702	270	702
Canada	2629	2528	2523	2539	2500	2379	2405	2395	2244	IE	2207	IE	2156	IE
Croatia	70	66	80	90	91	58			70					
Cyprus	41	45	47	49	50	50	48	51	39	39	34	34	30	30
Czech Republic	1089	944	697	438	268	264	251	237	245	283	230	230	225	225
Denmark	138	174	101	75	55	29	26	25	56		50		50	
Estonia	119	125	119	110	103	95	92	88	100		100		100	
Finland	96	105	99	90	87	74	85	82	98		NE		97	
France	978	954	806	823	705	627	570	537	375					
Georgia	20	30	33	20	8.6	6.1	6.4							
Germany	1937	1339	1039	836	735	636	643	611	509					
Greece	541	525	521	528	540	483	485		546					
Hungary	705	673	659	592	590	486	400	359	358		375		377	
Iceland	24	24	25	27					29					
Ireland	161	147	166	176	157	131	126	96	42					
Italy	1263	1203	1063	1002	893	752	709		842					
Kazakhstan	1083	805	938	961	881	948								
Kyrgyzstan	16	14	9.9	11	8.7									
Latvia	55	51	39	36	29	16	13	12	101		8.2		8	
Liechtenstein	0.08	0.07	0.07	0.06	0.06	0.05	0.05		0.04		0.04		0.04	
Lithuania	94	93	77	94	70	43	49	43	145	NE	NE	NE	NE	NE
Luxembourg	9	8	6	4	3.8	3.1			4					
Malta														
Monaco	0.09	0.08	0.07	0.07	0.08	0.07	0.07	0.07	0.04	NE	NE	NE	NE	NE
Netherlands	130	135	118	108	103	77	76	71	65	NA	NA	NA	NA	NA
Norway	33	33	30	30	28	27	25	22	26					
Poland	2376	2368	2181	1897	1719	1511	1564		NE	NE	NE	NE	NE	NE
Portugal	262	196	205	254	261	232	210	216	165	NE	NE	NE	NE	NE
Republic of Moldova	64	67	36	32	12	13	12	15	NE	135	NE	NE	NE	NE
Romania														
Russian Federation	2969	2774	2524	2275	2062	1997		2130	2400					
Serbia and Montenegro	462	434	522	521	355	387	394	382	1135					
Slovakia	239	227	202	179	171	124	129	102	89	89	92	92	95	95
Slovenia	125	112	118	123	104	99	68	71	27		NE	NA	NA	
Spain	1808	1581	1739	1607	1640	1522	1464	1541						
Sweden	77	81	76	73	59	55	57	58	67					
Switzerland	34	30	26	28	26	19	21	19	18		18		17	
TFYR of Macedonia			17	105		105	137	166						
Turkey	1007	1165	1225	1354	2104	1347			995					
Ukraine	1639	1293	1132	1028	1029	2310	1844		2310					
United Kingdom	2363	2028	1670	1607	1229	1189	1115	1002	585	585	533	533	450	450
United States	17406	17621	18068	18182	15869	16483	14325	14360	15167		14759		14351	
European Community	10198	8885	8071	7665	6932	5750								

* CLE Current legislation projections
** CRP Current reduction plans
NE Not estimated
NA Not applicable

Table 2: Anthropogenic emissions of nitrogen oxides (1980-1994) in the ECE region (Gg NO_2 per year)

Party/ year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Armenia[27]		15	17	17	16	45	53	52	56	51	46	40	22	12	12
Austria	246	232	228	230	230	234	227	225	219	214	212	217	207	199	194
Azerbaijan															
Belarus[28]	234	235	235	237	240	238	358	263	262	263	285	281	224	207	203
Belgium[29]	442					325	317	338	345	357	334	326	334	330	333
Bosnia and Herzegovina															
Bulgaria[30]								416	415	411	361	256	230	242	230
Canada	1959	1907	1897	1884	1871	2503	2470	2605	2632	2669	2614	2578	2520	2523	2542
Croatia[31]	60										88	65	56	59	66
Cyprus	13	13	14	14	14	14	15	16	17	17	18	16	19	20	20
Czech Republic	937	819	818	830	844	831	826	816	858	920	544	521	496	454	375
Denmark						307	328	319	307	288	283	332	290	289	292
Estonia[32]								70	70	69	68	63	39	38	41
Finland	295	276	271	261	257	275	277	288	293	301	300	290	284	282	282
France[33]	2024	1927	1895	1874	1871	1847	1807	1838	1842	1902	1897	1962	1914	1790	1742
Georgia	121	126	130	138	137	140	134	134	135	131	130	113	48	33	21
Germany	3334	3259	3219	3258	3305	3276	3286	3350	3230	3011	2845	2610	2417	2298	2129
Greece[34]						306		285	304		290	298	297	292	299
Hungary	273	270	268	266	264	263	264	265	258	247	238	203	183	184	187
Iceland	21	21	21	22	22	21	22	24	25	25	26	27	28	29	29
Ireland	73	86	86	85	84	91	100	115	122	127	118	120	130	119	115
Italy[35]	1585	1558	1557	1537	1552	1641	1705	1822	1845	1904	1919	1973	1991	1896	1813
Kazakhstan[36]											356	401	378	372	297
Kyrgyzstan												20	8.9	6.5	3.3
Latvia[37]											83	65	52	51	49
Liechtenstein	0.58	0.59	0.59	0.6	0.6	0.6	0.6	0.59	0.59	0.58	0.53	0.5	0.48	0.45	0.44
Lithuania	152	154	156	158	162	166	169	171	172	173	158	166	98	78	77
Luxembourg	23			21		21		20			23			25	23
Malta															
Monaco[38]											0.53	0.64	0.68	0.63	0.62
Netherlands[39]	583	575	562	555	573	589	587	599	602	584	579	568	556	535	510
Norway[40]	191	178	182	187	201	213	228	230	224	225	224	214	212	221	219
Poland	1229					1500	1510	1530	1550	1480	1280	1205	1130	1120	1105
Portugal[41]	166			192		96	110	116	122		234	245	263	255	255
Republic of Moldova[42]	58	57	50	42	44	66	72	71	74	70	100	97	67	53	46
Romania	523	528	516	542	546	542	559	580	590	579	546	464	357	318	319
Russian Federation[43]	1734	1915	2002	1976	1879	1903	1871	3411	3287	3335	3600	3435	3123	3054	2667
Serbia and Montenegro[44]	47	50	50	53	58	58	58	60	63	62	66	57	49	54	52
Slovakia[45]								197		227	216	193	181	174	164
Slovenia	51	52	52	51	52	53	58	57	59	58	63	58	58	63	66
Spain[46]	1068	982	972	994	1007	979	1001	1059	1092	1185	1269	1312	1343	1315	1340
Sweden	404	417	412	401	411	426	432	437	432	418	324	321	317	305	308
Switzerland[47]	170	172	174	175	177	179	176	174	172	169	154	146	138	129	124
TFYR of Macedonia[48]															
Turkey[49]	364	377	408	433	459	483	528	570	571	609	644	649	667	748	731
Ukraine[50]	1145	1145	1153	1153	1102	1059	1112	1094	1090	1065	1097	989	830	700	568
United Kingdom	2580	2495	2486	2496	2456	2535	2618	2734	2789	2789	2771	2645	2566	2391	2311
United States	22121	22397	21819	21704	22581	21045	20480	23443	23215	23023	23161	22842	22916	23003	22997
European Community[51]								13446	13464	13563	13389	13281	12977	12341	11951

Table 2(continued): Anthropogenic emissions of nitrogen oxides (1995-2002, 2010, 2015, 2020) in the ECE region (Gg NO_2 per year)

	1995	1996	1997	1998	1999	2000	2001	2002	2010	2010	2015	2015	2020	2020
									CLE*	CRP**	CLE*	CRP**	CLE*	CRP**
Armenia	15	11	15	11	11	10	13	13						
Austria	189	194	190	194	190	190	196	204	107					
Azerbaijan							43		90		103		113	
Belarus	367	173	189	164	142	135	135	137	155		163		170	
Belgium	359	315	306	312	289	329	292	284		176				
Bosnia and Herzegovina														
Bulgaria	266	259	225	223	202	184	188		NA	247	NA	256	NA	256
Canada	2528	2488	2472	2501	2475	2546	2486	2458	2277	IE	2145	IE	2114	IE
Croatia	66	69	73	76	77	77			87					
Cyprus	19	21	21	22	22	23	18	22	23	23	21	21	20	20
Czech Republic	368	366	349	321	313	321	332	318	286	286	284	284	282	282
Denmark	274	312	266	243	226	208	203	200	146		130		120	
Estonia	42	44	45	46	40	41	38	40	60		60		60	
Finland	258	268	260	252	247	236	222	208	151		NE		151	
France	1704	1673	1607	1586	1512	1431	1395	1352	810					
Georgia	27	50	55	42	30	42	44							
Germany	2000	1918	1822	1765	1718	1639	1566	1499	1155					
Greece	296	306	310	334	326	321	331		344					
Hungary	190	196	200	203	201	185	185	180	208		227		241	
Iceland	28	30	29	28					30					
Ireland	115	120	119	122	119	125	132	125	65					
Italy	1785	1727	1650	1539	1441	1360	1317		1436					
Kazakhstan	283	252	213	228	205	201								
Kyrgyzstan	3.4	3.5	3.5	3.6	2.4									
Latvia	51	44	43	42	40	38	41	41	61		52		57	
Liechtenstein	0.42	0.4	0.39	0.38	0.36	0.35	0.3		0.22		0.2		0.19	
Lithuania	65	65	57	60	54	48	55	51	110	NE	NE	NE	NE	NE
Luxembourg	21	22	18	17	16	17			11					
Malta														
Monaco	0.58	0.56	0.55	0.52	0.55	0.59	0.72	0.65	NE	NE	NE	NE	NE	NE
Netherlands	497	501	453	428	429	423	413	406	288	NA	NA	NA	NA	NA
Norway	221	230	233	234	237	224	220	213	187					
Poland	1120	1154	1114	991	951	838	805		NE	NE	NE	NE	NE	NE
Portugal	263	252	251	262	263	261	256	279	249	NE	NE	NE	NE	NE
Republic of Moldova	38	38	37	22	17	27	23	25	NE	90	NE	NE	NE	NE
Romania														
Russian Federation	2570	2467	2379	2488	2494	2357		2566	3300					
Serbia and Montenegro	59	57	66	66	46	50	51	51	147					
Slovakia	174	132	125	130	118	107	106	102	113	113	120	120	128	128
Slovenia	67	70	71	64	58	58	57	58	45		NE	NA	NA	
Spain	1349	1317	1354	1352	1413	1431	1406	1445						
Sweden	298	291	279	274	262	250	247	242	155					
Switzerland	120	113	107	104	99	96	98	94	72		64		60	
TFYR of Macedonia			6	15		30	32	37						
Turkey	800	873	879	863	952	951			2044					
Ukraine	531	467	455	558	543	561	1091		1094					
United Kingdom	2188	2190	2022	1938	1810	1718	1647	1582	1167	1167	1181	1181	1132	1132
United States	22639	22423	22552	22152	20581	21547	20275	19263	17498		15930		14362	
European Community	11567	11360	10896	10556	10215	9497								

* CLE Current legislation projections
** CRP Current reduction plans
NE Not estimated
NA Not applicable

Table 3: Anthropogenic emissions of ammonia (1980-1994) in the ECE region (Gg NH_3 per year)

Party/ year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Armenia[52]		3.1	3.1	3	2.8	2	1.7	1.7	2	0.2	25	0.11	0.05	0.01	0.006
Austria	52	52	53	54	54	54	53	54	51	53	57	59	55	57	59
Azerbaijan															
Belarus											4				4
Belgium[53]						89					99	93	93	97	96
Bosnia and Herzegovina															
Bulgaria[54]											144	124	111	109	101
Canada															
Croatia[55]											37	32	27	26	24
Cyprus															
Czech Republic											156	134	115	99	91
Denmark						138	139	136	132	133	133	129	127	124	120
Estonia[56]											24	22	18	13	13
Finland	39					43	41	45			38		41		
France[57]	795	804	807	812	799	799	809	806	784	781	779	774	765	757	762
Georgia															
Germany	835	821	817	841	853	857	846	845	835	823	735	654	636	631	600
Greece											79	78	75	75	73
Hungary	157					150	170	150		170	124	93	84	77	76
Iceland															
Ireland											112	115	117	117	119
Italy[58]	441	438	427	464	443	448	456	457	459	443	428	435	428	429	424
Kazakhstan[59]											0.49	0.42	0.69	0.61	0.39
Kyrgyzstan															
Latvia[60]											38	37	29	17	15
Liechtenstein	0.22				0.17						0.2	0.21	0.2	0.2	0.21
Lithuania[61]	85	86	86	87	88	89	89	90	89	86	84	85	81	80	80
Luxembourg											7			7	7
Malta															
Monaco[62]											0.001	0.001	0.001	0.002	0.003
Netherlands[63]	234	240	244	244	246	248	258	258	237	232	232	228	180	191	166
Norway[64]	20	23	23	23	23	23	23	21	21	21	20	21	22	22	22
Poland	550					550	550	550	550	550	508	450	447	382	384
Portugal[65]											101	100	96	95	95
Republic of Moldova[66]	53					58					49	49	44	37	35
Romania	340	332	327	311	359	343	350	329	339	341	300	267	255	223	221
Russian Federation[67]	1189	1192	1214	1245	1247	1239	1286	1277	1269	1258	1191	1161	1084	903	772
Serbia and Montenegro															
Slovakia[68]											63	56	47	42	39
Slovenia											24	23	24	23	22
Spain[69]	285	276	292	295	299	296	304	330	331	339	330	319	317	298	318
Sweden	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	54	55	55	61	62
Switzerland[70]	77				60	74					72	71	71	71	70
TFYR of Macedonia															
Turkey[71]															
Ukraine[72]											729	734	691	620	585
United Kingdom	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	361	363	347	345	347
United States						1685					3925	3977	4028	4093	4157
European Community											3780				

Table 3(continued): Anthropogenic emissions of ammonia (1995-2002, 2010, 2015, 2020) in the ECE region (Gg NH_3 per year)

	1995	1996	1997	1998	1999	2000	2001	2002	2010	2010	2015	2015	2020	2020
									CLE*	CRP**	CLE*	CRP**	CLE*	CRP**
Armenia	0.006	0.004	0.004	0.002	0.003	0.002	0.004	12						
Austria	58	57	58	57	56	54	54	53	66					
Azerbaijan														
Belarus	4.6	4.4	4.1	4.4	4.2	142	137	128	155	155	155			
Belgium	100	99	99	102	100	81	85	83				74		
Bosnia and Herzegovina														
Bulgaria	99	83	77	66	60	56	56		100	80	80	108	101	101
Canada	532	539	545	547	555	563			NE	NE	NE	NE	NE	NE
Croatia	25	23	23	23	24	23			30					
Cyprus							8.5	6.6	9	8	8	9	8	8
Czech Republic	86	81	81	80	75	74	77	72	62	60	57	101	60	57
Denmark	113	110	109	110	105	105	104	101	83	83	83			
Estonia	11	9.6	9.7	9.8	8.5	8.8	9	9.1	29	29	29			
Finland	35	35	38	38	35	33	33	33	31	NE	NE			
France	766	778	783	785	787	784	786	778	780					
Georgia														
Germany	609	613	606	612	610	602	614	614	579					
Greece	85	73	71	74	73				73					
Hungary	77	78	76	74	71	71	66	65	67	67	67			
Iceland														
Ireland	120	122	123	127	127	122	123	119	116					
Italy	426	419	434	435	436	429	442		449					
Kazakhstan	0.32	0.07	0.07	0.26	0.27	0.27								
Kyrgyzstan					59									
Latvia	15	14	13	12	11	10	11	11	44	11	12			
Liechtenstein	0.39	0.21	0.21	0.39	0.21	0.21	0.18		0.17	0.17	0.17			
Lithuania	38	36	35	35	29	25	50	51	84	NE	NE	NE	NE	NE
Luxembourg	7	7	7	7	7.3	7.2			7					
Malta														
Monaco	0.003	0.004	0.005	0.005	0.006	0.006	0.006	0.006	NE	NE	NE	NE	NE	NE
Netherlands	193	146	188	170	166	152	142	136	120	NA	NA	NA	NA	NA
Norway	23	24	23	23	23	23	23	22	23					
Poland	380	364	350	371	341	322	328		NE	NE	NE	NE	NE	NE
Portugal	95	96	95	97	99	97	97	98	88	NE		NE	NE	
Republic of Moldova	33	31	25	25	25	25	26	27	NE	NE	NE	42	NE	NE
Romania														
Russian Federation	824	749	730	675	657	650		600	800					
Serbia and Montenegro							NE	NE						
Slovakia	40	38	36	32	30	30	28	29	37	36	37	37	36	37
Slovenia	22	22	19	20	20	19	19	19	20	NE	NA		NA	
Spain	306	340	340	359	371	389	383	382						
Sweden	63	61	61	60	58	58	55	55	57					
Switzerland	69	69	69	68	68	68	68	67	66	66	66			
TFYR of Macedonia														
Turkey	0.009	0.008	0.006	0.007	0.007	0.007								
Ukraine	540	518	483	410	364	358	378		23					
United Kingdom	337	338	341	335	331	311	306	296	297	284	288	297	284	288
United States	4225	4258	4342	4433	4369	4503	4532	3366	4506	4605	4704			
European Community	3549	3527	3587	3582										

* CLE Current legislation projections
** CRP Current reduction plans
NE Not estimated
NA Not applicable

Table 4: Anthropogenic emissions of non-methane volatile organic compounds (1980-1994) in the ECE region (Gg NMVOC per year)

Party/ year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Armenia		26	24	24	22	93	98	104	93	90	81	70	31	20	17
Austria	437	413	408	406	407	400	393	390	378	346	298	286	257	250	233
Azerbaijan															
Belarus	549	546	543	543	540	516	506	509	535	511	533	546	412	372	366
Belgium[73]						688					274	267	266	265	258
Bosnia and Herzegovina															
Bulgaria[74]									309		217	178	179	208	175
Canada	2099					2838	2771	2827	2785	2864	2843	2778	2730	2491	2533
Croatia[75]											105	87	64	69	75
Cyprus															
Czech Republic						275					441	394	366	346	310
Denmark						194	193	193	189	187	164	166	164	165	162
Estonia[76]						81	83	83	84	87	88	82	45	42	45
Finland[77]								210	225	227	224	210	204	196	194
France[78]									2734	2700	2499	2479	2424	2314	2187
Georgia	46	47	48	50	49	49	48	48	48	46	46	8.2	3.9	2.2	1.7
Germany[79]	3224	3152	3134	3152	3191	3190	3218	3274	3256	3202	3591	3137	2864	2643	2471
Greece[80]						614					255	253	261	270	274
Hungary[81]	215					232	263	228	215	205	205	150	142	149	142
Iceland	7.7	7.7	7.7	7.6	7.7	8	8.4	12	13	13	13	14	14	14	14
Ireland											111	111	114	109	107
Italy[82]	2032	1980	1935	1911	1879	1847	1865	1939	1970	2061	2041	2109	2157	2109	2055
Kazakhstan[83]											0.39	0.47	0.56	0.57	0.7
Kyrgyzstan												8	6.9	4	2.5
Latvia[84]											152	103	84	74	77
Liechtenstein	1.14	1.15	1.15	1.15	1.15	1.15	1.13	1.1	1.08	1.06	0.99	0.93	0.87	0.81	0.76
Lithuania	100	102	104	105	106	112	108	108	109	109	108	111	66	52	52
Luxembourg						15					19			18	18
Malta															
Monaco[85]											0.7	0.81	0.93	0.83	0.82
Netherlands[86]	579	555	543	526	513	502	489	485	538	468	490	462	438	405	389
Norway[87]	173	182	189	201	212	231	249	253	249	275	294	294	322	338	352
Poland[88]	1036	912	889	954	985	1011	1029	1014	1026	1016	831	833	805	756	819
Portugal[89]						199					268	278	291	286	293
Republic of Moldova[90]						105	101	102	102	96	157	151	99	75	66
Romania	829	810	772	796	812	787	830	884	846	812	772	678	627	634	638
Russian Federation[91]	2843	2843	2582	2444	2390	2496	2338	3410	3396	3444	3668	3361	3297	3062	2924
Serbia and Montenegro[92]															
Slovakia[93]											252	NE	NE	148	NE
Slovenia									39		44	41	40	42	44
Spain[94]	1392	1372	1350	1377	1371	1393	1420	1475	1510	1544	1633	1658	1642	1541	1600
Sweden	NE	NE	NE	NE	NE	NE	NE	NE	528	524	503	483	470	438	418
Switzerland[95]	323				324	324	318	311	305	298	279	261	242	226	213
TFYR of Macedonia															
Turkey[96]	359	361	379	387	384	379	403	430	450	453	463	457	479	527	516
Ukraine[97]						1626	1660	1687	1604	1512	1369	1302	1171	972	1024
United Kingdom	2100	2090	2129	2165	2218	2225	2292	2367	2438	2476	2419	2337	2252	2131	2090
United States	23221	21786	20943	21865	22957	21904	20953	20726	20965	20120	18421	18878	18777	18948	19327
European Community											16231	15687	15187	14540	14376

Table 4(continued): Anthropogenic emissions of non-methane volatile organic compounds (1995-2002, 2010, 2015, 2020) in the ECE region (Gg NMVOC per year)

	1995	1996	1997	1998	1999	2000	2001	2002	2010	2010	2015	2015	2020	2020
									CLE*	CRP**	CLE*	CRP**	CLE*	CRP**
Armenia	23	18	35	17	17	16	28	14						
Austria	232	226	213	201	190	190	195	193	159					
Azerbaijan							8.5		18	20	22			
Belarus	195	328	345	294	240	225	215	229	235	240	243			
Belgium	262	242	249	269	248	233	276	264				139		
Bosnia and Herzegovina														
Bulgaria	173	147	120	132	118	120	123		175	175	175	175	175	175
Canada	2499	2413	2393	2366	2469	2646	2623	2614	2710	2790	2864	IE	IE	IE
Croatia	74	82	80	79	77	80			90					
Cyprus							14	16	14	12	11	14	12	11
Czech Republic	292	293	277	242	234	227	220	203	209	206	200	220	206	200
Denmark	158	157	149	143	138	132	126	124	83	80	75			
Estonia	48	50	54	54	42	34	33	38	49	49	49			
Finland	188	182	175	171	166	161	157	151	130	NE	NE			
France	2107	2020	1947	1888	1806	1719	1648	1542	1050					
Georgia	1.5	2.4	2.8	11	19	28	29							
Germany	2251	2112	2044	1968	1844	1700	1595	1478	1192					
Greece	273	284	285	290	291	305	268		261					
Hungary	150	150	145	141	170	173	166	155	133	132	130			
Iceland	12	12	9.8	10					6.6					
Ireland	105	112	116	118	98	90	87	81	55					
Italy	2034	1988	1920	1815	1722	1557	1467		1440					
Kazakhstan	1.2	0.13	0.08	0.03	0.04	0.22								
Kyrgyzstan	2.8	2.4	2.4	2.4	2.3									
Latvia	80	83	86	87	87	81	85	89	136	73	75			
Liechtenstein	0.71	0.67	0.63	0.6	0.56	0.53	0.64		0.53	0.53	0.53			
Lithuania	77	82	81	79	68	61	71	72	92	NE	NE	NE	NE	NE
Luxembourg	16	16	15	13	15	15			9					
Malta														
Monaco	0.75	0.7	0.64	0.58	0.56	0.52	0.51	0.49	NE	NE	NE	NE	NE	NE
Netherlands	361	362	317	301	291	266	250	243	200	NA	NA	NA	NA	NA
Norway	367	371	369	361	368	380	391	345	160					
Poland	769	766	774	730	731	599	576		804	NE	NE	NE	NE	NE
Portugal	294	297	298	300	291	285	280	285	240	NE	NE	NE	NE	NE
Republic of Moldova	62	64	69	43	22	21	25	28	NE	NE	NE	100	NE	NE
Romania														
Russian Federation	2857	2622	2386	2376	2451	2450		2777	3500					
Serbia and Montenegro							NE	NE						
Slovakia	154	158	133	128	124	85	88	87	76	79	81	76	79	81
Slovenia	44	49	48	42	40	40	49	49	40	NE	NA		NA	
Spain	1549	1534	1534	1584	1585	1548	1530	1510						
Sweden	410	395	365	341	318	306	297	295	241					
Switzerland	199	191	182	173	165	159	145	143	121	119	118			
TFYR of Macedonia														
Turkey	677	755	784	803	785	726			1925					
Ukraine	811	718	665	254	272		269		1369					
United Kingdom	1958	1869	1800	1658	1479	1364	1265	1186	1200	1195	1221	1200	1195	1221
United States	18824	17700	17680	17180	16689	16252	15408	15176	12606	12546	12486			
European Community	13043	13525	13336	12511	12103	11562								

* CLE Current legislation projections
** CRP Current reduction plans
NE Not estimated
NA Not applicable

Table 5: Anthropogenic emissions of carbon monoxide (1980-1994) in the ECE region (Gg CO per year)

Party/ year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Armenia		27	30	30	31	405	405	417	417	399	304	377	195	145	128
Austria	1786	1743	1717	1693	1740	1714	1649	1579	1496	1437	1249	1253	1209	1171	1118
Azerbaijan															
Belarus						1654	1605	1601	1590	1615	1722	1717	1381	1201	1241
Belgium											1285	1103	1123	1088	1044
Bosnia and Herzegovina															
Bulgaria[98]								997	995	985	891	608	768	820	855
Canada	10273					13291	13306	13585	13289	13452	13107	12554	12186	11755	11849
Croatia[99]											655	565	417	375	369
Cyprus															
Czech Republic	894		906		895	899	740	738	737	884	1257	1179	1170	1103	1125
Denmark[100]						1036	1015	1032	941	993	745	788	778	786	758
Estonia[101]						400	417	423	419	448	434	399	208	210	241
Finland	660										559	552	478	457	444
France[102]	15810	15041	14584	14150	14214	14046	13649	13410	12975	12420	10947	10832	10353	9770	9070
Georgia	648	617	632	648	651	637	643	639	648	597	526	441	130	143	149
Germany[103]	14046	13027	12438	11980	12176	12134	12135	12438	12081	11430	11212	9528	8351	7701	7080
Greece											1298	1290	1320	1285	1264
Hungary	1019					931			963		997	913	836	796	774
Iceland	44	44	44	43	44	46	48	54	57	57	58	59	61	60	60
Ireland											401	394	395	350	329
Italy[104]	7164	7099	7177	7107	7270	7303	7265	7347	7219	7365	7146	7492	7653	7552	7362
Kazakhstan[105]											1640	1975	1959	1801	1426
Kyrgyzstan												26	21	13	9.5
Latvia[106]											752	634	615	326	330
Liechtenstein	5	4.8	4.6	4.3	4.1	3.9	3.7	3.4	3.2	3	2.6	2.5	2.3	2.2	2.1
Lithuania	541	548	543	550	550	545	554	564	578	568	519	577	350	292	303
Luxembourg						193					175			219	145
Malta															
Monaco[107]											3	3.5	3.9	3.5	3.4
Netherlands[108]	1530	1418	1374	1354	1357	1381	1252	1192	1179	1131	1128	1025	983	960	907
Norway[109]	878	815	824	816	842	844	872	886	869	869	867	800	778	781	766
Poland											7406		7083	8655	5115
Portugal[110]											784	796	817	803	789
Republic of Moldova[111]	55	53	56	49	48	483	478	474	496	476	453	468	279	218	171
Romania	3245	3217	3152	3030	3463	3307	3378	3196	3317	3314	3186	2695	2506	2434	2325
Russian Federation[112]	13520	15005	13617	13696	13672	14122	13142	13270	13144	12210	13329	13000	11703	11320	10603
Serbia and Montenegro															
Slovakia[113]										491	493	438	384	412	385
Slovenia	68	66	63	61	64	68	78	79	75	75	81	78	78	87	93
Spain[114]	3494	3372	3343	3370	3344	3305	3347	3437	3620	3807	3798	3868	3933	3713	3674
Sweden[115]	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	1202	1178	1174	1134	1119
Switzerland	1280	1222	1164	1106	1048	990	933	877	820	764	673	629	581	544	516
TFYR of Macedonia[116]															
Turkey	2934	2961	3110	3141	3141	3121	3305	3477	3610	3505	3585	3579	3662	3936	3769
Ukraine						9832	9722	9269	9085	8794	8141	7406	5496	4218	3375
United Kingdom[s]	7669	7657	7751	7566	7651	7452	7453	7496	7554	7798	7417	7186	6872	6361	6010
United States	101641	97724	96799	100470	100999	103472	97183	94855	95593	93832	84544	89239	88301	89091	90353
European Community											50205	48326	46474	44154	42041

Table 5(continued): Anthropogenic emissions of carbon monoxide (1995-2002, 2010, 2015, 2020) in the ECE region (Gg CO per year)

	1995	1996	1997	1998	1999	2000	2001	2002	2010	2015	2020
Armenia	174	126	224	124	124	110	104	106			
Austria	1031	1038	978	938	891	833	837	812			
Azerbaijan							293		611	699	768
Belarus	1253	1242	1223	1034	786	718	711	712	1404		
Belgium	1175	1000	938	1114	1017	1100	1006	1019			
Bosnia and Herzegovina											
Bulgaria	846	613	515	650	617	667	619		750		666
Canada	11479	11151	10838	10614	10835	10331	9959	9764	10550		10360
Croatia	374	428	431	409	399	402			660		
Cyprus							85	83			
Czech Republic	999	1012	944	765	716	648	649	546			
Denmark	742	747	695	634	609	602	603	577	331		
Estonia	242	268	283	281	215	202	177	178			
Finland	436	461	474	452	547	526	605	600			
France	8913	8320	7864	7663	7138	6624	6261	5954			
Georgia	250	390	429	353	223	216	218				
Germany	6580	6166	5993	5554	5200	4925	4573	4311			
Greece	1254	1354	1356	1489	1386	1531	1366				
Hungary	761	727	733	737	722	633	592	620	714	761	790
Iceland	49	50	39	40					19		
Ireland	304	307	312	318	285	280	270	254	322		
Italy	7140	6844	6696	6173	5914	5221	4965		4213		
Kazakhstan	1422	1451	1379	1345	1187	1114					
Kyrgyzstan	7.5	5.5	4.6	5	3.7						
Latvia	391	408	399	399	396	364	381	378	313	321	328
Liechtenstein	2	1.9	1.8	1.7	1.7	1.6	1.6		1.2	1.2	1.2
Lithuania	286	312	358	358	320	282	229	224	400		
Luxembourg	107	103	80	51	50	49			33		
Malta											
Monaco	3.1	2.8	2.7	2.3	2.2	2.1	2.1	2			
Netherlands	849	903	749	739	702	699	673	653			
Norway	734	707	670	634	600	571	560	530			
Poland	4547	4837	4700	4301	4363	3463	3528				
Portugal	786	772	747	738	720	711	672	678			
Republic of Moldova	192	170	210	153	100	84	88	107	150		
Romania											
Russian Federation	9945	9401	10332	10383	10804	10811		11517	16650		
Serbia and Montenegro							NE	NE			
Slovakia	380	348	350	327	322	300	300	297			
Slovenia	91	95	93	77	70	68	93	89	53		NA
Spain	3301	3424	3266	3250	2997	2885	2859	2734			
Sweden	1113	1081	996	957	897	838	796	766	426		
Switzerland	491	467	443	422	399	394	374	383	290	289	288
TFYR of Macedonia			23	26		77	76	81			
Turkey	3987	4135	4179	4156	4047	3778			10986		
Ukraine	2906	2567	2516	2810	2672		3107		8141		
United Kingdom	5651	5644	5251	4874	4531	3928	3636	3238	2838		
United States	83993	90741	90054	89456	97755	82939	103079	101798	83482	88038	92593
European Community	40490	39029	37423	35673	33848	30817					

NE Not estimated

Table 6: Anthropogenic emissions of total suspended matter (1980-1994) in the ECE region (Gg TSP per year)

Party/ year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Armenia															
Austria	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	56	NE	NE	NE	NE
Azerbaijan															
Belarus															
Belgium											NE				
Bosnia and Herzegovina															
Bulgaria															
Canada															
Croatia															
Cyprus															
Czech Republic											640	599	508	448	354
Denmark															
Estonia[117]						334	294	301	279	262	269	278	241	189	161
Finland															
France	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	1618	1653	1557	1464	1431
Georgia															
Germany[118]											1840	932	586	415	328
Greece															
Hungary	0					0			0		197	192	154	150	150
Iceland															
Ireland															
Italy															
Kazakhstan[119]											1268	1219	1164	1070	8864
Kyrgyzstan															
Latvia[120]											NE	NE	NE	NE	NE
Liechtenstein															
Lithuania															
Luxembourg															
Malta															
Monaco[121]											0.01	0.011	0.013	0.012	0.011
Netherlands[122]											100				
Norway[123]											88	81	77	84	83
Poland															
Portugal[124]											0.15	0.17	0.19	0.18	0.19
Republic of Moldova															
Romania															
Russian Federation															
Serbia and Montenegro															
Slovakia[125]											303	233	180	146	90
Slovenia															
Spain[126]											0	0	0	0	0
Sweden	167	163	164	158	167	180	169	156	148	141	139	134	128	124	116
Switzerland															
TFYR of Macedonia															
Turkey															
Ukraine															
United Kingdom	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
United States															
European Community															

Table 6(continued): Anthropogenic emissions of total suspended matter (1995-2002, 2010, 2015, 2020) in the ECE region (Gg TSP per year)

	1995	1996	1997	1998	1999	2000	2001	2002	2010	2015	2020
Armenia											
Austria	58	NE	NE	NE	62	61	63	65			
Azerbaijan											
Belarus								91			
Belgium	NE					277	281	280			
Bosnia and Herzegovina											
Bulgaria							NO				
Canada	14862	14778	15041	15106	14826	16281	16518	16777			
Croatia											
Cyprus								0.72			
Czech Republic	202	178	127	84	66	57	125	0.08			
Denmark						34	34	34			
Estonia	113	99	78	70	70	158	77	57			
Finland	50					74	80	81			
France	1425	1508	1507	1534	1527	1478	1482	1475			
Georgia											
Germany	270	254	249	235	229	227	216	209			
Greece											
Hungary	155	141	137	127	128	129	122	93	87	87	84
Iceland											
Ireland						NE	24	22			
Italy											
Kazakhstan	9124	7829	6662	618	5860	5860					
Kyrgyzstan											
Latvia	NE	NE	NE	NE	NE	5.6	5.7	5.8	5.2	5.5	5.5
Liechtenstein							NE				
Lithuania						13	11	12			
Luxembourg											
Malta											
Monaco	0.009	0.009	0.008	0.007	0.007	0.006	0.008	0.008			
Netherlands	74			54	73	56	55	52			
Norway	82	85	89	83	80	82	81	77			
Poland						464	491				
Portugal	0.2	0.18	0.24	0.25	0.2	0.19	0.24	0.23			
Republic of Moldova						15	11	18			
Romania											
Russian Federation								0.94			
Serbia and Montenegro							NE	NE			
Slovakia	92	70	63	58	61	52	50	39			
Slovenia							NE	NE			
Spain	0	0	0	0	0	333	332	338			
Sweden	114	109	100	95	87	85	86	87			
Switzerland	42										
TFYR of Macedonia											
Turkey											
Ukraine							867				
United Kingdom	NE	NE	NE	NE	NE	NE	NE	NE			
United States					NE			NE			
European Community											

NE Not estimated
NO Not occurring

Table 7: Anthropogenic emissions of articulate matter (1980-1994) in the ECE region (Gg PM_{10} per year)

Party/ year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Armenia															
Austria	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	38	NE	NE	NE	NE
Azerbaijan															
Belarus															
Belgium											NE				
Bosnia and Herzegovina															
Bulgaria															
Canada															
Croatia															
Cyprus															
Czech Republic															
Denmark															
Estonia[127]															
Finland															
France	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	621	655	622	591	560
Georgia															
Germany[128]											NE	NE	NE	NE	NE
Greece															
Hungary	0					0			0		0	0	0	0	0
Iceland															
Ireland															
Italy											254	245	246	249	241
Kazakhstan															
Kyrgyzstan															
Latvia[129]											NE	NE	NE	NE	NE
Liechtenstein											0.09				
Lithuania															
Luxembourg															
Malta															
Monaco[130]															
Netherlands[131]											79				
Norway[132]											70	64	61	68	69
Poland															
Portugal[133]											0.08	0.08	0.08	0.08	0.09
Republic of Moldova															
Romania															
Russian Federation															
Serbia and Montenegro															
Slovakia[134]															
Slovenia															
Spain[135]											0	0	0	0	0
Sweden	138	134	136	130	138	149	140	128	121	114	113	109	104	100	93
Switzerland											32				
TFYR of Macedonia															
Turkey															
Ukraine															
United Kingdom	361	345	338	335	295	333	347	341	337	324	311	309	298	285	270
United States															
European Community															

Table 7(continued): Anthropogenic emissions of particulate matter (1995-2002, 2010, 2015, 2020) in the ECE region (Gg PM_{10} per year)

	1995	1996	1997	1998	1999	2000	2001	2002	2010	2015	2020
Armenia											
Austria	38	NE	NE	NE	39	38	40	41			
Azerbaijan											
Belarus								NE			
Belgium	NE					65	66	64			
Bosnia and Herzegovina											
Bulgaria							NO				
Canada	4636	4602	4646	4647	4613	5050	5120	5198			
Croatia											
Cyprus							0.574	NA			
Czech Republic							43	0.051			
Denmark						22	23	22			
Estonia	33						NE	35			
Finland	30					48	54	55			
France	559	579	562	568	556	535	531	518			
Georgia											
Germany	NE	NE	NE	NE	NE	NE	NE	NE			
Greece											
Hungary	60	53	51	48	46	47	0.043	43			
Iceland											
Ireland						14	17	15			
Italy	237	223	218	213	207	201	194				
Kazakhstan											
Kyrgyzstan											
Latvia	NE	NE	NE	NE	NE	4.22	4.19	4.21	3.79	4.01	0.04
Liechtenstein	0.08					0.07	0.05		0.05	0.05	0.05
Lithuania							0.64	NE			
Luxembourg											
Malta											
Monaco							NE	NE			
Netherlands	60			44	63	49	46	45			
Norway	68	70	74	67	65	66	65	62			
Poland						282	303				
Portugal	0.09	0.08	0.1	0.1	0.09	0.09	0.1	0.1			
Republic of Moldova						4.51	3.44	5.37			
Romania											
Russian Federation								0.56			
Serbia and Montenegro							NE	NE			
Slovakia						NE	NE	25			
Slovenia							NE	NE			
Spain[i]	0	0	0	0	0	217	218	222			
Sweden	91	87	79	74	67	66	66	67			
Switzerland	28					26	24	24	23	23	23
TFYR of Macedonia											
Turkey											
Ukraine							NO				
United Kingdom	240	235	215	210	199	179	180	161			
United States					20702	20901	21266	20109			
European Community											

NE Not estimated
NO Not occurring

Table 8: Anthropogenic emissions of particulate matter (1980-1994) in the ECE region (Gg $PM_{2.5}$ per year)

Party/ year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Armenia															
Austria	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	26	NE	NE	NE	NE
Azerbaijan															
Belarus															
Belgium											NE				
Bosnia and Herzegovina															
Bulgaria															
Canada															
Croatia															
Cyprus															
Czech Republic															
Denmark															
Estonia[136]															
Finland															
France[137]	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	361	392	369	353	324
Georgia															
Germany[138]											43	42	44	46	45
Greece															
Hungary	0					0			0		0	0	0	0	0
Iceland															
Ireland															
Italy															
Kazakhstan															
Kyrgyzstan															
Latvia[139]											NE	NE	NE	NE	NE
Liechtenstein															
Lithuania															
Luxembourg															
Malta															
Monaco[140]															
Netherlands[141]											48				
Norway[142]											62	56	54	60	63
Poland															
Portugal[143]											0.07	0.07	0.07	0.07	0.07
Republic of Moldova															
Romania															
Russian Federation															
Serbia and Montenegro															
Slovakia[144]															
Slovenia															
Spain[145]											0	0	0	0	0
Sweden	108	105	106	100	108	119	111	100	94	87	86	83	78	75	69
Switzerland															
TFYR of Macedonia															
Turkey															
Ukraine															
United Kingdom	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	173	172	168	161	154
United States															
European Community															

Table 8(continued): Anthropogenic emissions of particulate matter (1995-2002, 2010, 2015, 2020) in the ECE region (Gg $PM_{2.5}$ per year)

	1995	1996	1997	1998	1999	2000	2001	2002	2010	2015	2020
Armenia											
Austria	25	NE	NE	NE	25	25	26	26			
Azerbaijan											
Belarus								NE			
Belgium	NE					36	37	34			
Bosnia and Herzegovina											
Bulgaria							NO				
Canada	900	889	885	883	888	889	898	908			
Croatia											
Cyprus								NA			
Czech Republic							0	NE			
Denmark						15	15	14			
Estonia	14						NE	25			
Finland	22					38	38	39			
France	323	335	316	319	307	290	288	275			
Georgia											
Germany	45	41	38	37	36	32	29	25			
Greece											
Hungary	28	28	27	25	20	26	24	24			
Iceland											
Ireland						NE	12	11			
Italy											
Kazakhstan											
Kyrgyzstan											
Latvia	NE	NE	NE	NE	NE	2.9	3.1	3.1	2.8	3.0	3.0
Liechtenstein							NE				
Lithuania								NE			
Luxembourg											
Malta											
Monaco							NE	NE			
Netherlands	37			34	37	31	29	28			
Norway	62	64	67	62	59	60	59	55			
Poland						135	142				
Portugal	0.07	0.07	0.07	0.08	0.07	0.07	0.08	0.08			
Republic of Moldova						2.09	1.6	1.47			
Romania											
Russian Federation								0.38			
Serbia and Montenegro							NE	NE			
Slovakia						NE	NE	16			
Slovenia							NE	NE			
Spain	0	0	0	0	0	147	148	149			
Sweden	67	64	57	53	46	44	45	45			
Switzerland	15										
TFYR of Macedonia											
Turkey											
Ukraine							NO				
United Kingdom	140	137	125	121	115	102	102	93			
United States					6116	6061	6154	6178			
European Community											

NE Not estimated
NO Not occurring

Table 9: Anthropogenic emissions of persistent organic pollutants in the ECE region (kg per year; except for dioxins and furans, which are g I-Teq per year; PAHs are Mg per year)

		ANNEX I									ANNEX II			ANNEX III							OTHER	
															PAHs							
Party	Year	Aldrin	Chlor-dane	Chlor-decone	Dieldrin	Endrin	Hepta-chlor	Hexa-bromo-biphenyl	Mirex	Toxa-phene	HCH	DDT	PCBs	Dioxins and furans	Benzo(a) pyrene	Benzo(b)-flour-anthene	Benzo(k)-flour-anthene	Indeno (1.2.3-cd) pyrene	Total 1-4	HCB	PCP	SCCP
Armenia	2002	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE					NE	NE	NE	NE
Austria	1980	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	1981	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	1982	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	1983	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	1984	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	1985	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	188	NE	NE	NE	NE	28	107	NE	NE
	1986	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	187	NE	NE	NE	NE	28	104	NE	NE
	1987	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	189	NE	NE	NE	NE	28	106	NE	NE
	1988	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	176	NE	NE	NE	NE	26	100	NE	NE
	1989	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	167	NE	NE	NE	NE	26	96	NE	NE
	1990	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	161	NE	NE	NE	NE	18	93	NE	NE
	1991	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	135	NE	NE	NE	NE	18	85	NE	NE
	1992	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	76	NE	NE	NE	NE	14	69	NE	NE
	1993	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	67	NE	NE	NE	NE	10	64	NE	NE
	1994	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	56	NE	NE	NE	NE	10	52	NE	NE
	1995	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	58	NE	NE	NE	NE	10	53	NE	NE
	1996	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	59	NE	NE	NE	NE	11	55	NE	NE
	1997	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	59	NE	NE	NE	NE	10	52	NE	NE
	1998	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	55	NE	NE	NE	NE	9.1	49	NE	NE
	1999	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	51	NE	NE	NE	NE	8.7	46	NE	NE
	2000	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	50	NE	NE	NE	NE	8.2	42	NE	NE
	2001	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	54	NE	NE	NE	NE	9.1	48	NE	NE
	2002	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	52	NE	NE	NE	NE	8.9	45	NE	NE
Belarus	1997													16								
	1998													16								
	1999													15								
	2000													18								
	2001													22	10	20	5.5	5.7	42			
	2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.6	25	10	20	5.6	5.6	42	7.6	NE	NE
Belgium[146]	1990	0	0	0	0	0	0	0	0	0	163	0	NE	624	IE	IE	IE	IE	199	18	5	0
	1993																		294			
	1994													148					235	30		
	1995	0	0	0	0	0	0	0	0	0	165	0.0066	0	455	IE	IE	IE	IE	101	30	8	0
	1996										9765			108					185	21	6	
	1997										9600			123					187	25	7	
	1998										9600			123					187	25	7	
	1999													129					105			
	2000	0	0	0	0	0	0	0	0	0	167	0	0	177	IE	IE	IE	IE	71	55	16	0

Table 9(continued): anthropogenic emissions of persistent organic pollutants in the ECE region (kg per year; except for dioxins and furans, which are g I-Teq per year; PAHs are Mg per year)

		ANNEX I									ANNEX II		ANNEX III								OTHER	
															PAHs							
Party	Year	Aldrin	Chlor-dane	Chlor-decone	Dieldrin	Endrin	Hepta-chlor	Hexa-bromo-biphenyl	Mirex	Toxa-phene	HCH	DDT	PCBs	Dioxins and furans	Benzo(a) pyrene	Benzo(b)-flour-anthene	benzo(k)-flour-anthene	Indeno (1.2.3-cd) pyrene	Total 1-4	HCB	PCP	SCCP
	2001										0		258	554					677	544	49	
	2002										0		382	456					443	79	11	
Bulgaria[147]	1990										0		258	554					677	544	49	
	1995										0		382	456					443	79	11	
	1996										0		262	341					410	87	11	
	1997												227	310					364	47	7.5	
	1998										0		253	288					384	76	9.1	
	1999												247	245					286	46	6.4	
	2000												229	233					118	54	2.6	
	2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	212	201	NA	NA	NA	NA	97	43	1.8	NA
	2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	250	217	NA	NA	NA	NA	129	38	1.7	NA
	2010												454	425					621	109	9.8	
	2020												483	394					679	101	6.8	
Canada	1990	0	0	0	0	0	0	0	0	0		0		468	35	470	158	6.6	670	89		
	1991	0	0	0	0	0	0	0	0	0		0		319	31	464	156	6.7	658	71		
	1992	0	0	0	0	0	0	0	0	0		0		329	32	447	150	7.3	636	74		
	1993	0	0	0	0	0	0	0	0	0		0		331	36	466	157	7.3	665	75		
	1994	0	0	0	0	0	0	0	0	0		0		323	33	470	159	7.4	669	72		
	1995	0	0	0	0	0	0	0	0	0		0		327	33	453	151	7.9	645	73		
	1996	0	0	0	0	0	0	0	0	0		0		324	33	447	152	7.8	640	72		
	1997	0	0	0	0	0	0	0	0	0		0		321	34	451	153	8.4	647	71		
	1998	0	0	0	0	0	0	0	0	0		0		268	34	456	154	8.4	653	33		
	1999	0	0	0	0	0	0	0	0	0		0		214	35	458	155	9	657	33		
	2000	0	0	0	0	0	0	0	0	0		0		198	36	460	156	9.5	662	40		
	2001	0	0	0	0	0	0	0	0	0		0		182	35	451	152	13	650	41		
	2002	0	0	0	0	0	0	0	0	0		0		182	33	435	146	9.4	623	42		
Croatia[148]	1990										9400			179					15	0.3	8500	1458967
	1996										12800			97					9.3	0	0	1636000
	1997										3100			95					9.2	0		
	1998										5000			111					8.6	0		
	1999										5000			98					7.9	0		
	2000										6983			109					9.1	0		
Cyprus	1990													0.772							0.7	
	2000													12.8								
Czech Republic	1990												773	1252					752			
	1991												772	1220					747			
	1992												741	1220					1131			
	1993												644	1140					1115			
	1994												630	1135					951			

Table 9: (continued): Anthropogenic emissions of persistent organic pollutants in the ECE region (kg per year; except for dioxins and furans, which are g I-Teq per year; PAHs are Mg per year)

		ANNEX I									ANNEX II			ANNEX III							OTHER	
															PAHs							
Party	Year	Aldrin	Chlor-dane	Chlor-decone	Dieldrin	Endrin	Hepta-chlor	Hexa-bromo-biphenyl	Mirex	Toxa-phene	HCH	DDT	PCBs	Dioxins and furans	Benzo(a) pyrene	Benzo(b)-flour-anthene	Benzo(k)-flour-anthene	Indeno (1.2.3-cd) pyrene	Total 1-4	HCB	PCP	SCCP
	1995												623	1135					1357			
	1996												555	922					971			
	1997												448	830					657			
	1998												458	767					657			
	1999												485	643					557			
	2000												474	744					488			
	2001	0	0	0	0	0	0	0	0	0	0	0	407	620	0	0	0	0	460	0	0	0
	2002	0	0	0	0	0	0	0	0	0	0	0	82	177	7.7	7.3	3.3	6.2	24	4.1	NE	NE
Denmark[149]	1980	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	0	0	0	0	0	NO	0	0
	1981	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	0	0	0	0	0	NO	0	0
	1982	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	0	0	0	0	0	NO	0	0
	1983	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	0	0	0	0	0	NO	0	0
	1984	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	0	0	0	0	0	NO	0	0
	1985	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	0	0	0	0	0	NO	0	0
	1986	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	0	0	0	0	0	NO	0	0
	1987	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	0	0	0	0	0	NO	0	0
	1988	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	0	0	0	0	0	NO	0	0
	1989	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	0	0	0	0	0	NO	0	0
	1990	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	2	2.6	0.86	1.6	7	NO	0	0
	1991	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	2.3	3	1	1.9	8.1	NO	0	0
	1992	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	2.3	3	1	1.9	8.1	NO	0	0
	1993	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	2.4	3.2	1.1	2	8.7	NO	0	0
	1994	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	2.4	3.1	1	1.9	8.5	NO	0	0
	1995	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	2.4	3.1	1.1	1.9	8.4	NO	0	0
	1996	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	2.5	3.4	1.1	1.9	8.9	NO	0	0
	1997	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	2.5	3.3	1.1	1.9	8.8	NO	0	0
	1998	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	93	2.2	3	1	1.7	7.8	NO	0	0
	1999	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	2.3	3.1	1.1	1.7	8.2	NO	0	0
	2000	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	2.7	3.6	1.2	2	9.6	NO	0	0
	2001	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	78	2.9	3.9	1.3	2.2	10	NO	0	0
	2002	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	78	2.9	3.9	1.3	2.1	10	NO	0	0
Estonia	1990																		0.31			
	1991																		0.29			
	1992																		0.17			

Table 9: Continued anthropogenic emissions of persistent organic pollutants in the ECE region (kg per year; except for dioxins and furans which are g I-Teq per year; PAHs are Mg per year)

		ANNEX I									ANNEX II			ANNEX III							OTHER	
															PAHs							
Party	Year	Aldrin	Chlor-dane	Chlor-decone	Dieldrin	Endrin	Hepta-chlor	Hexa-bromo-biphenyl	Mirex	Toxa-phene	HCH	DDT	PCBs	Dioxins and furans	Benzo(a) pyrene	Benzo(b)-flour-anthene	Benzo(k)-flour-anthene	Indeno (1.2.3-cd) pyrene	Total 1-4	HCB	PCP	SCCP
	1993																		0.18			
	1994																		0.18			
	1995																		0.19			
	1996																		0.19			
	1997																		0.2			
	1998																		0.21			
	2000																		6			
	2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NE	0.09	2.07	0.02	0.01	0.01	2.1	NE		
	2002	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	47	2.4	3.3	5	2.4	2.4	13	NO	NO	NO
Finland	1990													30					16			
	1991													33					15			
	1992													31					15			
	1993												5300	32					16			
	1994												1100	33					16			
	1995												15800	34					17			
	1996													32					16			
	1997													32					16			
	1998													32					16			
	1999													32					16			
	2000													31					15			
	2001	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NA	31	IE	IE	IE	IE	16	NA		
	2002	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	32	IE	IE	IE	IE	17	NA	NA	NA
France	1990	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	61	1741	NO	NO	NO	NO	293	165	NO	NO
	1991	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	68	1796	NO	NO	NO	NO	320	167	NO	NO
	1992	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	67	1820	NO	NO	NO	NO	305	169	NO	NO
	1993	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	67	1881	NO	NO	NO	NO	296	163	NO	NO
	1994	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	64	1882	NO	NO	NO	NO	273	179	NO	NO
	1995	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	60	1684	NO	NO	NO	NO	271	178	NO	NO
	1996	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	60	1471	NO	NO	NO	NO	274	170	NO	NO
	1997	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	50	1034	NO	NO	NO	NO	263	171	NO	NO
	1998	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	50	934	NO	NO	NO	NO	268	170	NO	NO
	1999	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	44	621	NO	NO	NO	NO	263	169	NO	NO
	2000	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	43	526	NO	NO	NO	NO	256	179	NO	NO
	2001	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	41	411	NO	NO	NO	NO	256	176	NO	NO
	2002	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	38	380	NO	NO	NO	NO	251	174	NO	NO
Germany[150]	1990	NO	NO	NO	NO	NO	NO	NO	NO	NO	14909	NO	43579	1196	NE	NE	NE	NE	420	86	NO	NO
	1991	NO	NO	NO	NO	NO	NO	NO	NO	NO	15776	NO	NE	NE	NE	NE	NE	NE	NE	NO	NO	NO
	1992	NO	NO	NO	NO	NO	NO	NO	NO	NO	9126	NO	NE	NE	NE	NE	NE	NE	NE	NO	NO	NO

Table 9: (continued): anthropogenic emissions of persistent organic pollutants in the ECE region (Kg per year; except for dioxins and furans, which are g I-Teq per year; PAHs are Mg per year)

		ANNEX I									ANNEX II			ANNEX III							OTHER	
															PAHs							
Party	Year	Aldrin	Chlor-dane	Chlor-decone	Dieldrin	Endrin	Hepta-chlor	Hexa-bromo-biphenyl	Mirex	Toxa-phene	HCH	DDT	PCBs	Dioxins and furans	Benzo(a) pyrene	Benzo(b) flour-anthene	Benzo(k)-flour-anthene	Indeno (1.2.3-cd) pyrene	Total 1-4	HCB	PCP	SCCP
	1993	NO	NO	NO	NO	NO	NO	NO	NO	NO	5820	NO	NE	NE	NE	NE	NE	NE	NE	NO	NO	NO
	1994	NO	NO	NO	NO	NO	NO	NO	NO	NO	4582	NO	30894	NE	NE	NE	NE	NE	396	NO	752	2100300
	1995	NO	NO	NO	NO	NO	NO	NO	NO	NO	3244	NO	NE	309	NE	NE	NE	NE	NE	NO	NO	NO
	1996	NO	NO	NO	NO	NO	NO	NO	NO	NO	4569	NO	NE	NE	NE	NE	NE	NE	NE	NO	NO	NO
	1997	NO	NO	NO	NO	NO	NO	NO	NO	NO	3591	NO	NE	NE	NE	NE	NE	NE	NE	NO	NO	NO
	1998	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NE	NE	NE	NE	NE	NE	NE	NO	NO	NO
	1999	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NE	NE	NE	NE	NE	NE	NE	NO	NO	NO
	2000	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NE	NE	NE	NE	NE	NE	NE	NO	NO	NO
	2001	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NE	NE	NE	NE	NE	NE	NE	NO	NO	NO
	2002	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NE	NE	NE	NE	NE	NE	NE	NO	NO	NO
Hungary[151]	1980												181	199					135	0.62	0.047	
	1985												169	207					156	0.49	0.036	
	1990										9281		135	157					132	0.3	0.023	
	1991										60		120	151					122	0.51	0.038	
	1992										12		108	126					87	0.68	0.051	
	1993										462		106	122					81	0.63	0.047	
	1994										798		104	104					72	0.48	0.036	
	1995										1650		101	116					68	0.66	0.05	
	1996										2400		99	108					63	0.66	0.05	
	1997										31		96	103					60	0.68	0.051	
	1998										22		92	94					54	0.71	0.053	
	1999												93	93					55	0.7	0.053	
	2000												88	99					56	0.71	0.052	
	2001													104					55	0.71	0.053	
	2002	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	99	73	6	6.5	3.5	3.8	20	4.4	2	NE
	2010												100	71					61			
	2015												101	69					63			
	2020												101	67					62			
Iceland	1990	0																				
Ireland	2001	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	8.7	NE	NE	NE	NE	NE	NE	NE	NE
	2002	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	27	3.3	4.5	2.3	2.1	12	0.04	NE	NE
Italy	1990													504					92			
	1991													501					106			
	1992													477					102			
	1993													445					104			

Table 9: (continued): Anthropogenic emissions of persistent organic pollutants in the ECE region (kg per year; except for dioxins and furans, which are g I-Teq per year; PAHs are Mg per year)

		ANNEX I									ANNEX II			ANNEX III							OTHER	
															PAHs							
Party	Year	Aldrin	Chlor-dane	Chlor-decone	Dieldrin	Endrin	Hepta-chlor	Hexa-bromo-biphenyl	Mirex	Toxa-phene	HCH	DDT	PCBs	Dioxins and furans	Benzo(a) pyrene	Benzo(b)-flour-anthene	Benzo(k)-flour-anthene	Indeno (1.2.3-cd) pyrene	Total 1-4		PCP	SCCP
	1994													373					108			
	1995													307					112			
	1996													273					102			
	1997													271					114			
	1998													253					110			
	1999													244					120			
	1996	NO	NO	NO	NO	NO	NO	NO	NO	NO	4569	NO	NE	NE	NE	NE	NE	NE	NE	NO	NO	NO
	2001													240					122			
Kyrgyzstan	1992										0.04								1.8			
	1993										0.038								4.4			
	1994										4.9								0.27			
	1995																		0.13			
	1996																		0.54			
	1997										0.003								0.2			
	1998										0.003								0.2			
	1999																		0.09			
Latvia	2002	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	19	NE	NE	NE	NE	NE	NE	NE	NE
Lithuania[152]	1997												12	5.6					71			
	1998												14	6					53			
	1999												13	5					44			
	2000												11	4.3					34			
	2001												15	13					87	0.02		
	2002	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	13	12	17	10	7.3	11	45	NE	NE	NE
Luxembourg	1990													40								
	1994													23					1.1			
	1995													24					0.6			
	1996													16					0.7			
	1997													16					0.4			
	1998													8					0.3			
	1999																		0			
Monaco[153]	1990												0.28	2.4					0.008			
	1991												0.28	2.4					0.008			
	1992												0.31	2.7					0.009			
	1993												0.34	2.9					0.009			
	1994												0.37	3.2					0.01			
	1995												0.37	3.2					0.01			
	1996												0.39	3.4					0.011			
	1997												0.44	3.8					0.012			

Table 9: (continued): Anthropogenic emissions of persistent organic pollutants in the ECE region (kg per year; except for dioxins and furans, which are g I-Teq per year; PAHs are Mg per year)

		ANNEX I									ANNEX II			ANNEX III							OTHER	
															PAHs							
Party	Year	Aldrin	Chlor-dane	Chlor-decone	Dieldrin	Endrin	Hepta-chlor	Hexa-bromo-biphenyl	Mirex	Toxa-phene	HCH	DDT	PCBs	Dioxins and furans	Benzo(a) pyrene	Benzo(b)-flour-anthene	Benzo(k)-flour-anthene	Indeno (1.2.3-cd) pyrene	Total 1-4	HCB	PCP	SCCP
	1998												0.42	3.6					0.011			
	1999												0.42	3.6					0.012			
	2000												0.43	3.7					0.012			
	2001	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	0.46	4	0	NE	NE	NE	NE	NE	NE	NE
	2002	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	0.41	3.5	0	NE	NE	NE	NE	NE	NE	NE
Netherlands[154]	1990	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NO	611	NE	NE	NE	NE	1724	0	34000	NO
	1992	0	0	0	0	0	0	0	0	0	0	0	0.25	505					142		30000	
	1994	0	0	0	0	0	0	0	0	0	0	0	0.28	143					139			5631000
	1995	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NO	66	NE	NE	NE	NE	915	0	29000	NO
	1996										0			61					109			4036600
	1997										0			55					107	2.1		3533200
	1998	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	44	NE	NE	NE	NE	713	NO	26000	NO
	1999	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	28	NE	NE	NE	NE	510	NO	25000	NO
	2000	NO	NO	NO	NO	NO	NO	NO	NO	NO	0	NO	NO	42	NE	NE	NE	NE	697	0	24000	NO
	2001	NO	NO	NO	NO	NO	NO	NO	NO	NO	16661	NO	NO	46	NE	NE	NE	NE	686	0	23350	NO
	2002	NO	NO	NO	NO	NO	NO	NO	NO	NO	15323	NO	NO	41	NE	NE	NE	NE	648	0	22700	NO
Norway[155]	1990	0	0	0	0	0	0	0	0	0		0		130					14			
	1991	0	0	0	0	0	0	0	0	0		0		98					14			
	1992	0	0	0	0	0	0	0	0	0	0	0		96					13	120		
	1993	0	0	0	0	0	0	0	0	0	0	0		95					14	135		
	1994	0	0	0	0	0	0	0	0	0	0	0		94					14	125		
	1995	0	0	0	0	0	0	0	0	0	0	0		70					14	80	63	
	1996	0	0	0	0	0	0	0	0	0	0	0		49					14	50	100	766800
	1997	0	0	0	0	0	0	0	0	0	0	0		41					14	60	100	
	1998	0	0	0	0	0	0	0	0	0	0	0		35					14	50		
	1999	0	0	0	0	0	0	0	0	0	0	0		39					13	40		
	2000													34					14			
	2001													34					15			
	2002													31					17			
Poland	1990	0	0	0	0	0	0		0	0		0	2425	529					159	62		
	1991												2367	535					174	39		
	1992												2322	517					172	39		
	1993												2348	592					253	43		
	1994												2330	520					231	38		
	1995	0	0	0	0	0	0		0	0		0	2323	515					237	51		
	1996	0	0	0	0	0	0		0	0		0	2348	484					225	48		
	1997	0	0	0	0	0	0		0	0		0	2342	440					195	51		

Table 9: (continued): Anthropogenic emissions of persistent organic pollutants in the ECE region (kg per year; except for dioxins and furans, which are g I-Teq per year; PAHs are Mg per year)

		ANNEX I									ANNEX II			ANNEX III							OTHER	
															PAHs							
Party	Year	Aldrin	Chlor-dane	Chlor-decone	Dieldrin	Endrin	Hepta-chlor	Hexa-bromo-biphenyl	Mirex	Toxa-phene	HCH	DDT	PCBs	Dioxins and furans	benzo(a) pyrene	benzo(b)-flour-anthene	benzo(k)-flour-anthene	Indeno (1.2.3-cd) pyrene	Total 1-4	HCB	PCP	SCCP
	1998	0	0	0	0	0	0		0	0		0	2353	381					176	43		
	1999	0	0	0	0	0	0		0	0		0	2331	381					176	40		
	2000												2265	333					167	46		
	2001	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	2327	447	47	51	15	51	164	8	NA	NO
Republic of Moldova	1990																		6.2			
	1991																		4.9			
	1992																		4			
	1993																		3.3			
	1994																		3.1			
	1995																		4.3			
	1996																		3.6			
	1997																		5.1			
	1998																		4.8			
	1999																		4.4			
	2000												196	4.3	0.45	0.54	0.23	1.2	2.4	0.66		
	2001												192	3.5	0.44	0.54	0.22	1.1	2.3	1		
	2002												232	4.4	0.52	0.63	0.27	1.4	2.8	0.75		
Russian Federation[156]	1990										923			991					18	1.6		
	1991													947					17	1.6		
	1992													901					16	1.6		
	1993													878					15	1.7		
	1994													825					15	1.6		
	1995													769					15	1.3		
	1996													637					15	1.1		
	1997													614					15	0.98		
	1998													606					15	0.95		
	1999													625					15	0.98		
	2000													631					15	1.1		
	2010													900					20	1.7		
Slovakia[157]	1990												164	189					42			
	1995												138	157					19			
	1997												137	125					19			
	1998												139	138					16			
	1999												136	127					17			
	2000	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	129	145	6.1	2.5	7.2	2	18	NE	NE	NE
	2001	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	135	130	5.9	2.2	7.2	1.8	17	NE	NE	NE
	2002	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	135	122	6	1.9	7.4	1.5	17	NE	NE	NE

Table 9 (continued): Anthropogenic emissions of persistent organic pollutants in the ECE region (kg per year; except for dioxins and furans, which are g I-Teq per year; PAHs are Mg per year)

		ANNEX I									ANNEX II			ANNEX III							OTHER	
															PAHs							
Party	Year	Aldrin	Chlor-dane	Chlor-decone	Dieldrin	Endrin	Hepta-chlor	Hexa-bromo-biphenyl	Mirex	Toxa-phene	HCH	DDT	PCBs	Dioxins and furans	Benzo(a) pyrene	Benzo(b)-flour-anthene	Benzo(k)-flour-anthene	Indeno (1.2.3-cd) pyrene	Total 1-4	HCB	PCP	SCCP
Slovenia	1990												357	8.6					24	0	0	
	1994												265	5.7					18	0	0	
	1995												235	4.9					17	0	0	
	1996												214	4.9					17	0	0	
	1997												194	3.8					19	0	0	
	1998												184	3.5					18	0	0	
	1999												105	3.5					18	0	0	
	2000												143	2.9					23	0	0	
	2001	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	122	2.8	NE	NE	NE	NE	23	NE	NE	NE
	2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	92	2.8	NE	NE	NE	NE	22	NE	NE	NE
Spain[158]	1990	0	0	0	0	0	0	0	0	0	9204	0	0	186	0	0	0	0	337	6647	70	0
	1991	0	0	0	0	0	0	0	0	0	9204	0	0	195	0	0	0	0	341	6204	70	0
	1992	0	0	0	0	0	0	0	0	0	6705	0	0	206	0	0	0	0	326	5369	74	0
	1993	0	0	0	0	0	0	0	0	0	5917	0	0	200	0	0	0	0	326	5108	75	0
	1994	0	0	0	0	0	0	0	0	0	10650	0	0	192	0	0	0	0	321	5563	75	0
	1995	0	0	0	0	0	0	0	0	0	9598	0	0	162	0	0	0	0	278	4894	76	0
	1996	0	0	0	0	0	0	0	0	0	9730	0	0	159	0	0	0	0	282	5417	73	0
	1997	0	0	0	0	0	0	0	0	0	9992	0	0	132	0	0	0	0	261	6070	89	0
	1998	0	0	0	0	0	0	0	0	0	9992	0	0	134	0	0	0	0	252	6119	95	0
	1999	0	0	0	0	0	0	0	0	0	9992	0	0	141	0	0	0	0	271	6072	97	0
	2000	0	0	0	0	0	0	0	0	0	9992	0	0	146	0	0	0	0	298	6100	103	0
	2001	0	0	0	0	0	0	0	0	0	9992	0	0	143	0	0	0	0	303	6098	108	0
	2002	0	0	0	0	0	0	0	0	0	9992	0	0	141	0	0	0	0	303	6107	109	0
Sweden	1980	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NE	191	NE	NE	NE	NE	48	NE	NE	NE
	1981	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NE	161	NE	NE	NE	NE	46	NE	NE	NE
	1982	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NE	136	NE	NE	NE	NE	48	NE	NE	NE
	1983	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NE	136	NE	NE	NE	NE	45	NE	NE	NE
	1984	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NE	154	NE	NE	NE	NE	55	NE	NE	NE
	1985	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NE	164	NE	NE	NE	NE	62	NE	NE	NE
	1986	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NE	146	NE	NE	NE	NE	55	NE	NE	NE
	1987	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NE	120	NE	NE	NE	NE	46	NE	NE	NE
	1988	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NE	91	NE	NE	NE	NE	44	NE	NE	NE
	1989	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NE	74	NE	NE	NE	NE	41	NE	NE	NE
	1990	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NE	66	NE	NE	NE	NE	39	NE	NE	NE
	1991	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NE	60	NE	NE	NE	NE	38	NE	NE	NE
	1992	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NE	57	NE	NE	NE	NE	34	NE	NE	NE
	1993	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NE	56	NE	NE	NE	NE	31	NE	NE	NE
	1994	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NE	54	NE	NE	NE	NE	28	NE	NE	NE

Table 9 (continued): Anthropogenic emissions of persistent organic pollutants in the ECE region
(kg per year; except for dioxins and furans, which are g I-Teq per year; PAHs are Mg per year)

		ANNEX I									ANNEX II				ANNEX III						OTHER	
															PAHs							
Party	Year	Aldrin	Chlor-dane	Chlor-decone	Dieldrin	Endrin	Hepta-chlor	Hexa-Bromo-biphenyl	Mirex	Toxa phene	HCH	DDT	PCBs	Dioxins And furans	Benzo(a) pyrene	Benzo(b) flour-anthene	Benzo(k)-flour anthene-	Indeno (1.2.3-cd) pyrene	Total 1-4	HCB	PCP	SCCP
	1995	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NE	49	NE	NE	NE	NE	28	NE	NE	NE
	1996	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NE	48	NE	NE	NE	NE	28	NE	NE	NE
	1997	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NE	47	NE	NE	NE	NE	23	NE	NE	NE
	1998	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NE	46	NE	NE	NE	NE	22	NE	NE	NE
	1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NE	44	NE	NE	NE	NE	21	NE	NE	NE
	2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NE	44	NE	NE	NE	NE	17	NE	NE	NE
	2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NE	45	NE	NE	NE	NE	19	NE	NE	NE
	2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NE	45	NE	NE	NE	NE	22	NE	NE	NE
Switzerland	1990	0	0	0	0	0	0	0		0		0								0	0	
	1991	0	0	0	0	0	0	0		0		0								0	0	
	1992	0	0	0	0	0	0	0		0		0								0	0	
	1993	0	0	0	0	0	0	0		0		0								0	0	
	1994	0	0	0	0	0	0	0		0		0								0	0	
	1995	0	0	0	0	0	0	0	0	0		0								0	0	
	1996	0	0	0	0	0	0	0	0	0		0								0	0	
	1997	0	0	0	0	0	0	0	0	0		0								0	0	
	1998	0	0	0	0	0	0	0	0	0		0								0	0	
	1999	0	0	0	0	0	0	0	0	0		0								0	0	
Ukraine	1997																		2.9			
	1998																		0.77			
United Kingdom[159]	1990	0	0	0	0	0	0	0	0	0	100023	0	7127	1188	67	82	42	34	225	1342	538370	48
	1991	0	0	0	0	0	0	0	0	0	86197	0	6546	1168	62	76	39	32	209	1199	538351	45
	1992	0	0	0	0	0	0	0	0	0	74764	0	6051	1144	53	69	35	29	186	1387	538349	43
	1993	0	0	0	0	0	0	0	0	0	65257	0	5554	1097	34	55	28	21	138	1199	529954	41
	1994	0	0	0	0	0	0	0	0	0	57306	0	4991	1009	31	52	26	19	128	973	518960	30
	1995	0	0	0	0	0	0	0	0	0	50621	0	4440	879	24	42	21	16	103	982	506215	24
	1996	0	0	0	0	0	0	0	0	0	44968	0	3899	648	13	18	8.8	9.3	49	997	493643	18
	1997	0	0	0	0	0	0	0	0	0	40162	0	3404	465	11	13	6.3	7.5	38	883	481342	13
	1998	0	0	0	0	0	0	0	0	0	35930	0	2840	395	9.7	8.3	5.3	5.8	29	874	467424	7.7
	1999	0	0	0	0	0	0	0	0	0	33337	0	2167	374	8.6	6.9	4	5.9	25	534	455703	5.8
	2000	0	0	0	0	0	0	0	0	0	28092	0	1644	318	6.7	5.9	3.2	4.3	20	325	449210	3.4
	2001	0	0	0	0	0	0	0	0	0	21771	0	1560	319	7.3	6.1	3.2	5.1	22	314	442937	0.55
	2002	0	0	0	0	0	0	0	0	0	16608	0	1452	310	6.4	5	2.9	4.3	19	307	436871	1.3
United States[160]	1990												102	2366					2474	1450		
	1996		300				83			1	235		195						1883	281		
	1999	NA	4	NA	NA	NA	3	NA	NA	7	NA	NA	3406	NA	NA	NA	NA	NA	7101	4835	NA	NA

Table 10: Anthropogenic emissions of heavy metals in the ECE region (Mg per year)

		PRIORITY METALS			OTHER METALS					
Party	Year	Lead	Cadmium	Mercury	Arsenic	Chromium	Copper	Nickel	Selenium	Zinc
Armenia[161]	1983	91		0.01	30					
	1984	61		0.01	95					
	1985	44		0.01	62		5			
	1986	87					5			
	1987	46			62	0.2	5	0.3		
	1988	57			66		5	0.003		0.1
	1989	22		0.03	22	5	2	0.1		
	1990	11		0.01		4	2.5	0.1		
	1991	0.82		0.01		6	1.6	0.24		
	1992	0.61		0.008		1.8	0.068	0.239		
	1993	0.79		0.009		1	0.036	0.074		
	1994	0.34		0.001		0.3	0.002	0.003		
	1995	0.334		0.001		0.1	0.001	0.009		
	1996	0.009		0.0008	0.0003	0.5	0.009	0.02		0.016
	1997	0.009				0.019	0.65	0.003		
	1998	0.01				0.008	0.005	0.007		0.001
	1999	0.005				0.073	0.008	0.004		0.021
	2000	0				0.006	0.0004	0		0
	2001	0				0.0009	0.0004	0		0
	2002	1				0.004	0.002	0.00001		0
Austria	1980	NE	NE	NE	NE	NE	NE	NE	NE	NE
	1981	NE	NE	NE	NE	NE	NE	NE	NE	NE
	1982	NE	NE	NE	NE	NE	NE	NE	NE	NE
	1983	NE	NE	NE	NE	NE	NE	NE	NE	NE
	1984	NE	NE	NE	NE	NE	NE	NE	NE	NE
	1985	327	3.3	3.8	NE	NE	NE	NE	NE	NE
	1986	313	2.9	3.3	NE	NE	NE	NE	NE	NE
	1987	303	2.4	2.9	NE	NE	NE	NE	NE	NE
	1988	273	2.1	2.5	NE	NE	NE	NE	NE	NE
	1989	240	1.9	2.3	NE	NE	NE	NE	NE	NE
	1990	204	1.5	2.2	NE	NE	NE	NE	NE	NE
	1991	168	1.5	2	NE	NE	NE	NE	NE	NE
	1992	117	1.3	1.6	NE	NE	NE	NE	NE	NE
	1993	84	1.1	1.4	NE	NE	NE	NE	NE	NE
	1994	59	1	1.2	NE	NE	NE	NE	NE	NE
	1995	16	1	1.2	NE	NE	NE	NE	NE	NE
	1996	16	1	1.2	NE	NE	NE	NE	NE	NE
	1997	15	1	1.1	NE	NE	NE	NE	NE	NE
	1998	13	0.9	1	NE	NE	NE	NE	NE	NE
	1999	13	0.9	0.9	NE	NE	NE	NE	NE	NE
	2000	12	0.9	0.9	NE	NE	NE	NE	NE	NE
	2001	13	1	0.9	NE	NE	NE	NE	NE	NE
	2002	13	1	0.9	NE	NE	NE	NE	NE	NE
Belarus[162]	1990	798	7.6	0.48	13	29	35	602		210
	1995	148	3.5	0.27	4.5	14	19	246		122
	1996	46	1.2	0.3	3.7	8.7	14	203		122
	1997	42	1.3	0.31	3.1	8.3	15	167		159
	1998	41	1.5	0.39	3	7.9	14	154		178
	1999	38	1.4	0.38	2.6	7.2	13	129		180
	2000	46	1.4	0.36	3.3	6.3	12	94		196
	2001	41	1.8	0.52	2.1	6.5	12	93		205
	2002	44	1.9	0.57	1.6	6.8	11	83	NE	207
Belgium	1990	566	7.8	6.7	5.7	32	34	76	5	219
	1991									
	1992		4							
	1993									
	1994									
	1995	361	5.1	3.6	5.7	27	29	76	6.1	181
	1996									
	1997									
	1998									
	1999									
	2000	114	2.4	2.5	2.6	17	24	49	4.2	167
	2001	99	2.3	2.1	3.1	17	23	60	3.9	158
	2002	110	2.5	3	2.8	16	24	57	3.8	155
Bulgaria[163]	1990	436	28	13						
	1995	297	13	6.9						
	1996	279	14	4.7						
	1997	231	14	4.3						
	1998	251	15	4.7						

Table 10(continued): Anthropogenic emissions of heavy metals in the ECE region (Mg per year)

		PRIORITY METALS			OTHER METALS					
Party	Year	Lead	Cadmium	Mercury	Arsenic	Chromium	Copper	Nickel	Selenium	Zinc
	2000	213	11	4.2						
	2001	177	10	4	NE	NE	NE	NE	NE	NE
	2002	105	12	3.9						
	2010	177	12	5.8						
	2020	203	13	6.9						
Canada	1990	1220	94	35						
	1991	1190	85	34						
	1992	1239	88	34						
	1993	1320	95	18						
	1994	1324	84	13						
	1995	749	31	12						
	1996	823	34	13						
	1997	704	50	10						
	1998	631	50	10						
	1999	533	43	8.5						
	2000	545	40	8						
	2001	487	71	8.1						
	2002	438	42	7.7						
Croatia[164]	1990	466	1.6	1.2	2.3	13	15	46	0.91	84
	1995	264	1	0.29						
	1996	268	1	0.3						
	1997	190	1	0.32	1.3	5.2	10	30	0.41	65
	1998	183	1.1	0.32	1.3	5.6	10	31	0.42	68
	1999	178	1.1	0.31	1.3	5.7	11	32	0.38	68
	2000	147	1	0.41	1.1	4.3	10	27	0.63	61
Cyprus	1990	81	0.2	0.3	0.6	1.6	1.2	1.7		1.8
	1991	63								
	1992	66								
	1993	69								
	1994	68								
	1995	67								
	1996	67								
	1997	72								
	1998	69								
	1999	75								
	2000	74								
	2001	59								
	2002	NA	NA	NA						
Czech Republic	1990	269	4.3	7.5						
	1991	240	3.9	7.4						
	1992	247	3.6	7.3						
	1993	232	3.5	7.5						
	1994	203	3.5	7.2						
	1995	180	3.6	7.4						
	1996	165	2.9	5.9						
	1997	180	3	5.5						
	1998	169	2.7	5.2						
	1999	157	2.7	3.7						
	2000	108	2.9	3.8						
	2001	47	2.6	3.3	3.5	12	16	15	8.4	156
	2002	47	2.7	2.8	6.4	14	20	17	10	169
Denmark[165]	1980									
	1981									
	1982									
	1983									
	1984									
	1985									
	1986									
	1987									
	1988									
	1989									
	1990	123	1.2	3.5	1.5	6.5	10	25	4.5	36
	1991	96	1.2	3.5	1.8	7.4	11	27	5.1	25
	1992	87	1.2	3.3	1.6	6.7	11	27	4.3	24
	1993	46	1.1	3.3	1.6	6.4	11	23	4.5	24
	1994	19	1.1	3.1	1.6	5.8	11	27	3.9	24
	1995	18	0.9	2.7	0.9	4.4	10	22	3.7	25
	1996	16	0.9	2.8	1.1	4	10	23	3.6	31
	1997	8	0.9	2.3	0.9	3.2	10	22	3.3	26

Table 10 (continued): Anthropogenic emissions of heavy metals in the ECE region (Mg per year)

		PRIORITY METALS			OTHER METALS					
Party	Year	Lead	Cadmium	Mercury	Arsenic	Chromium	Copper	Nickel	Selenium	Zinc
	2000	6.9	0.6	1.2	0.9	1.6	8.6	12	2.2	23
	2001	6.2	0.7	1.3	0.8	1.6	8.6	11	1.8	26
	2002	5.3	0.7	1.2	0.8	1.6	8.7	13	1.9	24
Estonia[166]	1990	233	1.6	1.3	8.1	8.2	1.7	4.4	0.2	29
	1991	208	1.5	1.2	7.7	7.9	1.7	4.2	0.2	28
	1992	121	1.1	1	7.2	7.8	1.6	3.9	0.2	27
	1993	100	0.9	0.8	5.6	6.2	1.2	3.1	0.1	21
	1994	107	0.9	0.8	4.8	5.1	1	2.7	0.1	18
	1995	88	0.9	0.8	4	4	0.8	2.2	0.1	17
	1996	80	0.9	0.8	4.3	4.2	2.3	2.4	0.1	16
	1997	73	1	0.8	3.8	3.9	2.3	2.1	0.1	14
	1998	55	0.8	0.7	3.5	3.4	2.2	1.9	0.1	13
	1999	45	0.8	0.6						
	2000	41	0.7	0.6	10	10	3.5	7.9	0.006	53
	2001	37	0.6	0.5	8.6	8.8	3.3	7.2	NA	49
	2002	37	0.6	0.5	8.6	8.9	3.6	7.1	NA	48
Finland	1990	326	6.3	1.1	33	32	94	67	0	571
	1991	247	3.4	0.9	22	41	91	45	0	381
	1992	175	2.9	0.8	18	31	66	37	0	284
	1993	100	2.9	0.6	14	21	54	26	0	260
	1994	60	2.4	0.7	11	20	49	34	0	316
	1995	57	1.7	0.7	3.5	22	27	34	0	322
	1996	35	1.5	0.8	7.2	21	55	25	0	191
	1997	19	1.1	0.6	12	21	72	28	0	70
	1998	20	1.3	0.5	12	18	27	21	0	71
	1999	14	0.6	0.4	3.6	19	4.1	17		58
	2000	38	1.4	0.6	4.6	28	19	33		71
	2001	38	1.6	0.7	5.2	26	19	33	NE	69
	2002	40	1.3	0.7	3.7	38	28	36	NE	88
France	1980	NO	NO	NO	NO	NO	NO	NO	NO	NO
	1981	NO	NO	NO	NO	NO	NO	NO	NO	NO
	1982	NO	NO	NO	NO	NO	NO	NO	NO	NO
	1983	NO	NO	NO	NO	NO	NO	NO	NO	NO
	1984	NO	NO	NO	NO	NO	NO	NO	NO	NO
	1985	NO	NO	NO	NO	NO	NO	NO	NO	NO
	1986	NO	NO	NO	NO	NO	NO	NO	NO	NO
	1987	NO	NO	NO	NO	NO	NO	NO	NO	NO
	1988	NO	NO	NO	NO	NO	NO	NO	NO	NO
	1989	NO	NO	NO	NO	NO	NO	NO	NO	NO
	1990	4264	16	25	28	396	168	318	14	2031
	1991	2864	16	26	29	343	175	365	15	1876
	1992	2081	15	25	28	289	176	307	14	1706
	1993	1826	14	23	24	230	176	261	13	1506
	1994	1626	14	22	25	201	176	251	13	1420
	1995	1446	13	21	25	211	175	259	14	1371
	1996	1272	13	20	24	217	178	260	14	1394
	1997	1121	12	16	24	245	177	248	14	1481
	1998	1008	11	15	26	252	178	263	15	1478
	1999	776	10	14	25	242	176	231	14	1374
	2000	247	10	13	25	259	177	222	14	1442
	2001	220	10	12	24	252	178	219	14	1390
	2002	217	10	12	24	242	178	192	14	1339
Germany[167]	1985	5028	45	154	221	344	459	440		1900
	1990	NE	NE	NE	NE	NE	NE	NE	NE	NE
	1991	NE	NE	NE	NE	NE	NE	NE	NE	NE
	1992	NE	NE	NE	NE	NE	NE	NE	NE	NE
	1993	NE	NE	NE	NE	NE	NE	NE	NE	NE
	1994	NE	NE	NE	NE	NE	NE	NE	NE	NE
	1995	NE	NE	NE	NE	NE	NE	NE	NE	NE
	1996	NE	NE	NE	NE	NE	NE	NE	NE	NE
	1997	NE	NE	NE	NE	NE	NE	NE	NE	NE
	1998	NE	NE	NE	NE	NE	NE	NE	NE	NE
	1999	NE	NE	NE	NE	NE	NE	NE	NE	NE
	2000	NE	NE	NE	NE	NE	NE	NE	NE	NE
	2001	NE	NE	NE	NE	NE	NE	NE	NE	NE
	2002	NE	NE	NE	NE	NE	NE	NE	NE	NE
	2010	294	11	24						
Greece[168]	1996	470	3	13	4	10	14	101	0.2	52
Hungary	1980	574	7.5	8.7	22	22	39	67	4.9	98
	1985	529	6.8	8.3	22	22	37	74	4.8	100

Table 10(continued): Anthropogenic emissions of heavy metals in the ECE region (Mg per year)

		PRIORITY METALS			OTHER METALS					
Party	Year	Lead	Cadmium	Mercury	Arsenic	Chromium	Copper	Nickel	Selenium	Zinc
	1990	680	5.5	6.3	16	16	28	42	3.4	97
	1991	488	4.7	5.8	15	15	24	49	3.2	71
	1992	208	4	5	10	12	18	49	2.8	62
	1993	187	4.1	5	10	12	18	57	2.9	68
	1994	155	4.1	4.7	10	12	17	54	2.8	46
	1995	127	3.8	4.8	8.8	11	16	50	2.5	48
	1996	100	3.4	4.7	8.3	10	15	43	2.3	46
	1997	90	3.3	4.5	7.3	9.2	15	47	2.1	45
	1998	82	3.1	4.3	6.1	7.4	15	46	1.9	39
	1999	39	3	4.2	6.1	7.3	16	43	1.8	40
	2000	37	2.7	4.2	5.7	6.7	15	37	1.6	40
	2001	51	3.1	4.4	6.1	8.2	17	39	1.7	82
	2002	33	2.8	4	5.9	7.6	18	29	1.4	82
	2010	12	2.7	2.1						
	2015	11	2.9	2						
	2020	9.4	3	1.9						
Iceland	1990	12								
	1991	8.9								
	1992	6.8								
	1993	5.3								
	1994	4.6								
	1995	3.9								
	1996	1.7								
	1997	0.4								
	1998	0.4								
Ireland	2000	NE	NE	NE	NE	NE	NE	NE	NE	NE
	2001	NE	NE	NE	NE	NE	NE	NE	NE	NE
	2002	13	0.3	1.5	0.6	2.4	8.3	24	0.19	11
Italy	1990	4331	14	11	37	85	63	178	72	1580
	1991	3274	14	11	36	79	61	176	76	1580
	1992	2401	14	11	36	75	59	171	74	1558
	1993	2224	13	10	30	71	62	165	75	1591
	1994	2025	14	10	29	68	61	165	80	1634
	1995	1914	17	11	27	68	65	168	81	1693
	1996	1782	17	10	26	50	59	167	79	1636
	1997	1604	18	11	25	40	59	156	82	1671
	1998	1431	16	10	26	43	50	164	84	1555
	1999	1231	15	10	31	44	50	164	87	1247
	2000	920	16	10	44	47	59	167	92	1432
	2001	673	16	10	44	46	51	167	94	1434
Kazakhstan[169]	1990				1600		1800			
	1991				1700		1500			
	1992				1800		1100			
	1993				2100		1400			
	1994				1700		620			
	1995				3100		2670			
Kyrgyzstan[170]	1999	0				0.2				
Latvia[171]	1990	108	1.8	0.7	2	9.4	6	68	2.2	63
	1991	48	1.3	0.6	1.4	6.6	4	49	1.6	44
	1992	43	1	0.4	1	4.6	3	37	1.2	29
	1993	57	1	0.3	1.1	5	3.5	36	0.8	35
	1994	53	1.2	0.4	1.3	5.8	3.9	46	0.9	38
	1995	48	0.9	0.3	1	4.7	3.5	33	0.9	32
	1996	36	0.8	0.3	0.9	4.6	3.2	29	0.8	34
	1997	30	0.8	0.2	0.9	6	4.1	23	0.6	53
	1998	27	0.8	0.3	0.8	6	4.1	21	0.6	54
	1999	8.6	0.7	0.2	0.8	6	4.1	19	0.6	55
	2000	8.5	0.6	0.2	0.6	5.8	4.1	12	0.4	56
	2001	8.5	0.6	0.1	0.6	5.7	4.3	9	0.4	57
	2002	8.9	0.5	0.1	0.6	5.8	4.3	8.2	1.1	58
	2010	10	0.6	0.2	0.6	6.3	4.9	9.4	1.4	63
	2015	10	0.6	0.2	0.6	6.4	5.2	9	1.4	64
	2020	11	0.6	0.2	0.6	6.4	5.4	8.3	1.4	65
Lithuania	1990	47	3.8	0.018	3.4	7.4	12	96		59
	1991	49	2.8	0.016	2.1	4.6	11	57		55
	1992	32	2.5	0.011	2.1	4.6	6.8	60		30
	1993	28	2.3	0.014	2	4.4	5.7	57		13
	1994	33	2.1	0.013	1.9	4.3	3.7	58		8.9
	1995	30	2.1	0.15	1.7	4.2	6.8	52		50
	1996	18	2.2	0.16	1.7	4.5	7.5	54		57

Table 10 (continued): Anthropogenic emissions of heavy metals in the ECE region (Mg per year)

		PRIORITY METALS			OTHER METALS					
Party	Year	Lead	Cadmium	Mercury	Arsenic	Chromium	Copper	Nickel	Selenium	Zinc
	1997	20	2.2	0.23	1.5	4.1	8.3	49		71
	1998	22	2.6	0.25	1.9	5.1	9.2	62		79
	1999	19	2	0.25	1.4	3.8	7.9	46		73
	2000	16	1.4	0.25	0.8	2.3	6.4	27		62
	2001	15	1.2	0.52	0.9	2.4	3.3	28	1.2	37
	2002	15	1	0.31	0.8	2.1	3.1	23	1.2	35
Luxembourg	1990	77	0.6	0.3						
	1994	53	0.5	0.2						
	1995	30	0.4	0.1						
	1996	26	0.4	0.1						
	1997	18	0.3	0.1						
	1998	6.8	0.2	0.1						
	1999	2.3	0.054	0.3	0.082	0.4	1.2	0.8	0	35
	2000	1.6	0.051	0.3	0.079	0.3	1.3	0.7	0	37
Monaco[172]	1990	3.9	0.057	0.109		0.001	0.018	0.001	0	0.01
	1991	4.1	0.058	0.111		0.001	0.019	0.001	0	0.011
	1992	4.2	0.064	0.123		0.001	0.02	0.001	0	0.012
	1993	3.8	0.07	0.134		0.001	0.025	0.001	0	0.014
	1994	2.2	0.006	0.07		0.001	0.025	0.001	0	0.015
	1995	0.815	0.006	0.069		0.001	0.024	0.001	0	0.014
	1996	0.698	0.007	0.074		0.001	0.024	0.001	0	0.014
	1997	0.62	0.008	0.084		0.001	0.024	0.001	0	0.014
	1998	0.518	0.007	0.079		0.001	0.023	0.001	0	0.014
	1999	0.465	0.007	0.08		0.001	0.025	0.001	0	0.014
	2000	0.06	0.008	0.082		0.001	0.025	0.001	0	0.015
	2001	0.063	0.008	0.087	NE	0.001	0.027	0.001	0	0.016
	2002	0.057	0.007	0.078	NE	0.001	0.026	0.001	0	0.015
Netherlands[173]	1990	335	1.946	3	1.464	11	19	76	0.4	221
	1991									
	1992									
	1993									
	1994									
	1995	159	1.007	1.1	1.189	8.2	20	87	0.4	144
	1996									
	1997									
	1998	44								
	1999	44								
	2000	44	1.153	0.6	1.241	5.5	21	53	0.11	126
	2001	44	1.159	0.6	1.244	5.9	21	64	0.11	104
	2002	44	1.16	0.6	0.912	4.1	20	14	0.06	102
Norway[174]	1980	482								
	1981	577								
	1982	651								
	1983	559								
	1984	401								
	1985	406	1.1							
	1986	341	0							
	1987	228	0							
	1988	293	0							
	1989	212	1.2							
	1990	186	1.6	1.7	3.1	13	22			
	1991	143	1.6	1.6	3	13	19			
	1992	126	1.6	1.4	3	13	19			
	1993	86	1.6	1.1	3.2	12	19			
	1994	23	1.2	1.2	3.6	12	18			108
	1995	21	1	1.1	2.9	11	18			109
	1996	8.9	1.1	1.1	3	11	19			104
	1997	8.4	1.1	1.1	2.8	12	19			
	1998	8.4	1.1	1.1	3.3	12	20			
	1999	7.6	1	1.2	3.3	11	20			
	2000	6.2	0.72	1	2.5	8.8	19			
	2001	5.2	0.72	1	2.2	7	19			
	2002	6.3	0.69	0.9	1.8	5.8	19			
Poland	1990	1372	92	33	82	155	599	370		3092
	1991	1336	85	33	80	134	530	355		2781
	1992	986	84	32	79	122	497	350		2678
	1993	997	92	33	82	128	511	353		2830
	1994	966	86	32	76	120	478	323		2624
	1995	937	83	32	73	118	465	312		2580
	1996	960	91	34	76	117	495	328		2749

Table 10(continued): Anthropogenic emissions of heavy metals in the ECE region (Mg per year)

		PRIORITY METALS			OTHER METALS					
Party	Year	Lead	Cadmium	Mercury	Arsenic	Chromium	Copper	Nickel	Selenium	Zinc
	1997	896	86	33	71	116	475	365		2580
	1998	736	55	30	54	90	389	251		2191
	1999	745	62	27	59	90	421	260		2377
	2000	648	50	26	50	84	375	251		2173
	2001	610	53	23	53	64	394	287	NE	1709
Portugal[175]	1990	1.3	0.002	0.003	0.002	0.005	0.013	0.069	0.01	0.025
	1991	1.3	0.002	0.003	0.002	0.006	0.013	0.072	0.01	0.026
	1992	1.4	0.002	0.003	0.003	0.007	0.014	0.095	0.013	0.029
	1993	1.3	0.002	0.003	0.002	0.006	0.014	0.071	0.012	0.027
	1994	1.3	0.001	0.003	0.002	0.005	0.014	0.059	0.015	0.028
	1995	1.3	0.002	0.003	0.002	0.006	0.015	0.069	0.015	0.03
	1996	1.3	0.001	0.003	0.002	0.004	0.014	0.042	0.015	0.028
	1997	1.3	0.001	0.003	0.002	0.005	0.015	0.045	0.015	0.029
	1998	1.3	0.002	0.003	0.002	0.006	0.016	0.067	0.018	0.032
	1999	1.2	0.002	0.003	0.002	0.007	0.018	0.071	0.02	0.034
	2000	1	0.001	0.003	0.002	0.006	0.018	0.058	0.021	0.034
	2001	1	0.002	0.003	0.002	0.007	0.019	0.064	0.022	0.035
	2002	0.91	0.002	0.004	0.003	0.008	0.021	0.077	0.023	0.038
Republic of Moldova	1990	253	3.1	4.3	5.1	9.09	10	101	0.52	13
	1991	220	3.5	3.8	3.2	7.3	7.5	83	0.24	8.4
	1992	103	1.7	3.3	2.9	4.91	4.5	60	0.07	5.4
	1993	71	1.4	1.8	1.7	4.19	3.6	48	0.11	4.6
	1994	23	0.82	1.3	1.5	2.68	2.8	27	0.07	3.8
	1995	34	0.59	0.9	1.5	2.02	2.8	17	0.16	3.1
	1996	28	0.66	1	1.6	1.63	2.7	20	0.06	3
	1997	22	0.36	0.6	0.91	1.4	2	12	0.04	2.1
	1998	7.9	0.33	0.4	0.6	1.04	1.4	10	0.07	1.4
	1999	11	0.15	0.2	0.21	0.48	0.8	4.4	0.01	0.6
	2000	2.8	0.17	0.3	0.56	0.85	1.3	4.6	0.07	1.4
	2001	3.4	0.11	0.2	0.5	0.66	1.3	2.8	0.06	1.5
	2002	3.3	0.23	0.4	0.63	0.78	1.5	1.8	0.12	1.7
Russian Federation	1990	3591	79	16						
	1991	3553	68	13						
	1992	3095	69	11						
	1993	3276	59	12						
	1994	2643	57	10						
	1995	2426	57	10						
	1996	2304	51	10						
	1997	2247	50	10						
	1998	2262	49	9.4						
	1999	2339	51	10						
	2000	2352	51	10						
	2002	2118	52	10						
	2010	550	55	14						
Serbia and Montenegro	2001	NE	NE	NE	NE	NE	NE	NE	NE	NE
	2002	NE	NE	NE	NE	NE	NE	NE	NE	NE
Slovakia[176]	1990	152	9.5	13	154	79	99	74	8.8	104
	1992	148	11	6.2	86	71	76	63	11	85
	1994	84	6.6	3.9	46	12	49	32	8.6	69
	1995	81	10	4	39	12	48	34	9.5	68
	1996	78	9	3.4	47	10	59	34	10	67
	1997	79	10	3.7	47	10	61	31	10	67
	1998	67	7.8	4.1	40	9.4	50	31	9.3	60
	1999	55	6.6	3.7	13	10	21	26	6	51
	2000	74	7.2	4.4	11	8.1	24	24	7.1	59
	2001	65	7.2	3.8	15	7.8	26	23	7.3	56
	2002	60	4.9	3.1	11	6.3	23	22	7.1	54
Slovenia	1990	460	1.7	0.76						
	1991	386								
	1992	390								
	1993	398								
	1994	406	1.7	0.61						
	1995	196	1.7	0.65						
	1996	99	1.8	0.59						
	1997	80	1.8	0.61						
	1998	60	1.7	0.63						
	1999	50	1.6	0.6						
	2000	41	1.5	0.58						
	2001	16	1.6	0.62	NE	NE	NE	NE	NE	NE
	2002	13	1.6	0.62	NE	NE	NE	NE	NE	NE

Table 10(continued): Anthropopogenitc emissions of heavy metals in the ECE region (Mg per year)

		PRIORITY METALS			OTHER METALS					
Party	Year	Lead	Cadmium	Mercury	Arsenic	Chromium	Copper	Nickel	Selenium	Zinc
	2020	NA	NA	NA						
Spain[177]	1990	2833	15	21	35	39	145	266	44	1380
	1991	1918	16	22	38	41	159	283	47	1416
	1992	1302	17	23	43	44	162	316	47	1452
	1993	1195	16	21	42	40	161	284	45	1471
	1994	1181	16	21	44	42	164	304	50	1534
	1995	975	17	21	43	44	158	325	53	1557
	1996	971	16	19	47	41	185	273	52	1617
	1997	909	16	19	50	43	195	269	56	1659
	1998	852	18	21	53	45	209	293	59	1823
	1999	800	19	23	54	49	219	339	62	1907
	2000	672	20	23	55	50	225	323	63	2025
	2001	583	20	24	59	51	232	322	68	2081
	2002	321	21	25	60	53	237	327	70	2135
Sweden	1980	NE	NE	NE	NE	NE	NE	NE	NE	NE
	1981	NE	NE	NE	NE	NE	NE	NE	NE	NE
	1982	NE	NE	NE	NE	NE	NE	NE	NE	NE
	1983	NE	NE	NE	NE	NE	NE	NE	NE	NE
	1984	NE	NE	NE	NE	NE	NE	NE	NE	NE
	1985	NE	NE	NE	NE	NE	NE	NE	NE	NE
	1986	NE	NE	NE	NE	NE	NE	NE	NE	NE
	1987	NE	NE	NE	NE	NE	NE	NE	NE	NE
	1988	NE	NE	NE	NE	NE	NE	NE	NE	NE
	1989	NE	NE	NE	NE	NE	NE	NE	NE	NE
	1990	474	2.5	4.7	5.5	23	34	30	0.61	178
	1991	397	1.5	1.4	4.2	19	33	28	0.63	158
	1992	355	1.4	1.2	3.9	17	40	27	0.63	137
	1993	275	1.1	1.1	2.6	17	30	29	0.65	138
	1994	45	0.78	1.2	1.4	16	20	34	0.7	142
	1995	23	0.76	1.1	1.5	12	19	32	0.7	129
	1996	21	0.77	1.1	1.2	11	20	33	0.82	124
	1997	20	0.75	1	1.2	8.8	21	27	0.7	114
	1998	19	0.69	0.94	1.1	7.6	19	27	0.71	112
	1999	18	0.56	0.93	0.79	6.4	16	21	0.64	102
	2000	15	0.52	0.77	0.7	6.7	15	16	0.57	94
	2001	14	0.6	0.65	0.89	7.1	15	17	0.65	109
	2002	13	0.52	0.67	0.81	8.7	16	19	0.67	103
Switzerland	1980	1760	6.4	7.9						1280
	1985	768	4.7	7.8						925
	1990	520	4.2	6.8						841
	1991	461	3.9	6.1						814
	1992	401	3.6	5.4						767
	1993	341	3.1	4.7						719
	1994	287	2.7	4						674
	1995	226	2.5	3.3						607
	1996	200	2.3	3.1						609
	1997	174	2.2	2.9						590
	1998	149	2.2	2.6						547
	1999	131	2.2	2.6						553
	2000	114	2.2	2.6						558
	2001	101	2.1	2.5						499
	2002	99	2	2.5						503
	2010	86	1.9	2.4						528
	2015	86	1.9	2.4						551
	2020	86	1.9	2.4						568
TFYR of Macedonia	1998	3	0.2	0.048						163
	2000	3	0.2	0.048						
	2001	21	2.2	0.048			3.9			
	2002	0.09	0.024	0.048						
Ukraine	2001	663	10	25	221	451	1025	238	15	2516
	2002	145	2	5.9	42	124	279	75	3.7	371
United Kingdom[178]	1980	8213	21	42	78	200	188	674	104	1287
	1981	7412	20	40	75	195	179	587	99	1284
	1982	7506	20	39	73	185	174	563	94	1232
	1983	7620	20	38	71	183	174	501	93	1233
	1984	7822	22	36	63	165	151	610	74	1227
	1985	7210	20	38	72	176	167	484	89	1210
	1986	3526	20	37	71	178	173	466	96	1175
	1987	3618	19	35	68	180	163	399	92	1204
	1988	3755	20	36	67	179	166	435	91	1243

Table 10(continued): Anthropogenic emissions of heavy metals in the ECE region (Mg per year)

		PRIORITY METALS			OTHER METALS					
Party	Year	Lead	Cadmium	Mercury	Arsenic	Chromium	Copper	Nickel	Selenium	Zinc
	1990	2809	20	37	62	174	160	393	87	1229
	1991	2556	20	37	62	164	154	409	84	1134
	1992	2336	19	35	60	165	151	408	83	1150
	1993	2109	14	24	58	158	140	398	75	1154
	1994	1857	13	23	54	148	133	365	68	1142
	1995	1549	12	22	46	122	117	300	55	1096
	1996	1306	9.2	17	44	111	113	270	54	986
	1997	1151	7.6	14	38	97	88	199	44	904
	1998	885	6	12	36	90	83	176	47	815
	1999	520	5.5	10	33	75	77	137	34	662
	2000	184	5.9	9	28	72	63	108	35	650
	2001	180	4.5	9.1	28	73	60	109	36	609
	2002	162	4.5	8	24	45	50	98	32	583
	2010	340	12	12						
United States	1990	2996	180	187	394	1003		1205	504	
	1991	3781								
	1992	3455								
	1993	3548								
	1994	3668								
	1995	3577		146						
	1996	2383	142	170	323	953		1086	782	
	1999	3044	158	106	367	841	NA	1388	745	NA
	2002	NA	NA	NA	NA	NA	NA	NA	NA	NA

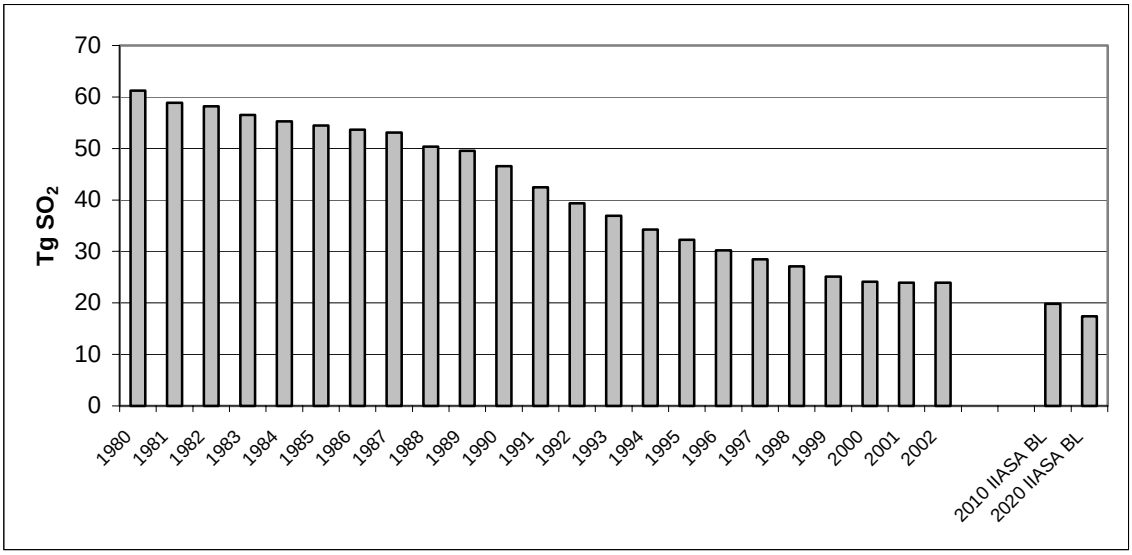

Figure I. Trends in sulphur emissions in the EMEP area (1980-2002, 2010, 2020)

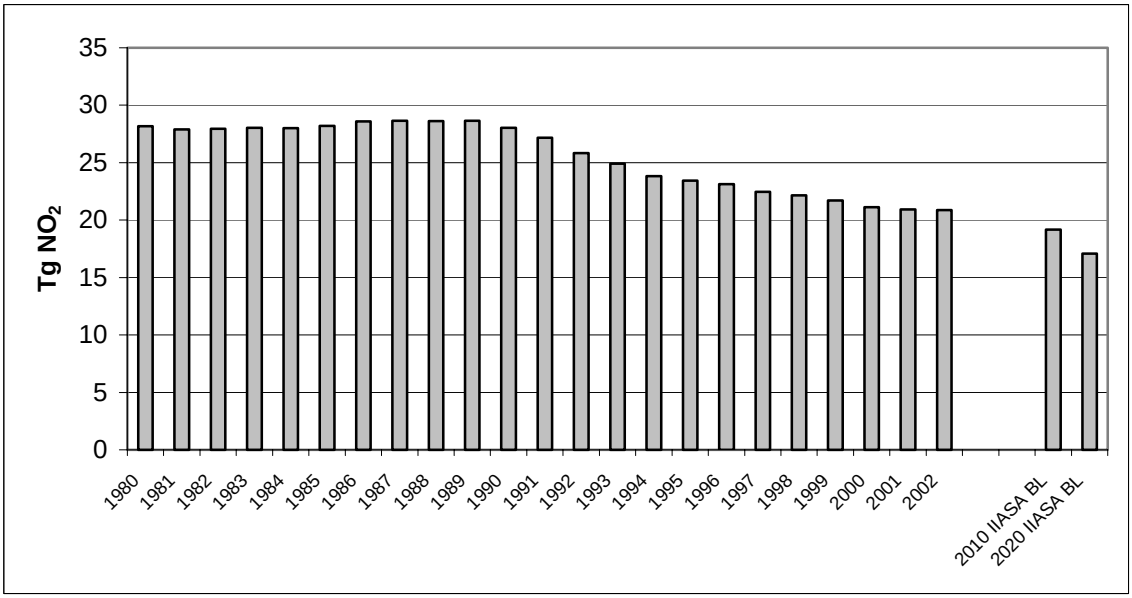

Figure II. Trends in nitrogen oxides emissions in the EMEP area (1980-2002, 2010, 2020)

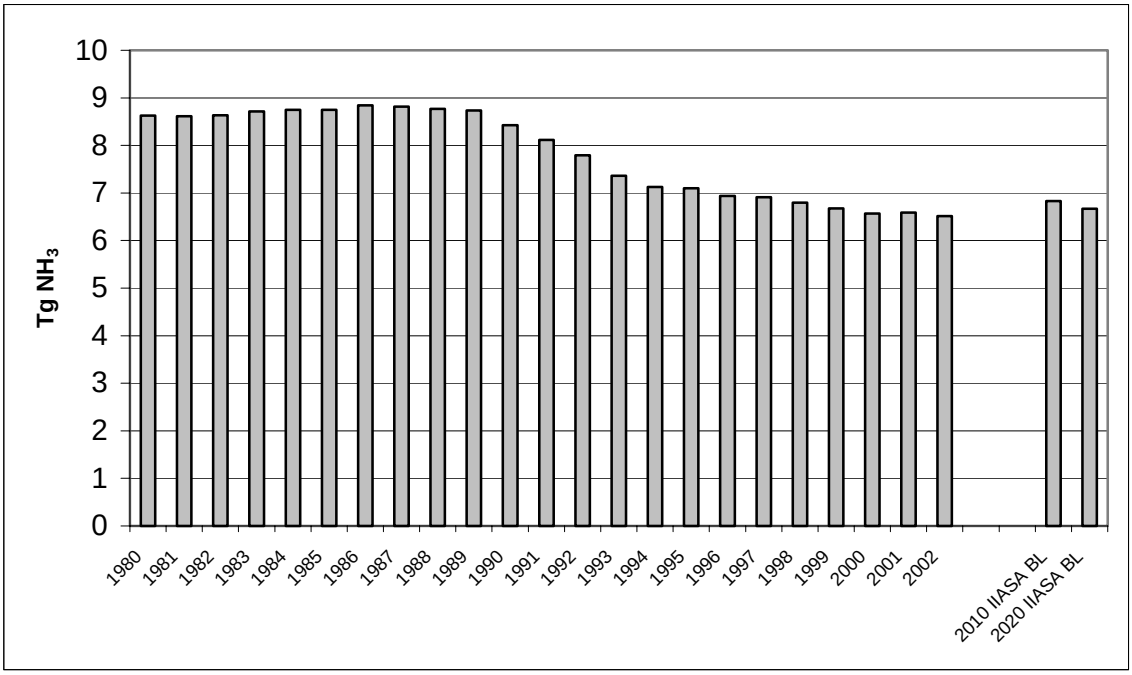

Figure III. Trends in ammonia emissions in the EMEP area (1980-2002, 2010, 2020)

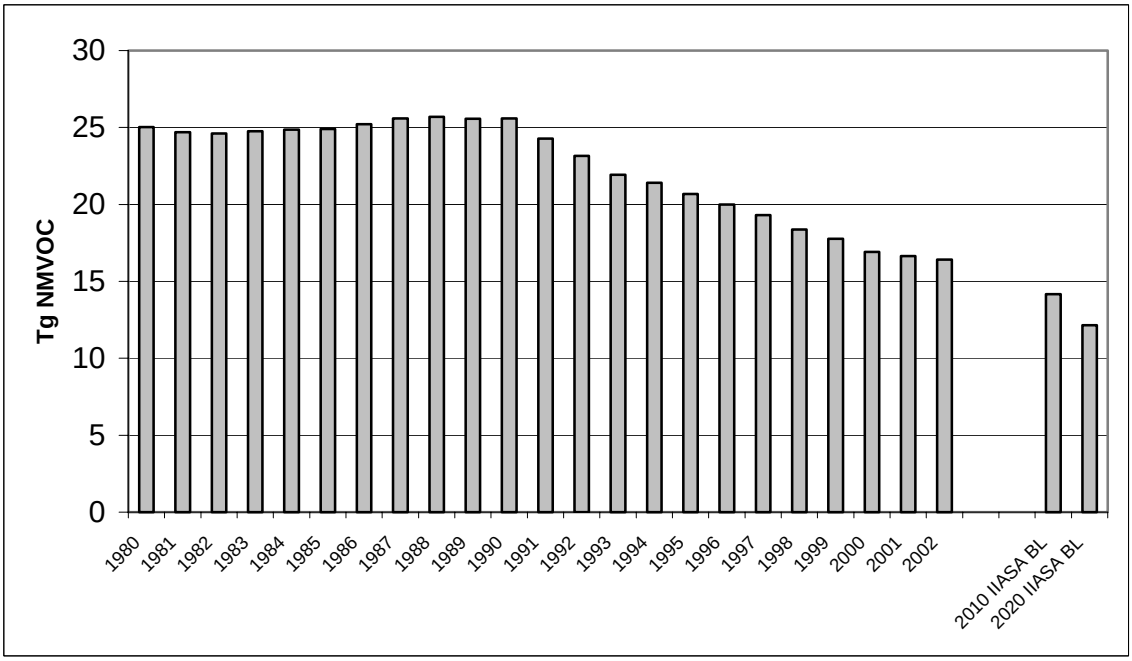

Figure IV. Trends in emissions of volatile organic compounds in the EMEP area (1980-2002, 2010, 2020)

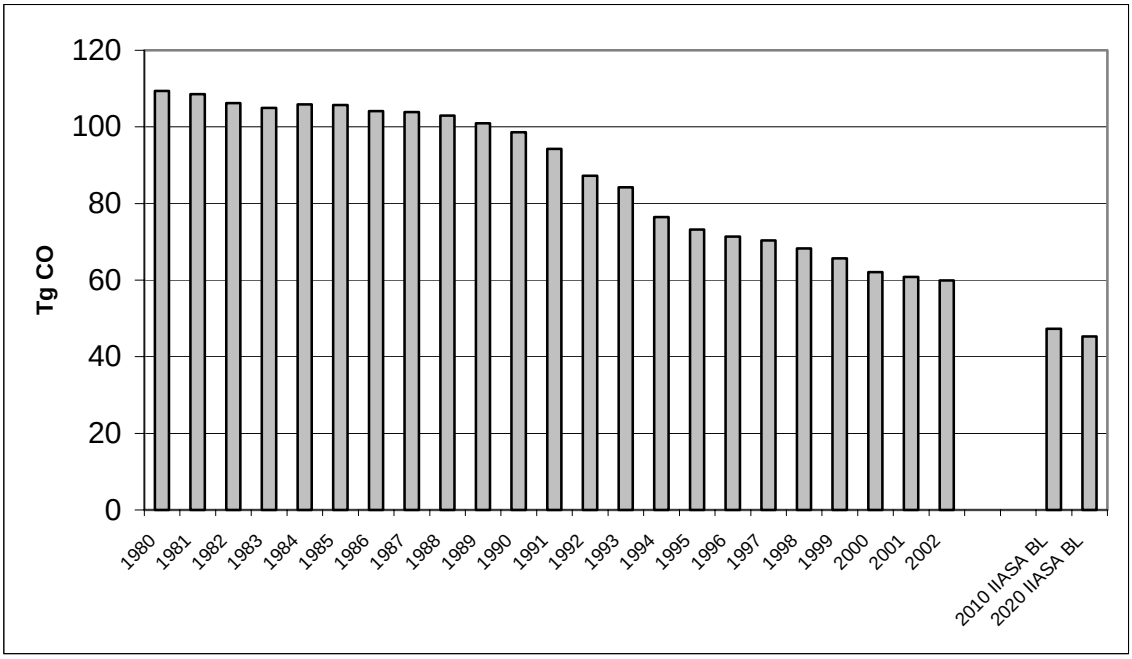

Figure V. Trends in carbon monoxide emissions in the EMEP area (1980-2002, 2010, 2020)

Reference

Vestreng, V., and E. Støren, 2000, Analysis of UNECE/EMEP Emission data, MSC-W Status Report 2000, Note 1/2000, ISSN 0332-9879, 2000.

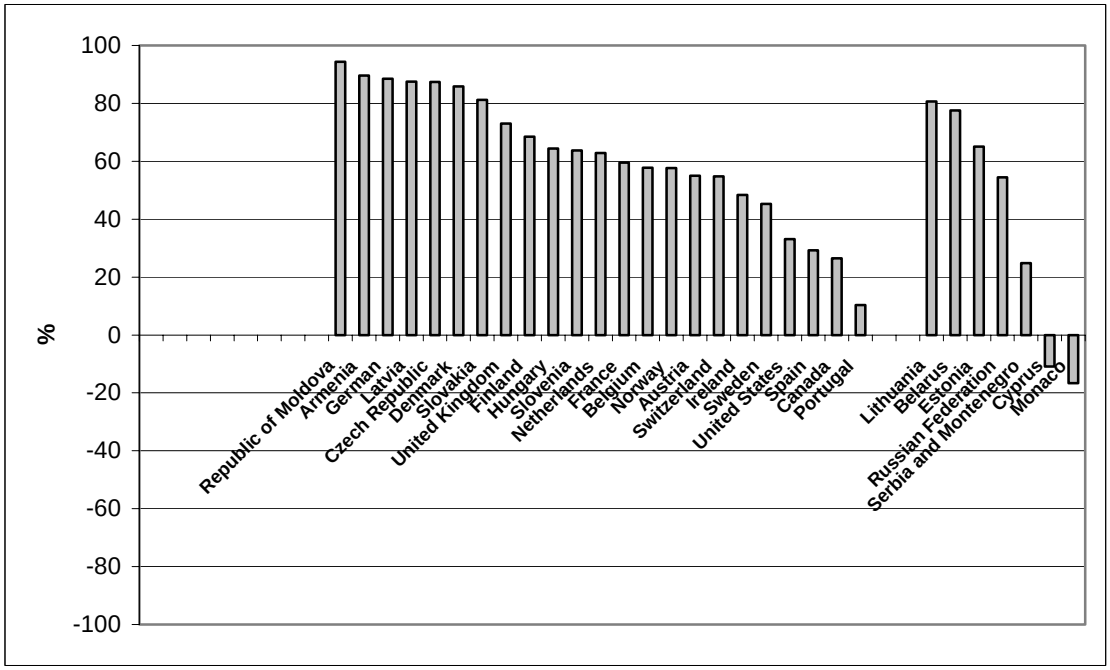

Figure VI. Sulphur emission reductions in the ECE region (1990-2002) (based on the latest data available. Signatories to the 1999 Gothenburg Protocol are on the left. Only countries that have reported national total emission data, including main sources, for both 1990 and 2002 are listed here.

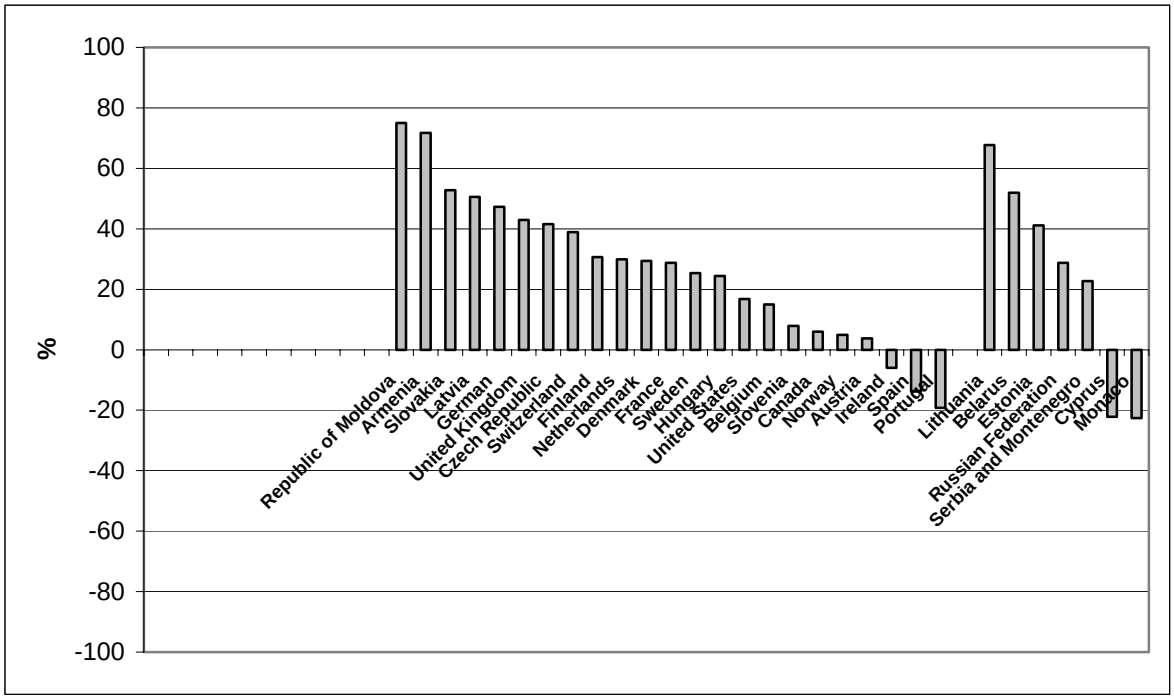

Figure VII. Nitrogen oxides emission reductions in the ECE region (1990-2002) (based on the latest data available). Signatories to the 1999 Gothenburg Protocol are on the left. Only countries that have reported national total emission data, including main sources, for both 1990 and 2002 are listed here.

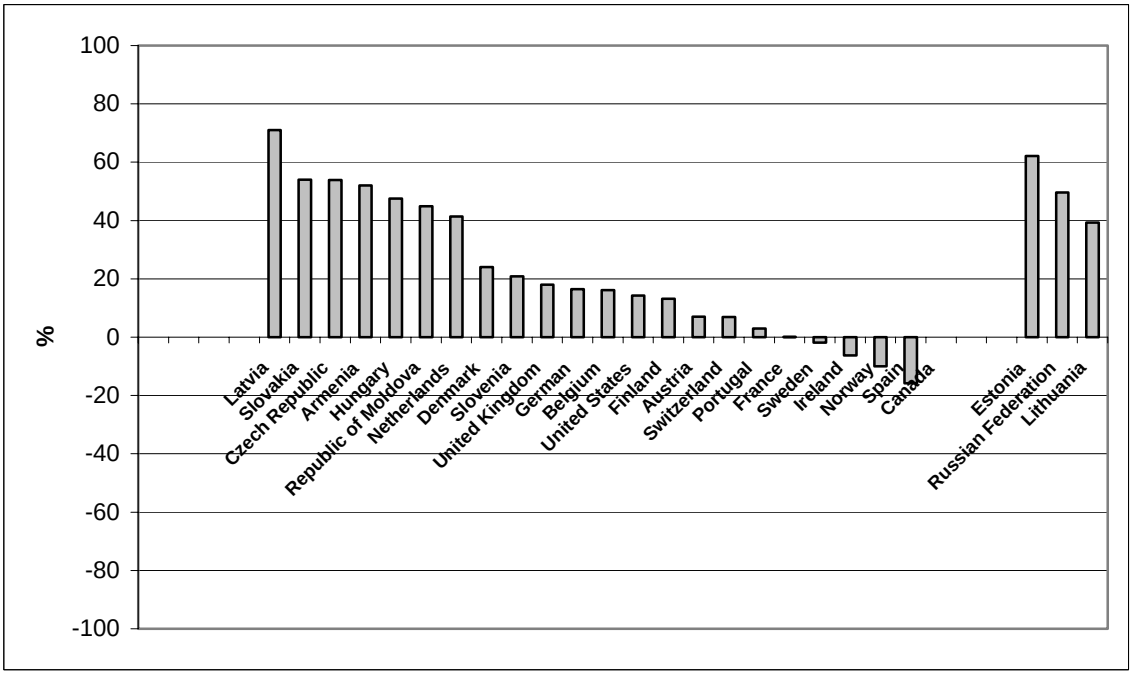

Figure VIII. Ammonia emission reductions in the ECE region (1990-2002) (based on the latest data available). Signatories to the 1999 Gothenburg Protocol are on the left. Only countries that have reported national total emission data, including main sources, for both 1990 and 2002 are listed here.

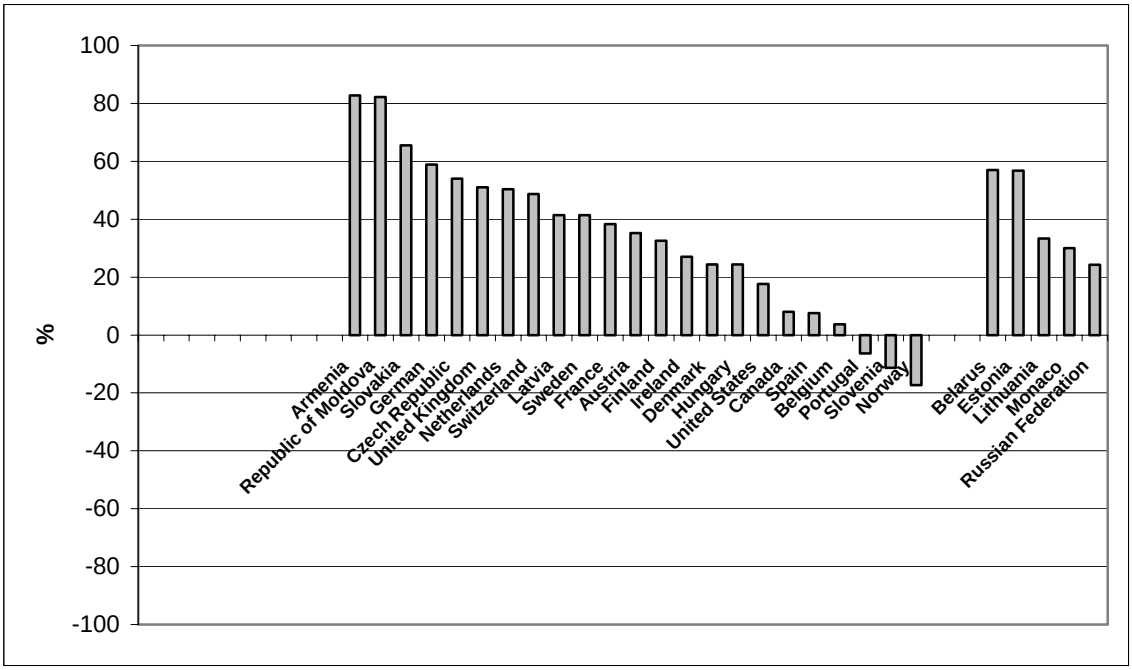

Figure IX. Reductions in emissions of non-methane volatile organic compounds in the ECE region (1990-2002) (based on the latest data available). Signatories to the 1999 Gothenburg Protocol are on the left. Only countries that have reported national total emission data, including main sources, for both 1990 and 2002 are listed here.

Table 1: Anthropogenic emissions of sulphur in the ECE region, footnotes

[1] Reduction of emissions from 1993 onwards is explained by the blockade of communications in Armenia followed by a drop in energy production. The SO2 reduction in 1999 can be explained by the fact that in 1999 all heating enterprises used natural gas as fuel.

[2] 2010, 2015, 2020: Sulphur projections were calculated on a 1990 baseline and economic development forecasts.

[3] 2000: NFR 8 emissions included in NFR 7; 2002-2020: SOx, - statistical data; not all sources accounted for.

[4] 1980-1989: S90: As relevant information is lacking for at least one of the three Belgian regions during the period 1980-89, no data are given before 1990; 1998-1999: Preliminary data.

[5] 2000 S7 S8: Emissions are calculated on the basis of the total quality of fuels used by sector.

[6] Emissions concerning the whole of Canada, not just for its Sulphur Oxides Management Area (SOMA): SO_2 for its SOMA (year, value, unit) are as follows:

1980	3245	Gg	1987	2111	Gg	1994	1382	Gg	2000	1221	Gg
1981	2819	Gg	1988	2190	Gg	1995	1227	Gg	2001	1196	Gg
1982	2373	Gg	1989	2241	Gg	1996	1206	Gg	2002	1112	Gg
1983	2382	Gg	1990	1872	Gg	1997	1210	Gg	2010	864	Gg
1984	2598	Gg	1991	1586	Gg	1998	1247	Gg	2015	797	Gg
1985	2343	Gg	1992	1546	Gg	1999	1149	Gg	2020	698	Gg
1986	2053	Gg	1993	1576	Gg						

[7] 1980-1990: Data are missing because Croatia was part of the former Yugoslavia during this period; 1990-1998: S90: Distributed according to SNAP90; 1999: S90: Distributed according to SNAP97.

[8] 1980-1999: National totals include overseas areas.

[9] Data include those located within the EMEP area only. National totals do not include international air traffic and international sea traffic. 2010: Emissions correspond to the European Commission's National Emission Ceilings (NEC) directive.

[10] 1990: NFR sector 2 G, Other: SO2 emissions of the new Länder; emissions cannot be differentiated.

[11] Emissions in 1980 and 1981 are assumed to be similar to 1982 due to lack of data; 1980-1999, 2010: 2/3 of SO_2 emissions are emitted as H_2S.

[12] Preliminary data.

[13] Under sub sector 1. A 3 e Other is reported emissions from off-road machinery; Under 2A7 Other is reported emissions from glass production.

[14] Table 1a 2001: Field 1A4a has been included in 1A4bi because data available at present do not allow for separate emissions from commercial/institutional sectors and emissions from residential sectors; Table 1b 2001: Field 1A4a has been included into 1A4bi because data available at present do not allow for separate emissions from commercial/institutional sectors and emissions from residential sectors; Table 2b 2001: 'Total renewable value is reported in NFR 1A1a as 'Biomass'.

[15] 1998-1999 Specification of emissions included under "other" categories: 1A3e: Other mobile sources such as draglines, building cranes, etc.; 2G: Emissions from industry not attributable to previous two categories 3D: emissions from use of consumer products: emissions from smoking cigarettes; emissions from foams; emissions from (car) service companies. 1990, 1995, 2000-2002, 2010, 2015, 2020: Included in category 1 A 3 D ii "National Navigation": Emissions from Netherlands fishery vessels, on Netherlands territory and the Netherlands continental shelf; Emissions from all other ships (Domestic and International) on inland waters on Netherlands territory. Included in 1.a.3.I: all LTO (domestic and international) in conformity with NEC directive article 2 and as required for compliance with the Convention's protocols as noted in the letter from the Netherlands to the Chairman of the EMEP Steering Body. IE is used whenever emissions were included in the "other" sub-category of that specific category. Specification of emissions included in the "other" categories: 1A3e, 2G, 3D: emissions from smoking cigarettes; emissions from foams; emissions from (car) service companies

[16] 1987,1989-2002, 2010, 2015, 2020: Other:1 A 2 Manufacturing Industries and Construction: 1 A 2 f Other: All mining, extraction and manufacturing industries (NACE 10-37) not included in 1A1; construction

1 A 3 Transport: 1 A 3 e Other; 1 A 3 e ii includes machinery except in Agriculture / Forestry / Fishing, military and households. Snow scooters and small watercraft are included under 1 A 4 b Residential and 1 A 4 c Agriculture / Forestry / Fishing; 2 A MINERAL PRODUCTS: 2 A 7 Other including Non Fuel Mining & Construction; manufacturing of other non-metallic mineral products (NACE 26) not included in 2A1-2A3: glass, plaster, clay products, rock wool. Mining, crushing plants, sand-pits. Construction; 2 B CHEMICAL INDUSTRY: 2 B 5 Other Manufacturing of methanol, basic plastics, sulphuric acid, chlorine, explosives, soap, pigments, and paint; 3 TOTAL SOLVENT AND OTHER PRODUCT USE; 3 D OTHER including products containing HMs and POPs; in addition to other solvents this item includes mercury emissions by evaporation from products.

[17] 1980-1999, 2010: Emissions from 1990 onwards are calculated using the SNAP97 categories; 1990-2020: National emission totals include emissions in Portuguese territorial areas that are outside the EMEP gridded area: Azores and Madeira Islands; 1990-2002: Recalculations mainly concern emissions from road transport, where a new country-specific model has been developed; 1990-2001: Recalculations reflect mainly the revision of the National Energy Balances under the responsibility of the Economy Ministry.

[18] SOx emissions 1980-1989 do not include mobile sources; for 1990-1999, emissions have been calculated according to EMEP/CORINAIR Emission Inventory Guidebook and the Greenhouse Gas Inventory Reporting Instructions; Since 1993 emissions from the left bank of the Dniester River are not included, except for emissions from the Moldavian electric station. The drop in emissions between 1991 and 1992 is due to a decrease in economic growth.

[19] National total and sectoral emissions.

[20] All: figures apply to the European part of EMEP; since 1980 SO_2 emission data were updated, taking into account emissions from mobile sources (agricultural engineering, road-building machinery and railway transport); GS-50-90 1995, 2000:Sector 7 only for SOx.

[21] 1980-2000 SO2 figures refer to stationary sources only.

[22] 2000: Preliminary data; 1990-2000, 2005, 2010, 2020 S90: Emissions included in Sector 3; 1990-2002 1A3aii Civil aviation (domestic, LTO); included emissions from civil aviation (domestic, LTO) and surface operations at the airport, emissions VOC; 6C Waste incineration - total waste incineration; 7 Other - biomass on-site burning and forest fires; 1A3ai(i) International Aviation (LTO) included in 1A3aii(i); 1A3ai (ii) International Aviation (cruise) included in 1A3 aii (ii); 1A3di International Navigation included in 1A3dii; NFR 1A1a - total NFR 1A1a; NFR 1A1b,c - total NFR 1A1b,c; NFR 1A2a-f - total NFR 1A2a-f; NFR 1A4a,bi,ci - total A4a, bi, ci; NFR 1A3aii,b,c,dii,eii+1A4bii,cii,ciii+1A5b Transport NFR 1A3aii - included only petrol and kerosene sold at airports in Slovakia; NFR 1A3aii Civil Aviation included only petrol and kerosene sold at airports in Slovakia; NFR 4B1a Dairy Cattle, Slurry-based system, detailed split of system not available; NFR 4B1a Dairy Cattle, Straw-based system - detailed split of system not available; NFR 4B1a Non-Dairy Cattle, Slurry-based system - detailed split of system not available; NFR 4B1a Non-Dairy Cattle, Straw-based system, detailed split of system not available; NFR 4B1a Swine, Slurry-based system - detailed split of system is not available; NFR 4B1a Swine, Straw-based system, detailed split of system not available; NFR 4Di N-fertilizer use, other N-fertilizers included are: synthetic fertilizer, N-fixing crops, crop residue, biological fixation; 2010-2020 Table IV 1A: National sector emissions: Main pollutants, particulate matter and heavy metals; 1A3aii Civil aviation (domestic, LTO) included emissions from civil aviation (domestic, LTO) and surface operations at the airport emissions VOC; 6C Waste incineration - total waste incineration; 7 Other: biomass on-site burning and forest fires; 1A3ai(i) International Aviation (LTO) - included in 1A3aii(i); 1A3ai(ii) International Aviation (cruise) included in 1A3aii(ii); 1A3di International Navigation - included in 1A3dii; Table IV 2B: Five-yearly, minimum reporting of energy consumption data; NFR 1A1a: total NFR 1A1a; NFR 1A1b,c: total NFR 1A1b,c
NFR 1A2a-f: total NFR 1A2a-f; NFR 1A4a,bi,ci - total 1A4a,bi,ci; NFR 1A3aii,b,c,dii,eii+1A4bii,cii,ciii+1A5b Transport: NFR 1A3aii: included only petrol and kerosene sold at airports in Slovakia; Table IV 2D: Five-yearly, Minimum reporting of energy consumption data for transport sector: NFR 1A3aii Civil Aviation: included only petrol and kerosene sold at airports in Slovakia; Table IV 2E: Five-yearly, Minimum reporting of agricultural activity data: NFR 4B1a Dairy Cattle, Slurry-based system: detailed split of system not available; NFR 4B1a Dairy Cattle, Straw-based system: detailed split of system not available; NFR 4B1a Non-Dairy Cattle, Slurry-based system: detailed split of system not available; NFR 4B1a Non-Dairy Cattle, Straw-based system; detailed split of system not available; NFR 4B1a Swine, Slurry-based system: detailed split of system not available; NFR 4B1a Swine, Straw-based system: detailed split of system not available; NFR 4Di N-fertilizer use: other N-fertilizers: included is synthetic fertilizer, N-fixing crops, crop residue, biological fixation.

[23] 1990-2002: Non-gridded data cover the whole national Spanish territory. Gridded data cover the EMEP area (it excludes Canary Islands and Ceuta and Melilla).

[24] 2010 Emissions correspond to the emission ceilings in the Gothenburg Protocol.

[25] 1997 National total and sectoral emissions. Refers to Skopje only; 1980-1999, 2010: Data are for sectors 1-6 only. Data for sectors 7-11 are not yet ready; 2000: S90 Emissions reported for NFR4G-NFR4I together are displayed as NFR4G emissions. Emissions reported for NFR4J and NFR4K together are displayed as NFR4J emissions.

[26] 1980-2020: S90 SO2 emissions from all sectors in the fuel combustion were calculated only for 1999; 2010: sum of reported sector data.

Table 2: Anthropogenic emissions of nitrogen oxides in the ECE region, footnotes

[27] 1980-2001: Agriculture not included. Only sector 4 included in year 2000.

[28] 2002-2020: statistical data; not all sources accounted for.

[29] 1980-1989: As relevant information is lacking for at least one of the three Belgian regions during the period 1980-89, no data are given before 1990; 1998-1999: preliminary data.

[30] 2000 S7 S8: Emissions are calculated on the basis of the total quality of the fuels used by sectors.

[31] 1990-1998: Distributed according to SNAP90; 1999: Distributed according to SNAP97; 1980-1989: Data are missing because Croatia was a part of the former Yugoslavia during this period.

[32] 1980-1999: National totals include overseas areas.

[33] 2010: Emissions corresponds to the European Commission's National Emission Ceilings (NEC) directive; Data include those located within the EMEP area only. National totals do not include international air traffic and international sea traffic.

[34] 1987: NO2 is based on emission figures for 1990-2000.

[35] Preliminary data for 1996 and 1997.

[36] Preliminary data.

[37] Under sub sector 1. A 3 e Other are reported emissions from off-road machinery; under 2A7 Other is reported emissions from glass production.

[38] Table 1a 2001: Field 1A4a has been included into 1A4bi because data available at present do not allow for separate emissions from commercial/institutional sectors and from residential sectors; table 1b 2001: field 1A4a has been included in 1A4bi because data available at present do not allow for separate emissions from commercial/institutional sectors and emissions from residential sectors; table 2b 2001: total renewable value is reported in NFR 1A1a under Biomass.

[39] 1998-1999: specification of emissions included in the "other" categories: 1A3e: Other mobile sources such as draglines, building cranes, etc.; 2G: Emissions from industry not attributable to previous two categories 3D: emissions from use of consumer products: emissions from smoking cigarettes; emissions from foams; emissions from (car) service companies; 1990, 1995, 2000-2002, 2010, 2015, 2020: Included in category 1 A 3 D ii National Navigation: Emissions from Netherlands fishery vessels, on Netherlands territory and the Netherlands continental shelf; Emissions from all other ships (Domestic and International) on inland waters on Netherlands territory; included in 1.a.3.I: all LTO (domestic and international) in conformity with NEC directive article 2 and as required for compliance with the Convention's protocols as mentioned in letter from the Netherlands to the Chairman of the EMEP Steering Body; IE used whenever emissions were included in "other" sub-category of that specific category; specification of emissions included in the "other" categories: 1A3e: 2G: 3D: emissions from smoking cigarettes; emissions from foams; emissions from (car) service companies.

[40] 1987,1989-2002, 2010, 2015, 2020: notes on the submission under source category: Other 1 A 2 Manufacturing Industries and Construction: 1 A 2 f Other:\All mining, extraction and manufacturing industries (NACE 10-37) not included in 1A1; construction; 1 A 3 Transport: 1 A 3 e Other 1 A 3 e ii includes machinery except in Agriculture / Forestry / Fishing, military and households. Snow scooters and small watercraft are included under; 1 A 4 b Residential and 1 A 4 c Agriculture / Forestry / Fishing; 2 A MINERAL PRODUCTS: 2 A 7 Other including Non Fuel Mining & Construction; Manufacturing of other non-metallic mineral products (NACE 26) not included in 2A1-2A3: glass, plaster, clay products, rock wool. Mining, crushing plants, sand-pits. Construction. 2 B CHEMICAL INDUSTRY: 2 B 5 Other; manufacturing of methanol, basic plastics, sulphuric acid, chlorine, explosives, soap, pigments, and paint; 3 TOTAL SOLVENT AND OTHER PRODUCT USE: 3 D OTHER including products containing HMs and POPs; in addition to other solvents this item includes mercury emissions by evaporation from products.

[41] 1980-1999, 2010: Emissions from 1990 onwards are calculated using the categories of SNAP97
1990-2020: National emission totals include emissions in Portuguese territorial areas that are outside EMEP grid area: Azores and Madeira Islands.
1990-2002: Recalculations mainly concern emissions from road transport, where a new country-specific model has been developed.

1990-2001: Recalculations reflecting mostly the revision of National Energy Balances under the responsibility of the Economy Ministry.
[42] SOx emissions 1980-1989 do not include mobile sources
For 1990-1999 emissions have been calculated according to EMEP/CORINAIR Emission Inventory Guidebook and the Greenhouse Gas Inventory Reporting Instructions
Since 1993 emissions from the left bank of Dniester River are not included, except for emissions from Moldavian electric station. The drop in emissions between 1991 and 1992 is due to a decrease in the national economy
[43] Figures apply to the European part within EMEP.
NO2 figures for 1980-1987 refer to stationary and road vehicles only. NO2 emission data from 1987 to 1989 were updated taking into account emissions from railway transport, agricultural engineering and road-building machinery.
Since 1987 the NOx emissions have been updated according to the instruction of the Ministry of Natural Resources of the Russian Federation for a such sources as road transport, other mobile sources etc. NOx emissions data for earlier period (before 1987) have not been corrected.
GS-50-90 1995, 2000:Sector 7 only for NOx.
[44] 1980-2000 NO2 figures refer to stationary sources only.
[45] 2000 Preliminary data
1990-2000, 2005, 2010, 2020: Emissions included in Sector 3
1990-2002
1A3aii Civil aviation (domestic, LTO) - included emissions from civil aviation (domestic, LTO) and surface operations at the airport - emissions VOC
6C Waste incineration - total waste incineration
7 Other - biomass on-site burning and forest fires
1A3ai(i) International Aviation (LTO) - included in 1A3aii(i)
1A3ai(ii) International Aviation (cruise) - included in 1A3aii(ii)
1A3di International Navigation - included in 1A3dii
NFR 1A1a - total NFR 1A1a
NFR 1A1b,c - total NFR 1A1b,c
NFR 1A2a-f - total NFR 1A2a-f
NFR 1A4a,bi,ci - total 1A4a,bi,ci
NFR 1A3aii,b,c,dii,eii+1A4bii,cii,ciii+1A5b -Transport- NFR 1A3aii - included only petrol and kerosene sold at airports in Slovakia
NFR 1A3aii Civil Aviation - included only petrol and kerosene sold at airports in Slovakia
NFR 4B1a Dairy Cattle, Slurry-based system - detailed split of system is not available
NFR 4B1a Dairy Cattle, Straw-based system - detailed split of system is not available
NFR 4B1a Non-Dairy Cattle, Slurry-based system - detailed split of system is not available
NFR 4B1a Non-Dairy Cattle, Straw-based system - detailed split of system is not available
NFR 4B1a Swine, Slurry-based system - detailed split of system is not available
NFR 4B1a Swine, Straw-based system - detailed split of system is not available
NFR 4Di N-fertilizer use – other N-fertilizers - included is: synthetic fertilizer, N-fixing crops, crop residue, biological fixation
2010-2020
Table IV 1A: National sector emissions: Main pollutants, particulate matter and heavy metals
1A3aii Civil aviation (domestic, LTO) - included emissions from civil aviation (domestic, LTO) and surface operations at the airport - emissions VOC
6C Waste incineration - total waste incineration
7 Other - biomass on-site burning and forest fires
1A3ai(i) International Aviation (LTO) - included in 1A3aii(i)
1A3ai(ii) International Aviation (cruise) - included in 1A3aii(ii)
1A3di International Navigation - included in 1A3dii
Table IV 2B:
Five-yearly, Minimum reporting of energy consumption data
NFF 1A1a - total NFR 1A1a
NFR 1A1b,c - total NFR 1A1b,c
NFR 1A2a-f - total NFR 1A2a-f
NFR 1A4a,bi,ci - total 1A4a,bi,ci
NFR 1A3aii,b,c,dii,eii+1A4bii,cii,ciii+1A5b -Transport- NFR 1A3aii - included only petrol and kerosene sold at airports in Slovakia
Table IV 2D:
Five-yearly, Minimum reporting of energy consumption data for transport sector
NFR 1A3aii Civil Aviation - included only petrol and kerosene sold at airports in Slovakia
Table IV 2E:
Five-yearly, Minimum reporting of agricultural activity data
NFR 4B1a Dairy Cattle, Slurry-based system - detailed split of system is not available
NFR 4B1a Dairy Cattle, Straw-based system - detailed split of system is not available
NFR 4B1a Non-Dairy Cattle, Slurry-based system - detailed split of system is not available
NFR 4B1a Non-Dairy Cattle, Straw-based system - detailed split of system is not available
NFR 4B1a Swine, Slurry-based system - detailed split of system is not available
NFR 4B1a Swine, Straw-based system - detailed split of system is not available
NFR 4Di N-fertilizer use – other N-fertilizers - included is: synthetic fertilizer, N-fixing crops, crop residue, biological fixation
[46] 1990-2002: Non-gridded data cover the whole national Spanish territory. Gridded data cover the EMEP area (it excludes Canary Islands and Ceuta and Melilla).
[47] 2010 Emissions corresponds to the national emission ceiling (NEC) in the Gothenburg Protocol.
[48] 1997: National total and sectoral emissions. Refers to Skopje only
1980-1999, 2010: Data are for sectors 1-6 only. Data for sectors 7-11 are not yet ready.
2000: Emissions reported for NFR4G-NFR4I together are displayed as NFR4G
emissions. Emissions reported for NFR4J and NFR4K together are displayed as NFR4J emissions.

[49] 2010: Sum of reported sector data
[50] 2010 Total emissions reported 1996, plus projections reported 12/4-1995 resent 31/5-1996
[51] 1987-1989: For the time series 1987-1989, data as submitted under the Environmental Information and Observation Network (EIONET) have been used. As no officially agreed data gap filling procedure exists, data gaps were filled by EMEP data and EEA interpolations.
1990-1999: For the time series 1990-1999, data as compiled for the EC UNFCCC submission was used (Annual European Community Greenhouse Gas Inventory 1990-1999, EEA Technical Report 60, April 2001). The reason for using the EC inventory to the UNFCCC is that the data availability is better and that an officially agreed procedure for data gap filling exists.
The two time series differ slightly due to different treatment of overseas territories and international bunkers.
The EC inventory relies on the availability and submission of Member States data. However, in order to provide a more complete picture, the emissions of air pollutants reported by the EC and its Member States under the UNFCCC (SOX, NOX, CO and NMVOC) have been used

Table 3: Anthropogenic emissions of ammonia in the ECE region, footnotes
[52] 1980-2001 Agriculture not included.Only sector 4 included in year 2000
[53] 1998-1999: Preliminary data
As relevant informations are lacking for at least one of the three Belgian regions during the period 1980-89 no data are given before 1990.
[54] 2000 S7 S8: Emissions are calculated on the base of the total quality of the used fuels by sectors
[55] 1980-1989: Data are missing because Croatia was part of the former Yugoslavia in this period.
1990-1998: distributed acording to SNAP90.
1999: Dirstributed according to SNAP97
[56] 1980-1999: National totals include overseas areas
[57] 2010: Emissions corresponds to the National Emission Ceilings (NEC)
Data include those located within the EMEP area only
National totals do not include the international air traffic and the international sea traffic
[58] Preliminary data for 1996 and 1997
[59] Preliminary data
[60] Under sub sector 1. A 3 e Other are reported emissions from off-road machinery."
Under 2A7 Other is reported emissions from glass production.
[61] 2001 NH3 emissions in sector S10 increased in 2001 because for the first time contribution of nitrogen fertilisers was evaluated.
[62] Table 1a 2001: Field 1A4a has been included into 1A4bi because data available at present do not allow for separate emissions from commercial/institutional sectors and emissions from residential sectors.
Table 1b 2001: Field 1A4a has been included into 1A4bi because data available at present do not allow for separate emissions from commercial/institutional sectors and emissions from residential sectors.
Table 2b 2001: 'TOTAL renewable' value is reported in NFR 1A1a 'Biomass'.
[63] 1998-1999 Specification of emissions included in the "other" categories:
1A3e: Other mobile sources such as draglines, building cranes, etc.
2G: Emissions from industry not attributable to previous two categories
3D: Emissions from use of consumer products:
- emissions from smoking cigarettes;
- emissions from foams;
- emissions from (car) service companies
1990, 1995, 2000-2002, 2010, 2015, 2020
NH3 emissions from human respiration are included. We included in category 1 A 3 D ii "National Navigation":
-Emissions from Netherlands fishery vessels, on Netherlands territory and the Netherlands continental shelf.
-Emissions from all other ships (Domestic and International) on inland waters on Netherlands territory.
We included in 1.a.3.I all LTO (domestic and international) in conformity with the NEC Directive article 2 and as required for compliance with the Convention's protocols as mentioned in the letter from the Netherlands to the Chairman of the EMEP Steering Body. We used IE whenever the emissions were included in the "other" sub-category of that specific category.
Specification of emissions included in the "other" categories:
1A3e:
2G:
3D:
- emissions from smoking cigarettes;
- emissions from foams;
- emissions from (car) service companies
[64] 1987,1989-2002, 2010, 2015, 2020
Notes on the submission under source category: Other
1 A 2 Manufacturing Industries and Construction: 1 A 2 f Other:\All mining, extraction and manufacturing industries (NACE 10-37) not included in 1A1. Construction.
1 A 3 Transport: 1 A 3 e Other
1 A 3 e ii includes machinery except in Agriculture / Forestry / Fishing, military and households. Snow scooters and small watercraft are included under
1 A 4 b Residential and 1 A 4 c Agriculture / Forestry / Fishing
2 A MINERAL PRODUCTS: 2 A 7 Other including Non Fuel Mining & Construction
Manufacturing of other non-metallic mineral products (NACE 26) not included in 2A1-2A3: glass, plaster, clay products, rock wool. Mining, crushing plants, sand-pits. Construction.
2 B CHEMICAL INDUSTRY: 2 B 5 Other (Please specify in a covering note)
Manufacturing of methanol, basic plastics, sulphuric acid, chlorine, explosives, soap, pigments, and paint.
3 TOTAL SOLVENT AND OTHER PRODUCT USE:
3 D OTHER including products containing HMs and POPs
In addition to other solvents this item includes mercury emissions by evaporation from products.
[65] 1980-1999, 2010: Emissions from 1990 onwards are calculated using the categories of SNAP97

1990-2002, 2010, 2020: National emission totals include emissions in Portuguese territorial areas that are outside EMEP grid area: Azores and Madeira Islands.
[66] 1980-1999, 2010: Since 1993 emissions from the left bank of Dniester River are not included, except for emissions from Moldavian electric station. The drop in emissions between 1991 and 1992 is due to a decrease in the national economy .
1990-1999,: For 1990-1999 emissions have been calculated according to EMEP/CORINAIR Emission Inventory Guidebook and the Greenhouse Gas Inventory Reporting Instructions
[67] Figures apply to the European part within EMEP.
NH3 figures for 1980-1986 refer to agricultural sector only. Since 1987 NH3 figures include emissions from industrial sources.
[68] 1990-2002
1A3aii Civil aviation (domestic, LTO) - included emissions from civil aviation (domestic, LTO) and surface operations at the airport - emissions VOC
6C Waste incineration - total waste incineration
7 Other - biomass on-site burning and forest fires
1A3ai(i) International Aviation (LTO) - included in 1A3aii(i)
1A3ai(ii) International Aviation (cruise) - included in 1A3aii(ii)
1A3di International Navigation - included in 1A3dii
NFR 1A1a - total NFR 1A1a
NFR 1A1b,c - total NFR 1A1b,c
NFR 1A2a-f - total NFR 1A2a-f
NFR 1A4a,bi,ci - total 1A4a,bi,ci
NFR 1A3aii,b,c,dii,eii+1A4bii,cii,ciii+1A5b -Transport- NFR 1A3aii - included only petrol and kerosene sold at airports in Slovakia
NFR 1A3aii Civil Aviation - included only petrol and kerosene sold at airports in Slovakia
NFR 4B1a Dairy Cattle, Slurry-based system - detailed split of system is not available
NFR 4B1a Dairy Cattle, Straw-based system - detailed split of system is not available
NFR 4B1a Non-Dairy Cattle, Slurry-based system - detailed split of system is not available
NFR 4B1a Non-Dairy Cattle, Straw-based system - detailed split of system is not available
NFR 4B1a Swine, Slurry-based system - detailed split of system is not available
NFR 4B1a Swine, Straw-based system - detailed split of system is not available
NFR 4Di N-fertilizer use – other N-fertilizers - included is: synthetic fertilizer, N-fixing crops, crop residue, biological fixation
2010-2020
Table IV 1A: National sector emissions: Main pollutants, particulate matter and heavy metals
1A3aii Civil aviation (domestic, LTO) - included emissions from civil aviation (domestic, LTO) and surface operations at the airport - emissions VOC
6C Waste incineration - total waste incineration
7 Other - biomass on-site burning and forest fires
1A3ai(i) International Aviation (LTO) - included in 1A3aii(i)
1A3ai(ii) International Aviation (cruise) - included in 1A3aii(ii)
1A3di International Navigation - included in 1A3dii
Table IV 2B:
Five-yearly, Minimum reporting of energy consumption data
NFR 1A1a - total NFR 1A1a
NFR 1A1b,c - total NFR 1A1b,c
NFR 1A2a-f - total NFR 1A2a-f
NFR 1A4a,bi,ci - total 1A4a,bi,ci
NFR 1A3aii,b,c,dii,eii+1A4bii,cii,ciii+1A5b -Transport- NFR 1A3aii - included only petrol and kerosene sold at airports in Slovakia
Table IV 2D:
Five-yearly, Minimum reporting of energy consumption data for transport sector
NFR 1A3aii Civil Aviation - included only petrol and kerosene sold at airports in Slovakia
Table IV 2E:
Five-yearly, Minimum reporting of agricultural activity data
NFR 4B1a Dairy Cattle, Slurry-based system - detailed split of system is not available
NFR 4B1a Dairy Cattle, Straw-based system - detailed split of system is not available
NFR 4B1a Non-Dairy Cattle, Slurry-based system - detailed split of system is not available
NFR 4B1a Non-Dairy Cattle, Straw-based system - detailed split of system is not available
NFR 4B1a Swine, Slurry-based system - detailed split of system is not available
NFR 4B1a Swine, Straw-based system - detailed split of system is not available
NFR 4Di N-fertilizer use – other N-fertilizers - included is: synthetic fertilizer, N-fixing crops, crop residue, biological fixation
[69] 2001 Non-gridded data are for the whole of the Spanish territory (including Canary Islands, Ceuta and Melilla). # Revised estimates are reported in this re-submission for agricultural (and total sectoral) NH3 emissions as a double counting (the part emitted by synthetic fertilizing) was detected in previous (Feb 2003) submission. This has also made it necessary to revise consistently the series 1980-2001 of NH3 emissions.
1990-2000, 2002
Non-gridded data cover the whole national Spanish territory. Gridded data cover the EMEP area (it excludes Canary Islands and Ceuta and Melilla).
[70] 2010: Emissions correspond to the national emission ceiling (NEC) in the Gothenburg Protocol.
[71] Sector 4 emissions only.
[72] 2010 Total emissions reported 1996, plus projections reported 12/4-1995 resent 31/5-1996.

Table 4: Anthropogenic emissions of non-methane volatile organic compounds in the ECE region, footnotes
[73] 1998-1999: Preliminary data
1985: The NMVOC figure for 1985 includes CH4 emissions
1980-1989 As relevant informations are lacking for at least one of the three Belgian regions during the period 1980-89 no data are given before 1990.
[74] 2000 S7 S8: Emissions are calculated on the base of the total quality of the used fuels by sectors

[75] 1990-1998: Distributed according to SNAP90
1999: Distributed according to SNAP97
1980-1989: Data are missing because Croatia was part of the former Yugoslavia in this period.
[76] 1980-1999: National totals include overseas areas
[77] Time series will be updated.
1990-1999 S90 S3 NMVOC: NMVOC emissions are included in the SNAP 8 category
[78] 2010: Emissions corresponds to the National Emission Ceilings (NEC)
Data include those located within the EMEP area only
National totals do not include the international air traffic and the international sea traffic
[79] 1980-1989, 2020:
NMVOC emissions by source categories do not include biogenic NMVOC emissions of managed forests since only anthropogenic emissions were requested.
[80] The NMVOC figure for 1985 includes CH4 emissions
[81] Before 1991 a top-down calculation was used, since 1991 a bottom-up method on the basis of a detailed survey has been applied. From 1990-1991 there was a sudden, rapid recession in the economy including lower industrial production, less fuel and solvent consumption resulting less VOC emission.
[82] Preliminary data for 1996 and 1997
[83] Preliminary data
1980-2000, 2010, 2020: CH4 included
[84] Under sub sector 1. A 3 e Other are reported emissions from off-road machinery."
Under 2A7 Other is reported emissions from glass production.
[85] Table 1a 2001: Field 1A4a has been included into 1A4bi because data available at present do not allow for separate emissions from commercial/institutional sectors and emissions from residential sectors. Table 1b 2001: Field 1A4a has been included into 1A4bi because data available at present do not allow for separate emissions from commercial/institutional sectors and emissions from residential sectors.
Table 2b 2001: 'TOTAL renewable' value is reported in NFR 1A1a 'Biomass'.
[86] 1998-1999 Specification of emissions included in the "other" categories:
1A3e: Other mobile sources such as draglines, building cranes, etc.
2G: Emissions from industry not attributable to previous two categories
3D: Emissions from use of consumer products:
- emissions from smoking cigarettes;
- emissions from foams;
- emissions from (car) service companies
1990, 1995, 2000-2002, 2010, 2015, 2020
NH3 emissions from human respiration are included. We included in category 1 A 3 D ii "National Navigation":
- Emissions from Netherlands fishery vessels, on Netherlands territory and the Netherlands continental shelf.
- Emissions from all other ships (Domestic and International) on inland waters on Netherlands territory.
We included in 1.a.3.I all LTO (domestic and international) in conformity with the NEC Directive article 2 and as required for compliance with the Convention's protocols as mentioned in the letter from the Netherlands to the Chairman of the EMEP Steering Body. We used IE whenever the emissions were included in the "other" sub-category of that specific category.
Specification of emissions included in the "other" categories:

1A3e:
2G:
3D:
- emissions from smoking cigarettes;
- emissions from foams;
- emissions from (car) service companies
[87] 1987,1989-2002, 2010, 2015, 2020
Notes on the submission under source category: Other
1 A 2 Manufacturing Industries and Construction: 1 A 2 f Other:\All mining, extraction and manufacturing industries (NACE 10-37) not included in 1A1. Construction.
1 A 3 Transport: 1 A 3 e Other
1 A 3 e ii includes machinery except in Agriculture / Forestry / Fishing, military and households. Snow scooters and small watercraft are included under
1 A 4 b Residential and 1 A 4 c Agriculture / Forestry / Fishing
2 A MINERAL PRODUCTS: 2 A 7 Other including Non Fuel Mining & Construction
Manufacturing of other non-metallic mineral products (NACE 26) not included in 2A1-2A3: glass, plaster, clay products, rock wool. Mining, crushing plants, sand-pits. Construction.
2 B CHEMICAL INDUSTRY: 2 B 5 Other (Please specify in a covering note)
Manufacturing of methanol, basic plastics, sulphuric acid, chlorine, explosives, soap, pigments, and paint.
3 TOTAL SOLVENT AND OTHER PRODUCT USE:
3 D OTHER including products containing HMs and POPs
In addition to other solvents this item includes mercury emissions by evaporation from products.
[88] Not including 297 Mg from source sector SNAP 11
[89] Emissions from 1990 onwards are calculated using the categories of SNAP97
1990-2002, 2010, 2015, 2020:
National emission totals include emissions in Portuguese territorial areas that are outside EMEP grid area: Azores and Madeira Islands. 1990-2002 Recalculations mainly concern emissions from road transport, where a new country-specific model has been developed.
[90] 1980-1999, 2010: Since 1993 emissions from the left bank of Dniester River are not included, except for emissions from Moldavian electric station. The drop in emissions between 1991 and 1992 is due to a decrease in the national economy
1980-1999 2010: For 1990-1999 emissions have been calculated according to EMEP/CORINAIR Emission Inventory Guidebook and the Greenhouse

Gas Inventory Reporting Instructions
[91] Figures apply to the European part within EMEP.
NMVOC: Natural sources not included. Since 1987 NMVOCs emission data were updated taking into account emissions from railway transport, agricultural engineering and road-building machinery.
[92] 80-00 #SO2 and NO2 figures refer to stationary sources only
[93] 1990-2002
1A3aii Civil aviation (domestic, LTO) - included emissions from civil aviation (domestic, LTO) and surface operations at the airport - emissions VOC
6C Waste incineration - total waste incineration
7 Other - biomass on-site burning and forest fires
1A3ai(i) International Aviation (LTO) - included in 1A3aii(i)
1A3ai(ii) International Aviation (cruise) - included in 1A3aii(ii)
1A3di International Navigation - included in 1A3dii
NFR 1A1a - total NFR 1A1a
NFR 1A1b,c - total NFR 1A1b,c
NFR 1A2a-f - total NFR 1A2a-f
NFR 1A4a,bi,ci - total 1A4a,bi,ci
NFR 1A3aii,b,c,dii,eii+1A4bii,cii,ciii+1A5b -Transport- NFR 1A3aii - included only petrol and kerosene sold at airports in Slovakia
NFR 1A3aii Civil Aviation - included only petrol and kerosene sold at airports in Slovakia
NFR 4B1a Dairy Cattle, Slurry-based system - detailed split of system is not available
NFR 4B1a Dairy Cattle, Straw-based system - detailed split of system is not available
NFR 4B1a Non-Dairy Cattle, Slurry-based system - detailed split of system is not available
NFR 4B1a Non-Dairy Cattle, Straw-based system - detailed split of system is not available
NFR 4B1a Swine, Slurry-based system - detailed split of system is not available
NFR 4B1a Swine, Straw-based system - detailed split of system is not available
NFR 4Di N-fertilizer use – other N-fertilizers - included is: synt etic fertilizer, N-fixing crops, crop residue, biological fixation
2010-2020
Table IV 1A: National sector emissions: Main pollutants, particulate matter and heavy metals
1A3aii Civil aviation (domestic, LTO) - included emissions from civil aviation (domestic, LTO) and surface operations at the airport - emissions VOC
6C Waste incineration - total waste incineration
7 Other - biomass on-site burning and forest fires
1A3ai(i) International Aviation (LTO) - included in 1A3aii(i)
1A3ai(ii) International Aviation (cruise) - included in 1A3aii(ii)
1A3di International Navigation - included in 1A3dii
Table IV 2B:
Five-yearly, Minimum reporting of energy consumption data
NFR 1A1a - total NFR 1A1a
NFR 1A1b,c - total NFR 1A1b,c
NFR 1A2a-f - total NFR 1A2a-f
NFR 1A4a,bi,ci - total 1A4a,bi,ci
NFR 1A3aii,b,c,dii,eii+1A4bii,cii,ciii+1A5b -Transport- NFR 1A3aii - included only petrol and kerosene sold at airports in Slovakia
Table IV 2D:
Five-yearly, Minimum reporting of energy consumption data for transport sector
NFR 1A3aii Civil Aviation - included only petrol and kerosene sold at airports in Slovakia
Table IV 2E:
Five-yearly, Minimum reporting of agricultural activity data
NFR 4B1a Dairy Cattle, Slurry-based system - detailed split of system is not available
NFR 4B1a Dairy Cattle, Straw-based system - detailed split of system is not available
NFR 4B1a Non-Dairy Cattle, Slurry-based system - detailed split of system is not available
NFR 4B1a Non-Dairy Cattle, Straw-based system - detailed split of system is not available
NFR 4B1a Swine, Slurry-based system - detailed split of system is not available
NFR 4B1a Swine, Straw-based system - detailed split of system is not available
NFR 4Di N-fertilizer use – other N-fertilizers - included is: synt etic fertilizer, N-fixing crops, crop residue, biological fixation
[94] 1990-2000, 2002
Non-gridded data cover the whole national Spanish territory. Gridded data cover the EMEP area (it excludes Canary Islands and Ceuta and Melilla). NMVOC emissions in NFR source category 4D1 (Direct Soil Emission) correspond to NMVOC emissions from foliar agricultural plants, and as such these NMVOC emissions could not be strictly considered as anthropogenic. Such NMVOC emissions amount to 469 Gg for the year 1990 and 356 Gg for the year 2002
2001
Non-gridded data are for the whole of the Spanish territory (including Canary Islands, Ceuta and Melilla). # Revised estimates are reported in this re-submission for agricultural (and total sectoral) NH3 emissions as a double counting (the part emitted by synthetic fertilizing) was detected in previous (Feb 2003) submission. This has also made it necessary to revise consistently the series 1980-2001 of NH3 emissions.
[95] 2010 Emissions corresponds to the national emission ceiling (NEC) in the Gothenburg Protocol.
[96] 2010 Sum of reported sector data.
[97] 1998-2001: Preliminary.

Table 5: Anthropogenic emissions of carbon monoxide in the ECE region, footnotes
[98] 2000 S7 S8: Emissions are calculated on the base of the total quality of the used fuels by sectors.
[99] 1990-1998: Distributed according to SNAP90
1999: Distributed according to SNAP97

1980-1989: Data are missing because Croatia was part of the former Yugoslavia in this period.
[100] 1980-1999, 2010: Data include those located within the EMEP area only.
[101] 1980-1999: National totals include overseas areas.
[102] Data include those located within the EMEP area only.
National totals do not include the international air traffic and the international sea traffic.
[103] Preliminary data for 1996 and 1997.
[104] Preliminary data.
[105] Under sub sector 1. A 3 e Other are reported emissions from off-road machinery."
Under 2A7 Other is reported emissions from glass production.
[106] Table 1a 2001:
Field 1A4a has been included into 1A4bi because data available at present do not allow for separate emissions from commercial/institutional sectors and emissions from residential sectors.
Table 1b 2001:
Field 1A4a has been included into 1A4bi because data available at present do not allow for separate emissions from commercial/institutional sectors and emissions from residential sectors.
Table 2b 2001: '
TOTAL renewable' value is reported in NFR 1A1a 'Biomass'.
[107] 1998-1999. Specification of emissions included in the "other" categories:
1A3e: Other mobile sources such as draglines, building cranes, etc.
2G: Emissions from industry not attributable to previous two categories
3D: Emissions from use of consumer products:
- emissions from smoking cigarettes;
- emissions from foams;
- emissions from (car) service companies
1990, 1995, 2000-2002, 2010, 2015, 2020
We included in category 1 A 3 D ii "National Navigation":
- Emissions from Netherlands fishery vessels, on Netherlands territory and the Netherlands continental shelf.
- Emissions from all other ships (Domestic and International) on inland waters on Netherlands territory.
We included in 1.a.3.I all LTO (domestic and international) in conformity with the NEC Directive article 2 and as required for compliance with the Convention's protocols as mentioned in the letter from the Netherlands to the Chairman of the EMEP Steering Body. We used IE whenever the emissions were included in the "other" sub-category of that specific category.
Specification of emissions included in the "other" categories:
1A3e:
2G:
3D:
- emissions from smoking cigarettes;
- emissions from foams;
- emissions from (car) service companies
[108] 1987,1989-2002, 2010, 2015, 2020
Notes on the submission under source category: Other
1 A 2 Manufacturing Industries and Construction: 1 A 2 f Other:\All mining, extraction and manufacturing industries (NACE 10-37) not included in 1A1. Construction.
1 A 3 Transport: 1 A 3 e Other
1 A 3 e ii includes machinery except in Agriculture / Forestry / Fishing, military and households. Snow scooters and small watercraft are included under
1 A 4 b Residential and 1 A 4 c Agriculture / Forestry / Fishing
2 A MINERAL PRODUCTS: 2 A 7 Other including Non Fuel Mining & Construction
Manufacturing of other non-metallic mineral products (NACE 26) not included in 2A1-2A3: glass, plaster, clay products, rock wool. Mining, crushing plants, sand-pits. Construction.
2 B CHEMICAL INDUSTRY: 2 B 5 Other (Please specify in a covering note)
Manufacturing of methanol, basic plastics, sulphuric acid, chlorine, explosives, soap, pigments, and paint.
3 TOTAL SOLVENT AND OTHER PRODUCT USE:
3 D OTHER including products containing HMs and POPs
In addition to other solvents this item includes mercury emissions by evaporation from products.
[109] National emission totals include emissions in Portuguese territorial areas that are outside EMEP grid area: Azores and Madeira Islands.
1990-2002: Recalculations mainly concern emissions from road transport, where a new country-specific model has been developed.
[110] 1980-1999, 2010: Since 1993 emissions from the left bank of Dniester River are not included, except for emissions from Moldavian electric station. The drop in emissions between 1991 and 1992 is due to a decrease in the national economy
1980-1999 2010: For 1990-1999 emissions have been calculated according to EMEP/CORINAIR Emission Inventory Guidebook and the Greenhouse Gas Inventory Reporting Instructions
[111] Figures apply to the European part within EMEP.
Since 1987 CO emission data were updated taking into account emissions from railway transport, agricultural engineering and road-building machinery.
GS-50-90 1995, 2000:Sector 7 only for CO.
[112] 2000 Preliminary data
1990-2000, 2005, 2010, 2020 S4: Emissions included in Sector 3
1990-2002
1A3aii Civil aviation (domestic, LTO) - included emissions from civil aviation (domestic, LTO) and surface operations at the airport
- emissions VOC
6C Waste incineration - total waste incineration
7 Other - biomass on-site burning and forest fires

1A3ai(i) International Aviation (LTO) - included in 1A3aii(i)
1A3ai(ii) International Aviation (cruise) - included in 1A3aii(ii)
1A3di International Navigation - included in 1A3dii
NFR 1A1a - total NFR 1A1a
NFR 1A1b,c - total NFR 1A1b,c
NFR 1A2a-f - total NFR 1A2a-f
NFR 1A4a,bi,ci - total 1A4a,bi,ci
NFR 1A3aii,b,c,dii,eii+1A4bii,cii,ciii+1A5b -Transport- NFR 1A3aii - included only petrol and kerosene sold at airports in Slovakia
NFR 1A3aii Civil Aviation - included only petrol and kerosene sold at airports in Slovakia
NFR 4B1a Dairy Cattle, Slurry-based system - detailed split of system is not available
NFR 4B1a Dairy Cattle, Straw-based system - detailed split of system is not available
NFR 4B1a Non-Dairy Cattle, Slurry-based system - detailed split of system is not available
NFR 4B1a Non-Dairy Cattle, Straw-based system - detailed split of system is not available
NFR 4B1a Swine, Slurry-based system - detailed split of system is not available
NFR 4B1a Swine, Straw-based system - detailed split of system is not available
NFR 4Di N-fertilizer use – other N-fertilizers - included is: synt etic fertilizer, N-fixing crops, crop residue, biological fixation
[113] 1990-2002
Non-gridded data cover the whole national Spanish territory. Gridded data cover the EMEP area (it excludes Canary Islands and Ceuta and Melilla).
[114] 1980-1999, 2010: International transport (i.e. aviation and navigation) is not included in national totals except for the CO2 figure for 1980
[115] 1980-1999, 2010: Data are for sectors 1-6 only. Data for sectors 7-11 are not yet ready.
1997 National total and sectoral emissions. Refers to Skopje only
2000: Emissions reported for NFR4G-NFR4I together are displayed as NFR4G emissions. Emissions reported for NFR4J and NFR4K together are displayed as NFR4J emissions.
[116] 1990-1999: As reported to IPPC.

Table 6: Anthropogenic emissions of total suspended matter in the ECE region, footnotes
[117] 1980-1999: National totals include overseas areas
The TSP emissions are dust only
[118] 1990 - 1997: Recalculation for TSP: This submission considers the TSP emissions of road transport for petrol.
1990 – 2002: Generally NE: At present the emission factors of Particulate Matter for Germany according to the source groups are evaluated in a research project. Results will be supplied with the next submission.
For the category 1 A 3 b Road Transport PM 2.5 emissions are considered in the TSP emission as well.
[119] Preliminary data
[120] Under sub sector 1. A 3 e Other are reported emissions from off-road machinery."
Under 2A7 Other is reported emissions from glass production.
[121] Table 1a 2001:
Field 1A4a has been included into 1A4bi because data available at present do not allow for separate emissions from commercial/institutional sectors and emissions from residential sectors.
Table 1b 2001: Field 1A4a has been included into 1A4bi because data available at present do not allow for separate emissions from commercial/institutional sectors and emissions from residential sectors.
Table 2b 2001: 'TOTAL renewable' value is reported in NFR 1A1a 'Biomass'.
[122] 1998-1999
Specification of emissions included in the "other" categories:
1A3e: Other mobile sources such as draglines, building cranes, etc.
2G: Emissions from industry not attributable to previous two categories
3D: Emissions from use of consumer products:
- emissions from smoking cigarettes;
- emissions from foams;
- emissions from (car) service companies
1990, 1995, 2000-2002
We included in category 1 A 3 D ii "National Navigation":
- Emissions from Netherlands fishery vessels, on Netherlands territory and the Netherlands continental shelf.
- Emissions from all other ships (Domestic and International) on inland waters on Netherlands territory.
We included in 1.a.3.I all LTO (domestic and international) in conformity with the NEC Directive article 2 and as required for compliance with the Convention's protocols as mentioned in the letter from the Netherlands to the Chairman of the EMEP Steering Body. We used IE whenever the emissions were included in the "other" sub-category of that specific category.
Specification of emissions included in the "other" categories:
1A3e:
2G:
3D:

- emissions from smoking cigarettes;
- emissions from foams;
- emissions from (car) service companies
[123] 1987,1989-2002, 2010, 2015, 2020
Notes on the submission under source category: Other
1 A 2 Manufacturing Industries and Construction: 1 A 2 f Other:\All mining, extraction and manufacturing industries (NACE 10-37) not included in 1A1. Construction.
1 A 3 Transport: 1 A 3 e Other

1 A 3 e ii includes machinery except in Agriculture / Forestry / Fishing, military and households. Snow scooters and small watercraft are included under
1 A 4 b Residential and 1 A 4 c Agriculture / Forestry / Fishing
2 A MINERAL PRODUCTS: 2 A 7 Other including Non Fuel Mining & Construction
Manufacturing of other non-metallic mineral products (NACE 26) not included in 2A1-2A3: glass, plaster, clay products, rock wool. Mining, crushing plants, sand-pits. Construction.
2 B CHEMICAL INDUSTRY: 2 B 5 Other (Please specify in a covering note)
Manufacturing of methanol, basic plastics, sulphuric acid, chlorine, explosives, soap, pigments, and paint.
3 TOTAL SOLVENT AND OTHER PRODUCT USE:
3 D OTHER including products containing HMs and POPs
In addition to other solvents this item includes mercury emissions by evaporation from products.
[124] National emission totals include emissions in Portuguese territorial areas that are outside EMEP grid area: Azores and Madeira Islands.
1990-2002: Recalculations mainly concern emissions from road transport, where a new country-specific model has been developed.
[125] 1990-2002
1A3aii Civil aviation (domestic, LTO) - included emissions from civil aviation (domestic, LTO) and surface operations at the airport
- emissions VOC
6C Waste incineration - total waste incineration
7 Other - biomass on-site burning and forest fires
1A3ai(i) International Aviation (LTO) - included in 1A3aii(i)
1A3ai(ii) International Aviation (cruise) - included in 1A3aii(ii)
1A3di International Navigation - included in 1A3dii
NFR 1A1a - total NFR 1A1a
NFR 1A1b,c - total NFR 1A1b,c
NFR 1A2a-f - total NFR 1A2a-f
NFR 1A4a,bi,ci - total 1A4a,bi,ci
NFR 1A3aii,b,c,dii,eii+1A4bii,cii,ciii+1A5b -Transport- NFR 1A3aii - included only petrol and kerosene sold at airports in Slovakia
NFR 1A3aii Civil Aviation - included only petrol and kerosene sold at airports in Slovakia
NFR 4B1a Dairy Cattle, Slurry-based system - detailed split of system is not available
NFR 4B1a Dairy Cattle, Straw-based system - detailed split of system is not available
NFR 4B1a Non-Dairy Cattle, Slurry-based system - detailed split of system is not available
NFR 4B1a Non-Dairy Cattle, Straw-based system - detailed split of system is not available
NFR 4B1a Swine, Slurry-based system - detailed split of system is not available
NFR 4B1a Swine, Straw-based system - detailed split of system is not available
NFR 4Di N-fertilizer use – other N-fertilizers - included is: synthetic fertilizer, N-fixing crops, crop residue, biological fixation
[126] 1990-2002
Non-gridded data are for the whole of the Spanish territory (including Canary Islands, Ceuta and Melilla).

Table 7: Anthropogenic emissions of particulate matter in the ECE region, footnotes
[127] 1980-1999: National totals include overseas areas
[128] 1990 – 2002 Generally:
NE: At present the emission factors of Particulate Matter for Germany according to the source groups are evaluated in a research project. Results will be supplied with the next submission.
For the category 1 A 3 b Road Transport PM 2.5 emissions are considered in the TSP emission as well.
[129] Under sub sector 1. A 3 e Other are reported emissions from off-road machinery."
Under 2A7 Other is reported emissions from glass production.
[130] Table 1a 2001:
Field 1A4a has been included into 1A4bi because data available at present do not allow for separate emissions from commercial/institutional sectors and emissions from residential sectors.
Table 1b 2001: Field 1A4a has been included into 1A4bi because data available at present do not allow for separate emissions from commercial/institutional sectors and emissions from residential sectors.
Table 2b 2001: 'TOTAL renewable' value is reported in NFR 1A1a 'Biomass'.
[131] 1998-1999
Specification of emissions included in the "other" categories:
1A3e: Other mobile sources such as draglines, building cranes, etc.
2G: Emissions from industry not attributable to previous two categories
3D: Emissions from use of consumer products:
- emissions from smoking cigarettes;
- emissions from foams;
- emissions from (car) service companies
1990, 1995, 2000-2002
We included in category 1 A 3 D ii "National Navigation":
- Emissions from Netherlands fishery vessels, on Netherlands territory and the Netherlands continental shelf.
- Emissions from all other ships (Domestic and International) on inland waters on Netherlands territory.
We included in 1.a.3.I all LTO (domestic and international) in conformity with the NEC Directive article 2 and as required for compliance with the Convention's protocols as mentioned in the letter from the Netherlands to the Chairman of the EMEP Steering Body. We used IE whenever the emissions were included in the "other" sub-category of that specific category.
Specification of emissions included in the "other" categories:
1A3e:
2G:
3D:
- emissions from smoking cigarettes;

- emissions from foams;
- emissions from (car) service companies
[132] 1987,1989-2002, 2010, 2015, 2020
Notes on the submission under source category: Other
1 A 2 Manufacturing Industries and Construction: 1 A 2 f Other:\All mining, extraction and manufacturing industries (NACE 10-37) not included in 1A1. Construction.
1 A 3 Transport: 1 A 3 e Other
1 A 3 e ii includes machinery except in Agriculture / Forestry / Fishing, military and households. Snow scooters and small watercraft are included under
1 A 4 b Residential and 1 A 4 c Agriculture / Forestry / Fishing
2 A MINERAL PRODUCTS: 2 A 7 Other including Non Fuel Mining & Construction
Manufacturing of other non-metallic mineral products (NACE 26) not included in 2A1-2A3: glass, plaster, clay products, rock wool. Mining, crushing plants, sand-pits. Construction.
2 B CHEMICAL INDUSTRY: 2 B 5 Other (Please specify in a covering note)
Manufacturing of methanol, basic plastics, sulphuric acid, chlorine, explosives, soap, pigments, and paint.
3 TOTAL SOLVENT AND OTHER PRODUCT USE:
3 D OTHER including products containing HMs and POPs
In addition to other solvents this item includes mercury emissions by evaporation from products.
[133] National emission totals include emissions in Portuguese territorial areas that are outside EMEP grid area: Azores and Madeira Islands.
1990-2002: Recalculations mainly concern emissions from road transport, where a new country-specific model has been developed.0
[134] 1990-2002
1A3aii Civil aviation (domestic, LTO) - included emissions from civil aviation (domestic, LTO) and surface operations at the airport
- emissions VOC
6C Waste incineration - total waste incineration
7 Other - biomass on-site burning and forest fires
1A3ai(i) International Aviation (LTO) - included in 1A3aii(i)
1A3ai(ii) International Aviation (cruise) - included in 1A3aii(ii)
1A3di International Navigation - included in 1A3dii
NFR 1A1a - total NFR 1A1a
NFR 1A1b,c - total NFR 1A1b,c
NFR 1A2a-f - total NFR 1A2a-f
NFR 1A4a,bi,ci - total 1A4a,bi,ci
NFR 1A3aii,b,c,dii,eii+1A4bii,cii,ciii+1A5b -Transport- NFR 1A3aii - included only petrol and kerosene sold at airports in Slovakia
NFR 1A3aii Civil Aviation - included only petrol and kerosene sold at airports in Slovakia
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NFR 4B1a Dairy Cattle, Straw-based system - detailed split of system is not available
NFR 4B1a Non-Dairy Cattle, Slurry-based system - detailed split of system is not available
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NFR 4B1a Swine, Slurry-based system - detailed split of system is not available
NFR 4B1a Swine, Straw-based system - detailed split of system is not available
NFR 4Di N-fertilizer use – other N-fertilizers - included is: synthetic fertilizer, N-fixing crops, crop residue, biological fixation
[135] 1990-2002
Non-gridded data are for the whole of the Spanish territory (including Canary Islands, Ceuta and Melilla).

Table 8: Anthropogenic emissions of particulate matter in the ECE region, footnotes
[136] 1980-1999: National totals include overseas areas
[137] Data include those located within the EMEP area only.
National totals do not include the international air traffic and the international sea traffic ###
[138] For 1990 – 2002 Generally:
NE: At present the emission factors of particulate matter for Germany according to the source groups are evaluated in a research project. Results will be supplied with the next submission.
For the category 1 A 3 b Road Transport PM 2.5 emissions are considered in the TSP emission as well.
[139] Under sub sector 1. A 3 e Other are reported emissions from off-road machinery.
Under 2A7 Other is reported emissions from glass production.
[140] Table 1a 2001:
Field 1A4a has been included into 1A4bi because data available at present do not allow for separate emissions from commercial/institutional sectors and emissions from residential sectors.
Table 1b 2001: Field 1A4a has been included into 1A4bi because data available at present do not allow for separate emissions from commercial/institutional sectors and emissions from residential sectors.
Table 2b 2001: 'TOTAL renewable' value is reported in NFR 1A1a 'Biomass'.
[141] 1998-1999
Specification of emissions included in the "other" categories:
1A3e: Other mobile sources such as draglines, building cranes, etc.
2G: Emissions from industry not attributable to previous two categories
3D: Emissions from use of consumer products:
- emissions from smoking cigarettes;
- emissions from foams;
- emissions from (car) service companies
1990, 1995, 2000-2002
NH3 emissions from human respiration are included. We included in category 1 A 3 D ii "National Navigation":
- Emissions from Netherlands fishery vessels, on Netherlands territory and the Netherlands continental shelf.

- Emissions from all other ships (Domestic and International) on inland waters on Netherlands territory.
We included in 1.a.3.I all LTO (domestic and international) in conformity with the NEC Directive article 2 and as required for compliance with the Convention's protocols as mentioned in the letter from the Netherlands to the Chairman of the EMEP Steering Body. We used IE whenever the emissions were included in the "other" sub-category of that specific category.
Specification of emissions included in the "other" categories:

1A3e:
2G:
3D:
- emissions from smoking cigarettes;
- emissions from foams;
- emissions from (car) service companies
[142] 1987,1989-2002, 2010, 2015, 2020
Notes on the submission under source category: Other
1 A 2 Manufacturing Industries and Construction: 1 A 2 f Other:\All mining, extraction and manufacturing industries (NACE 10-37) not included in 1A1. Construction.
1 A 3 Transport: 1 A 3 e Other
1 A 3 e ii includes machinery except in Agriculture / Forestry / Fishing, military and households. Snow scooters and small watercraft are included under
1 A 4 b Residential and 1 A 4 c Agriculture / Forestry / Fishing
2 A MINERAL PRODUCTS: 2 A 7 Other including Non Fuel Mining & Construction
Manufacturing of other non-metallic mineral products (NACE 26) not included in 2A1-2A3: glass, plaster, clay products, rock wool. Mining, crushing plants, sand-pits. Construction.
2 B CHEMICAL INDUSTRY: 2 B 5 Other (Please specify in a covering note)
Manufacturing of methanol, basic plastics, sulphuric acid, chlorine, explosives, soap, pigments, and paint.
3 TOTAL SOLVENT AND OTHER PRODUCT USE:
3 D OTHER including products containing HMs and POPs
In addition to other solvents this item includes mercury emissions by evaporation from products.
[143] National emission totals include emissions in Portuguese territorial areas that are outside EMEP grid area: Azores and Madeira Islands.
1990-2002: Recalculations mainly concern emissions from road transport, where a new country-specific model has been developed.
[144] 2001-2002
1A3aii Civil aviation (domestic, LTO) - included emissions from civil aviation (domestic, LTO) and surface operations at the airport
- emissions VOC
6C Waste incineration - total waste incineration
7 Other - biomass on-site burning and forest fires
1A3ai(i) International Aviation (LTO) - included in 1A3aii(i)
1A3ai(ii) International Aviation (cruise) - included in 1A3aii(ii)
1A3di International Navigation - included in 1A3dii
NFR 1A1a - total NFR 1A1a
NFR 1A1b,c - total NFR 1A1b,c
NFR 1A2a-f - total NFR 1A2a-f
NFR 1A4a,bi,ci - total 1A4a,bi,ci
NFR 1A3aii,b,c,dii,eii+1A4bii,cii,ciii+1A5b -Transport- NFR 1A3aii - included only petrol and kerosene sold at airports in Slovakia
NFR 1A3aii Civil Aviation - included only petrol and kerosene sold at airports in Slovakia
NFR 4B1a Dairy Cattle, Slurry-based system - detailed split of system is not available
NFR 4B1a Dairy Cattle, Straw-based system - detailed split of system is not available
NFR 4B1a Non-Dairy Cattle, Slurry-based system - detailed split of system is not available
NFR 4B1a Non-Dairy Cattle, Straw-based system - detailed split of system is not available
NFR 4B1a Swine, Slurry-based system - detailed split of system is not available
NFR 4B1a Swine, Straw-based system - detailed split of system is not available
NFR 4Di N-fertilizer use – other N-fertilizers - included is: synthetic fertilizer, N-fixing crops, crop residue, biological fixation
[145] 1990-2002
Non-gridded data are for the whole of the Spanish territory (including Canary Islands, Ceuta and Melilla).

Table 9: Anthropogenic emissions of persistent organic pollutants in the ECE region, footnotes
[146] 1998-1999: Preliminary data 1990 Pb Cd Hg As Cr Cu Ni Se Zn: Figures for 1990 refer to Flanders and Wallonia only.
1991-1993 Cd Hg As Cr Cu Ni Se Zn: Figures for 1991-1993 totals for Flanders only.
1990 DIOX PAH: Referring to Flanders only
1993 PAH: Referring to Flanders only
1995-1998 HCH: Referring to Wallonia only
1994 1996-1998 HCB: Referring to Wallonia only
1996-1998 PCP: Referring to Wallonia only
1995 PCP: Referring to Flanders and Wallonia only
1994 DIOX: Referring to Brussels and Wallonia only
S90 Pb Cd Hg As Cr Cu Ni Se Zn: Some data are missing due to the fact that national totals have not been calculated when the data for at least one region
were missing.
[147] 1990-1999: Data resubmitted 04.01.01
2000 S7 S8: Emissions are calculated on the base of the total quality of the used fuels by sectors
[148] 1980-1989: Data are missing because Croatia was part of the former Yugoslavia in this period.
1990-1998: Distributed according to SNAP90.

1999: Distributed according to SNAP97
[149] Comments to the emission submission is available at MSC-W
[150] For 1990 – 2002 Generally
POP emissions:
NE: At present the emission factors of POP for Germany according to the source groups are evaluated in a research project. Results will be supplied with the next submission.
IE: The LPG of Light Duty Vehicles is included in the LPG of Passenger Cars Other animals. Fur animals are considered
[151] Additions and corrections to previous submitted data
[152] Under sub sector 1. A 3 e Other are reported emissions from off-road machinery.
Under 2A7 Other is reported emissions from glass production.
[153] Table 1a 2001: Field 1A4a has been included into 1A4bi because data available at present do not allow for separate emissions from commercial/institutional sectors and emissions from residential sectors.
Table 1b 2001: Field 1A4a has been included into 1A4bi because data available at present do not allow for separate emissions from commercial/institutional sectors and emissions from residential sectors.
Table 2b 2001: 'TOTAL renewable' value is reported in NFR 1A1a 'Biomass'.
[154] 1990, 1995, 2000-2002, 2010, 2015, 2020
We included in category 1 A 3 D ii "National Navigation":
- Emissions from Netherlands fishery vessels, on Netherlands territory and the Netherlands continental shelf.
- Emissions from all other ships (Domestic and International) on inland waters on Netherlands territory.
We included in 1.a.3.I all LTO (domestic and international) in conformity with the NEC Directive article 2 and as required for compliance with the Convention's protocols as mentioned in the letter from the Netherlands to the Chairman of the EMEP Steering Body. We used IE whenever the emissions were included in the "other" sub-category of that specific category.
Specification of emissions included in the "other" categories:
1A3e:
2G:
3D:
- emissions from smoking cigarettes;
- emissions from foams;
- emissions from (car) service companies
1998-1999
Specification of emissions included in the "other" categories:
1A3e: Other mobile sources such as draglines, building cranes, etc.
2G: Emissions from industry not attributable to previous two categories
3D: Emissions from use of consumer products:
- emissions from smoking cigarettes;
- emissions from foams;
- emissions from (car) service companies.
[155] 1987,1989-2002, 2010, 2015, 2020
Notes on the submission under source category: Other
1 A 2 Manufacturing Industries and Construction: 1 A 2 f Other:\All mining, extraction and manufacturing industries (NACE 10-37) not included in 1A1. Construction.
1 A 3 Transport: 1 A 3 e Other
1 A 3 e ii includes machinery except in Agriculture / Forestry / Fishing, military and households. Snow scooters and small watercraft are included under
1 A 4 b Residential and 1 A 4 c Agriculture / Forestry / Fishing
2 A MINERAL PRODUCTS: 2 A 7 Other including Non Fuel Mining & Construction
Manufacturing of other non-metallic mineral products (NACE 26) not included in 2A1-2A3: glass, plaster, clay products, rock wool. Mining, crushing plants, sand-pits. Construction.
2 B CHEMICAL INDUSTRY: 2 B 5 Other (Please specify in a covering note)
Manufacturing of methanol, basic plastics, sulphuric acid, chlorine, explosives, soap, pigments, and paint.
3 TOTAL SOLVENT AND OTHER PRODUCT USE:
3 D OTHER including products containing HMs and POPs
In addition to other solvents this item includes mercury emissions by evaporation from products
[156] Figures apply to the European part within EMEP.
1990-2000 2005 2010 PAH: Including only benzo(a)pyrene
[157] 1990-2002
1A3aii Civil aviation (domestic, LTO) - included emissions from civil aviation (domestic, LTO) and surface operations at the airport
- emissions VOC
6C Waste incineration - total waste incineration
7 Other - biomass on-site burning and forest fires
1A3ai(i) International Aviation (LTO) - included in 1A3aii(i)
1A3ai(ii) International Aviation (cruise) - included in 1A3aii(ii)
1A3di International Navigation - included in 1A3dii
NFR 1A1a - total NFR 1A1a
NFR 1A1b,c - total NFR 1A1b,c
NFR 1A2a-f - total NFR 1A2a-f
NFR 1A4a,bi,ci - total 1A4a,bi,ci
NFR 1A3aii,b,c,dii,eii+1A4bii,cii,ciii+1A5b -Transport- NFR 1A3aii - included only petrol and kerosene sold at airports in Slovakia
NFR 1A3aii Civil Aviation - included only petrol and kerosene sold at airports in Slovakia
NFR 4B1a Dairy Cattle, Slurry-based system - detailed split of system is not available
NFR 4B1a Dairy Cattle, Straw-based system - detailed split of system is not available

NFR 4B1a Non-Dairy Cattle, Slurry-based system - detailed split of system is not available
NFR 4B1a Non-Dairy Cattle, Straw-based system - detailed split of system is not available
NFR 4B1a Swine, Slurry-based system - detailed split of system is not available
NFR 4B1a Swine, Straw-based system - detailed split of system is not available
NFR 4Di N-fertilizer use – other N-fertilizers - included is: synthetic fertilizer, N-fixing crops, crop residue, biological fixation
[158] Non-gridded data cover the whole national Spanish territory. Gridded data cover the EMEP area (it excludes Canary Islands and Ceuta and Melilla).
[159] General comments available.
[160] PAH: PAHs are defined as the sum of 16-PAH, which includes: Benz(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoroanthene, Benzo(k)fluoranthene, Chrysene,Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene, Acenaphthene, Acenaphthylene, Anthracene, Benzo(ghi)perylene, Fluoroanthene, Fluorene, Naphthalene, Phenanthrene, Pyrene 1990 DIOX: The 1990 dioxins and furan inventory was developed using methodologies applied on a national level basis. Data development for subsequent years includes application of facility-specific information and is expected to include additional sources.
1996 DIOX: A reassessment of the dioxins and furan inventory data and estimation methodologies is being conducted. Data developed since the 1990 inventory includes facility-specific information and is expected to include more sources.
1996 PCB S4: The PCB national value reflects that reported to the US EPA Toxic Release Inventory (TRI) and is suspected to contain an error in industry reporting.

Table 10: Anthropogenic emissions of heavy metals in the ECE region, footnotes
[161] Pb: 1983-2001 road transport not included, 2002 road transport is included
As, Cr (1987- 1997), Cu (1985-1997), Hg, Ni (1987-1997), Pb (1983-1997), Zn (1988-1996): National total, sectoral and gridded emisions
[162] 2000 All compounds:
NFR 8 emissions included in NFR 7
[163] 2000 Cd, Hg, Pb,
S7 S8: Emissions are calculated on the base of the total quality of the used fuels by sectors
1990-1999 Cd, Hg, Pb,
Data resubmitted 04.01.01
[164] 1980-1989: Data are missing because Croatia was part of the former Yugoslavia in this period. 1990-1998: distributed according to SNAP90. 1999: Distributed according to SNAP97.
[165] Comments to the emission submission is available at MSC-W.
[166] 1980-1999: National totals include overseas areas.
[167] 1985 & 2010:
National total and sectoral emissions
1990 – 2002 Generally
HM emissions:
NE: At present the emission factors of heavy metals for Germany according to the source groups are evaluated in a research project. Results will be supplied with the next submission.
[168] 1996: The reported figures are preliminary.
[169] 1990-1995: Preliminary data
[170] 1999: Preliminary data
[171] Heavy metal emissions for category 1A2a-f are included under category 1A1a"
Heavy metal emissions for sectors 1A3c-d are included under category 1A1a"
Heavy metal emissions for sectors 1A4bi-ii are included under category 1A1a"
Heavy metal emissions for sectors 1A4c are included under category 1A1a"
Heavy metal emissions for sectors 1A5a-b are included under category 1A3b"
Under sub sector 1. A 3 e Other are reported emissions from off-road machinery."
Under 2A7 Other is reported emissions from glass production.
[172] Table 1a 2001: Field 1A4a has been included into 1A4bi because data available at present do not allow for separate emissions from commercial/institutional sectors and emissions from residential sectors.
Table 1b 2001: Field 1A4a has been included into 1A4bi because data available at present do not allow for separate emissions from commercial/institutional sectors and emissions from residential sectors.
Table 2b 2001: 'TOTAL renewable' value is reported in NFR 1A1a 'Biomass'.
[173] 1990, 1995, 2000-2002
We included in category 1 A 3 D ii "National Navigation":
- Emissions from Netherlands fishery vessels, on Netherlands territory and the Netherlands continental shelf.
- Emissions from all other ships (Domestic and International) on inland waters on Netherlands territory.
We included in 1.a.3.I all LTO (domestic and international) in conformity with the NEC Directive article 2 and as required for compliance with the Convention's protocols as mentioned in the letter from the Netherlands to the Chairman of the EMEP Steering Body. We used IE whenever the emissions were included in the "other" sub-category of that specific category.
Specification of emissions included in the "other" categories:
1A3e:
2G:
3D:
- emissions from smoking cigarettes;
- emissions from foams;
- emissions from (car) service companies
1998-1999
Specification of emissions included in the "other" categories:
1A3e: Other mobile sources such as draglines, building cranes, etc.
2G: Emissions from industry not attributable to previous two categories
3D: Emissions from use of consumer products:

- emissions from smoking cigarettes;
- emissions from foams;
- emissions from (car) service companies

[174] 1996 Zn: National total, sectoral and gridded emissions
1990-2002 As, Cd, Cr, Cu, Hg, Pb:
Notes on the submission under source category: Other
1 A 2 Manufacturing Industries and Construction: 1 A 2 f Other:\All mining, extraction and manufacturing industries (NACE 10-37) not included in 1A1. Construction.
1 A 3 Transport: 1 A 3 e Other
1 A 3 e ii includes machinery except in Agriculture / Forestry / Fishing, military and households. Snow scooters and small watercraft are included under
1 A 4 b Residential and 1 A 4 c Agriculture / Forestry / Fishing
2 A MINERAL PRODUCTS: 2 A 7 Other including Non Fuel Mining & Construction
Manufacturing of other non-metallic mineral products (NACE 26) not included in 2A1-2A3: glass, plaster, clay products, rock wool. Mining, crushing plants, sand-pits. Construction.
2 B CHEMICAL INDUSTRY: 2 B 5 Other (Please specify in a covering note)
Manufacturing of methanol, basic plastics, sulphuric acid, chlorine, explosives, soap, pigments, and paint.
3 TOTAL SOLVENT AND OTHER PRODUCT USE:
3 D OTHER including products containing HMs and POPs
In addition to other solvents this item includes mercury emissions by evaporation from products.

[175] National emission totals include emissions in Portuguese territorial areas that are outside EMEP grid area: Azores and Madeira Islands.
1990-2002: Recalculations mainly concern emissions from road transport, where a new country-specific model has been developed.

[176] 1990-2002
1A3aii Civil aviation (domestic, LTO) - included emissions from civil aviation (domestic, LTO) and surface operations at the airport
- emissions VOC
6C Waste incineration - total waste incineration
7 Other - biomass on-site burning and forest fires
1A3ai(i) International Aviation (LTO) - included in 1A3aii(i)
1A3ai(ii) International Aviation (cruise) - included in 1A3aii(ii)
1A3di International Navigation - included in 1A3dii
NFR 1A1a - total NFR 1A1a
NFR 1A1b,c - total NFR 1A1b,c
NFR 1A2a-f - total NFR 1A2a-f
NFR 1A4a,bi,ci - total 1A4a,bi,ci
NFR 1A3aii,b,c,dii,eii+1A4bii,cii,ciii+1A5b -Transport- NFR 1A3aii - included only petrol and kerosene sold at airports in Slovakia
NFR 1A3aii Civil Aviation - included only petrol and kerosene sold at airports in Slovakia
NFR 4B1a Dairy Cattle, Slurry-based system - detailed split of system is not available
NFR 4B1a Dairy Cattle, Straw-based system - detailed split of system is not available
NFR 4B1a Non-Dairy Cattle, Slurry-based system - detailed split of system is not available
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NFR 4B1a Swine, Slurry-based system - detailed split of system is not available
NFR 4B1a Swine, Straw-based system - detailed split of system is not available
NFR 4Di N-fertilizer use – other N-fertilizers - included is: synthetic fertilizer, N-fixing crops, crop residue, biological fixation

[177] Non-gridded data cover the whole national Spanish territory. Gridded data cover the EMEP area (it excludes Canary Islands and Ceuta and Melilla).

[178] General comments available.