Topic report 8/2000

Air Emissions
Annual topic update 1999

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1. Introduction

1.1. The European Environment Agency

The European Environment Agency, based in Copenhagen, was established in 1990 by a Council Regulation of the European Union. The mission of the Agency is 'to support sustainable development and to help to achieve significant and measurable improvement in Europe's environment through the provision of timely, targeted, relevant and reliable information to policy making agents and the public'.

The Regulation laid down a number of tasks for the Agency. One of the main tasks is the establishment, coordination and further development of a network for collecting, processing and analysis of environmental data, EIONET (European Environment Information and Observation Network). EIONET consists of national coordinating institutes (National Focal Points, NFPs) and national centres of expertise on specific topics (National Reference Centres, NRCs) in the participating countries. Furthermore European Topic Centres (ETCs) have been appointed directly by the Agency to act as centres of expertise on specific environmental topics and to execute specific tasks identified in the EEA Multiannual Work Programme.

1.2. The European Topic Centre on Air Emissions

This report presents a summary of the activities and products of the Topic Centre on Air Emissions in 1999. The Topic Centre (ETC/AE) was appointed in December 1994 by EEA to act as a centre of expertise on air emissions for use by the Agency in support of its mission.

The ETC/AE consortium
The German Federal Environmental Agency (UBA Berlin) has been appointed by EEA as the lead organisation of ETC/AE. The ETC is led by Dietmar Koch:

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Germany	
ETC/AE Website:	http://etc-ae.eionet.eu.int/etc-ae/index.htm

ETC/AE consists of a consortium of seven European organisations/institutes. These and their named representatives are:

- AEA Technology (Atomic Energy Authority, Culham, UK) – Simon Eggleston/Justin Goodwin
- ENEA (National Agency for New Technology and the Environment, Rome, Italy) – Riccardo de Lauretis
- RISØ (National Laboratory, Roskilde, Denmark) – Niels Kilde
- TNO (Institute Environmental Sciences, Energy, Technology and Process Innovation, Apeldoorn, the Netherlands) – Tinus Pulles
- Umweltbundesamt (Vienna, Austria) – Manfred Ritter
- CITEPA (Centre Interprofessionnel Technique d'Etudes de la Pollution Atmosphérique, Paris, France) – Jean-Pierre Fontelle
- POSEIDON (Industrial Consultants, Thessaloniki, Greece) – Zissis Samaras

The ETC/AE Steering Committee

A Steering Committee (SC) was established in 1996 and is chaired by the ETC leader. Members of the SC in 1999 were Simon Eggleston (AEA Technology), Tinus Pulles (TNO) and Manfred Ritter (UBA Vienna) who also acts as the ETC data manager. This committee supports the ETC leader's activities through scientific advice (review draft reports and updated work plans) and technical assistance thus serving all ETC partners, EEA and other bodies. It also provides the basis for quarterly progress reports and the Annual Topic Updates to the Agency.

PHARE Topic Link on Air Emissions

The extension of the EIONET to central and eastern European countries is being made possible through funding of the European Commission's PHARE Programme pending negotiations with PHARE countries with regard to their membership of EEA.

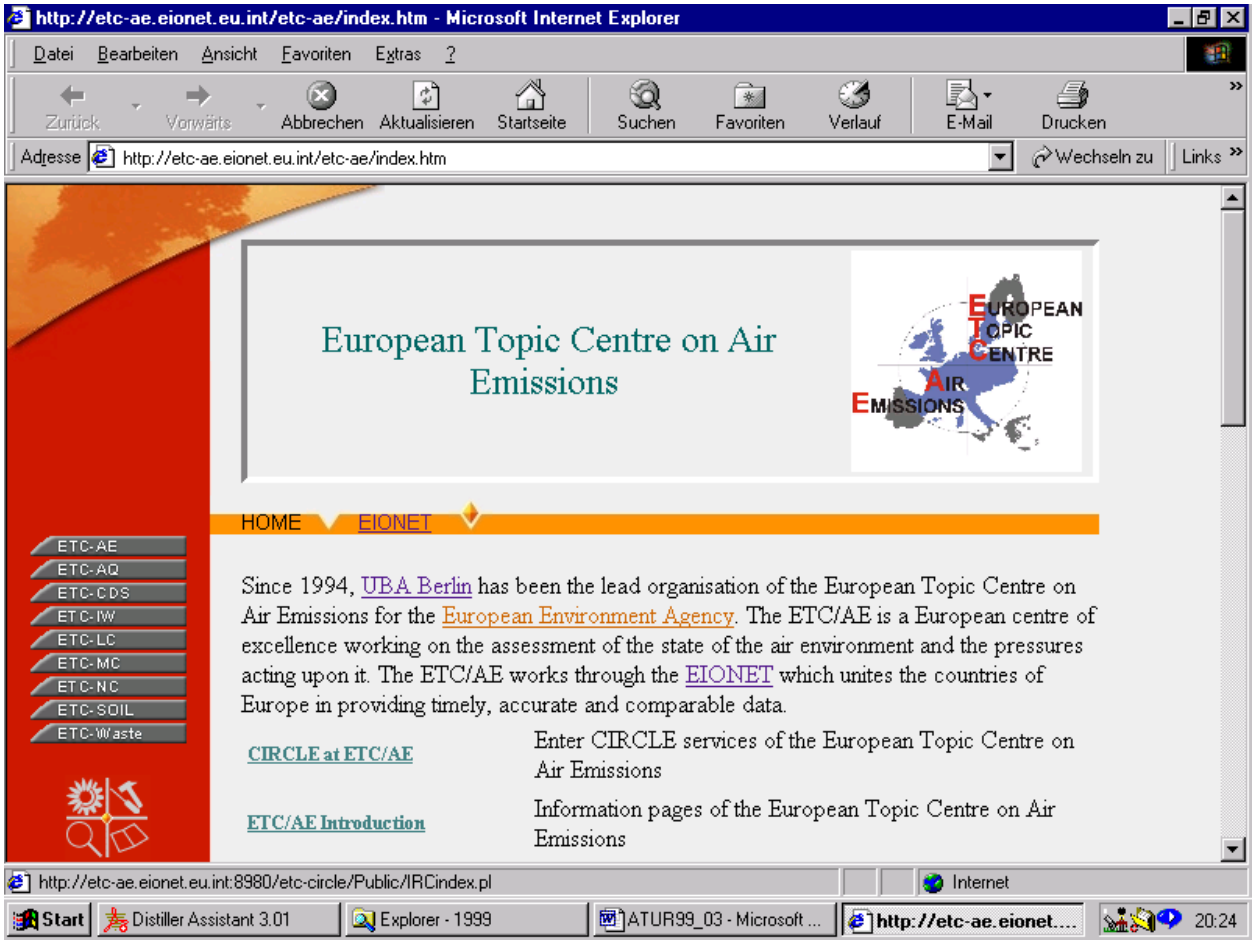
For Air Emissions, a PHARE Topic Link (PTL/AE) was appointed in 1998. This consists of a PTL Leader, Wanda Pazdan (ATMOTERM, Opole, Poland) with experts from two other organisations: SHMU (Slovak Hydrometeorological Institute) Bratislava, Slovak Republic and NCESD (National Centre for Environment and Sustainable Development) Sofia, Bulgaria. The PTL/AE Leader and ETC/AE Leader jointly developed the PTL/AE work programme in order to coordinate the technical tasks to be undertaken. In this way the PTL/AE is seen as part of an extended Topic Centre on Air Emissions and in most cases in this report ETC refers to the extended ETC (including PTL).

Further information on ETC/AE in particular and on EEA and other Topic Centres is provided on the following websites:

ETC/AE: http://etc-ae.eionet.eu.int/etc-ae/index.htm
PTL-AE: http://www.ptl-ae.atmoterm.pl/
EEA: http://www.eea.eu.int/

Figure 1 presents a snapshot from the *new ETC/AE website* where most of ETC/AE's plans, products and services and latest developments are made publicly available. The site hosted at and maintained by UBA Berlin has been adapted to the 'look and feel' of EIONET websites. CIRCLE at ETC/AE (see arrow) provides an Intranet for registered members. They have access to special information held in so-called Interest Groups. These groups provide a forum for those who are interested in actively participating in the on-going activities of the topic centre and EEA.

Figure 1: Snapshot from screen of the new ETC/AE website



1.3. National Reference Centres for Air Emissions

A number of organisations throughout Europe also contribute to the EEA work programme – the National Reference Centres (NRCs). These are appointed and funded by the participating countries and collaborate with their National Focal Points (NFPs) and with ETCs to cover various topics, of which one is Air Emissions. NRCs for Air Emissions (NRC/AE) in the 18 EEA member countries were appointed by their NFPs in 1994/95, while in the PHARE countries they have been appointed following the nomination of NFPs in 1996/97. Furthermore, the ETC cooperates with several other countries, where there is neither a nominated NFP nor NRC, but a contact point. NRCs are the regular collectors and suppliers of environmental data and information and/or possess relevant knowledge regarding environmental science, monitoring and modelling. An overview of NRC experts for Air Emission Inventories is given in the Annex to this report.

2. Work plan 1999

This section describes the objectives of the technical work plan of ETC/AE for 1999, while section 3 presents some highlights from the progress in these tasks during 1999.

1999 Work plan – Tasks and objectives
1. Databases and topic reporting
CORINAIR Database ***Objective***: To compile, maintain and assure quality of air emissions data at European level. The database holds different sets of data at different levels of details for all participating countries. It is designed to serve the needs of EEA, European Commission, UN Framework Convention on Climate Change (UNFCCC), Convention on Long-range Transboundary Air Pollution (CLRTAP) and others. Data is regularly sent to EEA data warehouse and EEA website for use in assessment reports and for public access.
Annual European Community GHG Inventory (EEA Technical report No 19) ***Objective*:** To provide data on emissions from sources and removals by sinks of greenhouse gases in the European Community in the period 1990 to 1996; to provide this greenhouse gas inventory to the European Commission to be submitted to the UNFCCC secretariat on behalf of the European Community as a Party to the UNFCCC.
EIONET – Air emissions data flow project ***Objective*:** To assure greater transparency of data through electronic dissemination and access. Data flow will facilitate reporting under UNFCCC, EU GHG Monitoring Mechanism, CLRTAP/EMEP and Eurostat/OECD using EIONET as the platform for submitting air emissions data to all European reporting levels. By clarifying the roles of NFPs/NRCs for quality assurance and updates of national data and ETC/AE for compilation, maintenance and quality assurance of data at European level, an efficient and regular data flow can be achieved in the future.
Development of the CORINAIR model and software ***Objective*:** To further develop the CORINAIR model by enhancing modules within the current software tools CollectER, the first EstimatER COPERT III (tool for estimating emissions of road transport), ReportER, and ProjectER. Priority areas identified by participating countries and ETC/AE were ReportER output tables for EMEP reporting and for reporting to UNFCCC using the new common reporting format (CRF).
2. Integrated assessment
Overview of national programmes to reduce GHG emissions (Topic report No. 8/1999) ***Objective***: To present the EU15 inventory of emissions of CO_2, CH_4, N_2O, NO_X, CO and NMVOC as well as HFCs, PFCs and SF_6. To evaluate progress of the Community and the Member States towards stabilisation of CO_2 emissions at 1990 levels by 2000, based on information in the national programmes and other information.
Air Emissions in Europe 80-96 ***Objective***: To present and interpret air emissions data compiled by ETC/AE. The report focuses on emissions, which contribute towards the environmental issues: climate change, acidification, tropospheric ozone, urban air quality and dispersion of heavy metals and persistent organic pollutants. Emissions are also presented by economic sectors (energy, industry, transport, agriculture). Data submitted by EEA member countries and other countries to CLRTAP and UNFCCC was used in this report, supplemented by data available from the CORINAIR programme maintained by ETC/AE. The report was requested by EEA in order to support EU policy making. The report helps member states and DG Environment to monitor whether environmental objectives and targets are being met and also indicates future areas for priority actions.
3. Periodical reporting
EEA yearly indicator report ***Objective***: To develop indicator sets required for reporting on progress of environmental strategies being integrated in the policies of Agriculture, Energy and Transport Councils (Cardiff, June 1998) and Industry (Vienna, December 1998). ETC/AE had to prepare fact sheets on the description of state and trends of emissions, distance to environmental targets and main policy developments. ETC/AE also was asked to contribute to the issue chapter on climate change.
Transport and Environment Reporting Mechanism (TERM) ***Objective***: To prepare, on request of the Council of Ministers, a contribution to monitoring of progress and effectiveness of the transport and environment integration strategies in the EU. To link indicators to policy framework, the DPSIR assessment framework has been used to support indicator identification and prioritise indicators where policy can intervene – so called leverage points. ETC/AE had to prepare fact sheets on the description of state and trends of emissions, distance to environmental targets and main policy developments

3. Progress during 1999

3.1. Databases and topic reporting

3.1.1. CORINAIR Database

In Europe, a number of different datasets on air emissions exist corresponding to the various reporting requirements at European and international level. Air emissions data is collected for reports to international conventions (*UNFCCC*, *CLRTAP*), to the European Commission (*Monitoring Mechanism of Community CO_2 and other greenhouse gas emissions*), and to Eurostat/OECD (*Joint Questionnaire 98, JQ98*). EEA does not perform separate data collection but provides, through the *CORINAIR programme* (CORe INventory for AIR emissions), software to countries to prepare detailed national inventories, to enable countries to report their emissions according to the international requirements. Furthermore EEA requests copies of the various datasets that countries submit internationally and compiles these datasets into the European CORINAIR database, maintained by ETC/AE.

The datasets are mainly defined by so-called reporting formats. The *UNFCCC* and *CO_2 Monitoring Mechanism* datasets have to follow the *UNFCCC Guidelines* (http://www.unfccc.de/) and the IPCC format, described in detail in the *1996 IPCC Guidelines* (http://www.ipcc-nggip.iges.or.jp/), whereas the *CLRTAP* and *CORINAIR* datasets have to follow the EMEP (http://www.emep.int/index.html) format described in the joint EMEP/CORINAIR Atmospheric Emission Inventory Guidebook (available on the EEA website at http://themes.eea.eu.int/showpage.php/state/air?pg=40530). Whereas the *JQ98* and the *Eurostat CO_2 from fossil fuels* datasets have reporting formats of their own, the *Eurostat CO_2 estimates* closely follow the 1996 IPCC Guidelines.

The datasets are different with respect to pollutants reported, geographic areas covered, and level of detail required. The following points illustrate this:

- CLRTAP (EMEP/CORINAIR format) requires reporting of SO_2, NO_X, CO, NMVOC, NH_3, CH_4, N_2O (CO_2 for validation purposes), plus from 1998 onwards some heavy metals and persistent organic pollutants. CLRTAP requires emission data from within the EMEP area (=Europe) because of its focus on European transboundary air pollution, whereas data submitted to the UNFCCC can include emissions from anywhere in the world, if judged as 'national' (e.g. from overseas territories).
- UNFCCC and CO_2 Monitoring Mechanism (UNFCCC/IPCC format) demand data on CO_2, N_2O, CH_4, NO_X, CO, NMVOC and from 1998 onwards also three 'new' greenhouse gases HFC, PFC and SF_6.
- EEA/ETC-AE requests reporting of the same pollutants as reported to CLRTAP, UNFCCC and the CO_2 Monitoring Mechanism, but in more sectoral and spatial detail, if available (e.g. NUTS3 administrative units every 5 years).
- The Eurostat/OECD data collection (JQ98 format) requests reporting of SO_2, NO_X, CO, NMVOC, CO_2, CH_4, N_2O, PM/PM_{10}, Pb, chlorofluorocarbons and halons.
- The level of detail in terms of sub-totals for the national total differs considerably between the different datasets. CORINAIR is the most detailed with up to 414 sub-totals followed by UNFCCC (and CO_2 Monitoring Mechanism) with up to 36 subtotals. CLRTAP requires 11 sub-totals and encourages reporting of approximately 60 more detailed sectors. The JQ98 asks for 7 sub-totals and the Eurostat CO_2 estimates from fossil fuels provide 21 subtotals.

One of the main objectives of ETC/AE has been to improve compatibility between these different datasets. For this purpose, international experts under the lead of ETC/AE have reviewed the CORINAIR approach (software tools and Guidebook) regularly. A second focus of ETC/AE was the assistance in and contribution to, efficient flows of air emission data from the Member States to the European Commission and to the relevant authorities under the international conventions.

The focus of the work of ETC/AE in 1999 was in providing consistent and reliable time series of these different datasets for use in EEAs key products.

The air emission datasets are managed by the ETC/AE data manager (UBA Vienna) in one MS Access database. The total of these datasets is in general referred to as the '*ETC/AE (CORINAIR) Database*'. Access to this database is possible through the ETC/AE CIRCLE Interest Group for all registered users. The most aggregated level of these data, meaning time series of national totals and of the main sectoral emissions, are publicly available through the EEA website (http://www.eea.eu.int/, under Data Service).

The EEA-ETC/AE data collection includes the following datasets, which are copies of datasets officially approved by Member States and officially provided under the various international reporting obligations:

- CLRTAP/EMEP/CORINAIR format (data officially submitted to either UNECE/CLRTAP or in some cases to EEA): national totals and SNAP level 1 for 1980 to 1997, and SNAP level 2 or 3 for 1990, 1994, 1995, 1996 (SO_2, NO_X, CO, NMVOC, NH_3, CH_4, N_2O, CO_2).
- UNFCCC/IPCC format (data officially submitted to either UNFCCC or the European Commission under the CO2 Monitoring Mechanism): national totals and summary Table 7A for 1990 to 1997/1998 (CO_2, N_2O, CH_4, NO_X, CO, NMVOC, HFC, PFC and SF_6).
- Emission density maps at NUTS3 level and sectoral split for 1990 for SO_2, NO_X , NMVOC, NH_3 .

In April 1999, ETC/AE released the first version of the *ETC/AE 1999 (CORINAIR) Database*. The latest version of 1999 (version 2.2) was released in October and used in:

- Topic report *Overview of national programmes to reduce greenhouse gas emissions* (EEA, 1999).
- Technical report *Annual European Community Greenhouse Gas Inventory 1990-1996, Submission to the Secretariat of the UNFCCC* (EEA, 1999).
- Topic report *Air emissions in Europe 1980-1996* (final draft) (EEA, 2000).
- EEA assessment report *Environmental signals 2000* (EEA, 2000).
- EEA assessment report *Are we moving in the right direction?,* TERM report (EEA, 2000).

In addition to the aggregated air emissions data, ETC/AE has collected copies of various more detailed national inventories including activity data (e.g. energy balances, number of livestock etc.) and emission factors for various years from 1990 onwards. These data were provided through the CORINAIR90 project and the new CORINAIR project implemented since the start of ETC/AE end of 1994.

These detailed, complete air emission inventories were prepared by a number of countries using CORINAIR software tools (made available in 1996) and/or the completely revised and improved CollectER and ReportER software tools (initially available in 1998, updated in 1999). EEA and ETC/AE encourage countries to use these new software tools, recognising however that various countries also continue to use their own national database/software systems.

Detailed inventories would ideally contain all information required to fully understand the inventory and make it fully transparent, usually resulting in large and complex national

databases. If a country uses the full CORINAIR (CollectER) approach, a detailed inventory would contain all activity data and emission factors on SNAP level 3, all large point sources (including Large Combustion Plants) and be fully spatially disaggregated into NUTS3 administrative units and/or 50x50 km grids. In some cases, nationally developed systems will contain even more detailed data.

The ETC/AE data manager in UBA Vienna has been maintaining the complete and validated CORINAIR90 database (in ORACLE). For subsequent years as well as for updates for the year 1990, it is each country's responsibility to prepare and maintain such detailed inventories. A number of countries provide these inventories to ETC/AE, which carries out some initial data quality and consistency checks. National detailed inventories are continuously revised, updated and improved as knowledge improves. Therefore, these detailed national inventories only give the state of play valid at a certain moment in time. There will often be a time delay between compilation of the detailed emission inventory and the official reporting of the aggregated data. Due to these considerations, the copies of national detailed emission inventories held by ETC/AE can neither be considered as the latest officially approved and validated national detailed estimates, nor be regarded as validated by EEA-ETC/AE.

3.1.2. Annual European Community GHG Inventory 1990-1996

In 1999 ETC/AE prepared the EC greenhouse gas inventory 1990-1996 which was submitted to the Secretariat of the United Nations Framework Convention on Climate Change by the European Commission in May 1999. The European Community as the only regional economic integration organisation, which is a Party to UNFCCC, has to report annually on greenhouse gas inventories within the area covered by its Member States. The EC greenhouse gas inventory 1990-1996 provides data on emissions from sources and removals by sinks of greenhouse gases in the European Community as a whole (EU15) and inventories of each of the individual Member States. It contains emission data of CO_2, CH_4, N_2O, NO_X, CO and NMVOC for 1990, 1994, 1995, and 1996 inventories of the industrial gases HFCs, PFCs and SF_6 are reported where available from the Member States.

The EC greenhouse gas inventory was prepared on the basis of nationally prepared inventory data for all of the EU Member States, as available to the European Commission by April 1999. The collection of Member States' greenhouse gas inventory data was organised within the framework laid down in the 1993 *Council Decision on the Monitoring Mechanism of Community CO_2 and other Greenhouse Gas Emissions* (Council Decision 93/389/EEC). The two main data sources for the EC greenhouse gas inventory 1990-1996 were: (1) data reported by the Member States to DG ENV under the Monitoring Mechanism; and (2) the Member States' national communications and annual submissions to the Secretariat of the UNFCCC.

The EC greenhouse gas inventory 1990-1996 was compiled according to the recommendations for inventories set out in the *Revised Guidelines for the Preparation of National Communications by Parties Included in Annex I to the Convention* (adopted as an Annex to Decision 9/CP.2) and the *IPCC 1996 Guidelines for National Greenhouse Gas Inventories*. The tables present greenhouse gas emission data for each Member State and for the Community as a whole (EU15) in the format of the *IPCC Table 7A – Summary Report for National Greenhouse Gas Inventories* of the revised 1996 guidelines.

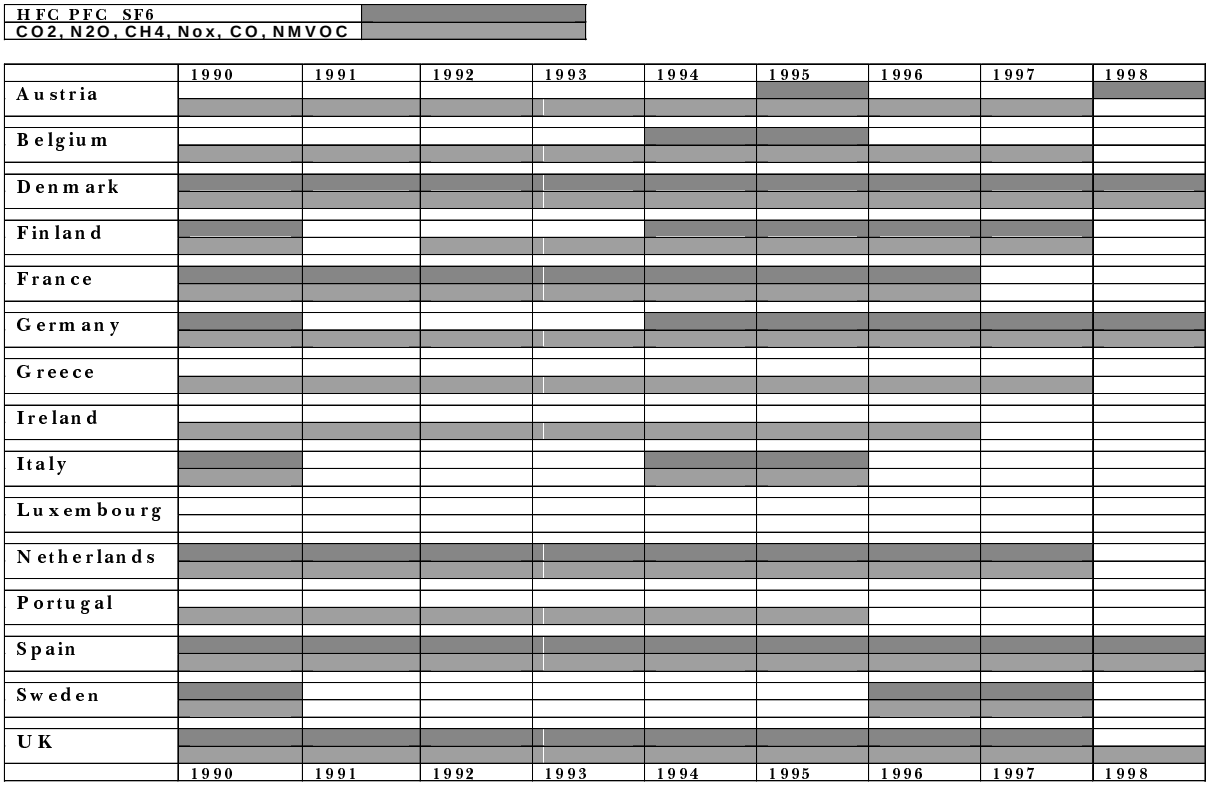
When compiling the Member State data into an EC inventory, EEA and ETC/AE depend on the availability of the relevant national inventories. Where such national inventories were not available or only partly available for the years 1995 and 1996, emissions reported for the most recent previous year were taken as a first estimate for the missing year. This was done in order to compile the required EC inventory containing estimates for all 15 Member States. For the reported period, the latest Member State emission data available for the compilation of this EC inventory were as follows:

EU Member State	Inventory data
Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Luxembourg, the Netherlands, Sweden, and the United Kingdom	1996
Italy and Spain	1995
Portugal	1994

3.1.3. EIONET – Air emissions data flow project

The EIONET air emissions data flow project was established in 1997 to improve the efficiency of the regular collection and reporting of national air emissions data. The data is needed in particular to enable EEA to produce on time the EC annual greenhouse gas inventory report, for both the Monitoring Mechanism (1999/296/EC) and UNFCCC, and the EC annual inventory report to UNECE/CLRTAP. To achieve this, EEA member countries are requested to post electronic copies of their data submissions to the Conventions' secretariats and the European Commission on their national EIONET servers. ETC/AE regularly collects the pages into the ETC/AE European CORINAIR database to produces and publishes European summaries. The data flow project was reviewed at the NFP/EIONET group meeting in October 1999. Although at different levels of completeness, all countries have provided some of the requested datasets. As an example, datasets for UNFCCC available at ETC/AE by January 2000 are as follows:

Figure 2: Datasets placed on the NFP servers – overview of UNFCCC/IPCC table 7A



The project continues since EEA requested, in December 1999, the posting of latest updated air emission estimates. Each NFP should liaise with its NRC on Air Emissions and other key actors in the country to establish the state of progress and take further action where needed. Some countries such as Denmark and Germany, in January 2000 informed EEA on their progress. The deadlines for posting CO_2 Monitoring Mechanism and CLRTAP sets have already passed. Most of the NRCs-AE will soon have to complete their work on the inventories and upload them, in order to make this exercise a useful part of the EIONET implementation. The exercise to be developed into a routine activity will have to consider the following issues:

- NFPs to regard the data flow Interest Group as a dissemination point to their ministries and other authorities in their own country;
- NFPs and NRCs to ensure data more up-to-date and provide links to where detailed data is held;
- EEA-ETC/AE (including PTL) to support implementation in PHARE countries;
- EEA to improve the system and extend functions towards meeting annual indicator reporting requirements;
- ETC/AE to provide templates for formats of the data to be reported;
- EEA together with Management Board members and NFPs to raise awareness in the countries to use the Interest Groups to make national reports/data more transparent, share data with national officials, NGOs, industry etc. and facilitate access to it (e.g. Swedish EPA has all data on its public website, Austria and Denmark provide additional information etc.).

3.1.4. Development of the CORINAIR model and software

A) CollectER, ReportER, TrainER

During 1999, the Collect*ER* and Report*ER* software tools including accompanying documentation were officially released by EEA for use by national inventory experts. In addition to these, a self-training document called Train*ER* was produced and published. All manuals are now available in the EEA Technical report series (Nos. 31, 32 and 33 respectively). The development of these software tools greatly benefited from the active participation of several national reference centres in the testing phase.

Several activities were also developed to enhance the software functionality and its use by national experts:

1. Training workshops were organized and supported at:
   - EIONET workshop in Roskilde, Denmark
   - TACIS training workshop in Kiev, Ukraine
   - Phare PTL/AE training workshop in Opole, Poland
   - UNITAR workshop on UNFCCC/CRF in Geneva, Switzerland
2. A questionnaire was sent to NRCs in August. From the responses, the following conclusions were drawn:
   - Collect*ER* is now used by nine of the 18 EEA member countries. Countries not using Collect*ER* are not doing so because it was not available on time, or because the country uses its own system
   - Report*ER* is now used by three countries for IPCC reporting and three countries for EMEP reporting. Countries not using Report*ER* are not doing so because it was available too late or because Collect*ER* was not used.
   - Train*ER* has been used by eight countries
   - Countries that use the tools are rather satisfied by it, although several improvements were requested.
   - Average scores on priorities (scale 1-5) for further developments given by the respondents are presented in Table 1.

Since September, ETC/AE is working on the implementation of the new UNFCCC Common Reporting Format (CRF) into the **Report*ER*** tool. A first version for internal testing was available by the end of 1999. The trial version of **Report*ER*** including the CRF report available for use by NRCs is to be available by mid March 2000. This trial version will produce all CRF tables and will upload all information available in the present **Collect*ER*** database structure into these tables. A full CRF reporting tool will be developed later in 2000.

Table 1: Priorities (scale 1-5) for further developments given by the respondents

Subject	Priority
New UNFCCC common reporting format CRF (± 50 tables)	4.63
Emission factors and activity rates reports for checking input	4.45
Tool for gridding to EMEP grid	4.26
Eurostat / OECD Joint Questionnaire, reporting in economic sectors (NACE)	4.22
ProjectER to produce national emission projections for UNECE/CLRTAP and UNFCCC	4.20
IPPC/PER Directive reporting	4.18
Tool for Quality Assurance / Quality Control (QA/QC)	4.16
Tool for trend analyses	4.13
Tool for Uncertainty estimation and reporting	4.00
Tool to compare CO2 emissions in database with IPCC Reference Approach.	4.00
Automatic import from national systems	4.00
Large Combustion Plants reporting	3.94
Emission Ceilings Directive reporting (expected to be similar to CLRTAP)	3.93
Direct printing facilities	3.81
Export tool to GIS systems	3.80
Reporting indicators (GWP, acid equivalents, etc.)	3.78
Add information on socio-economic sectors (NACE and NOSE)	3.67
EstimatER for biogenic emissions	3.58
HTML format tables for publishing via Internet	3.56
Tool for reporting re-estimations by comparing subsequent inventories for the same year	3.47

B) COPERT III

COPERT is an MS Windows software programme developed to enable users to calculate emissions from road traffic. Furthermore, emissions from internal combustion engines used in off road applications are also covered. The emissions include all major transport pollutants (CO, NO_X, VOC, PM) and several more (N_2O, NH_3, SO_2, PAH, POPs etc.). In addition, fuel consumption estimates are computed. A detailed methodology report is available. EEA member countries can use COPERT for the compilation of national (CORINAIR) emission inventories. To that aim, a special function exists to export results from COPERT III directly to the CollectER format. COPERT III methodology can be applied for the calculation of traffic emission estimates at a relatively high aggregation level, both temporally and spatially, on a yearly basis for each country. However, it has been shown that the methodology can also be used at a higher resolution, for the compilation of urban emission inventories with a spatial resolution of 1x1 km^2 and a temporal resolution of 1 hour.

COPERT III is an updated and extended version of COPERTII. The methodological revisions and extensions originate from the DGVII programmes COST 319 action (Estimation of Emissions from Road Transport) and MEET (Methodologies to Estimate Emissions from Transport), the European Commission's Auto Oil II programme and the EPEFE programme of ACEA and EUROPIA.

COPERT III – methodology and software was made available in September 1999 to the EIONET national reference centres and others to test. The feedback from users has been evaluated and incorporated where appropriate. The software and a technical report, which describes the methodology and relevant emission factors, are available from the ETC/AE website at the following location: http://etc-ae.eionet.eu.int/etc-ae/software.htm This provides the link the site, from where three zipped files and the report in a portable document format can be downloaded. Publication and distribution of COPERT III is expected by EEA in 2000.

The inventorying methods form a solid basis for forecasts, which can be used for setting up and/or evaluating technologies, measures and policies to abate air pollution. Realising that emissions from transportation contribute significantly to the issues of acidification and climate change as well as air quality, the issues of monitoring and modelling of mobility, modal balance, technical measures and technological improvements are areas to be addressed in future COPERT activities.

3.1.5. Annual EIONET air emissions workshop

The annual EIONET air emissions workshop for NRCs and associated experts was held in conjunction with the meeting of the UNECE Task Force on Emissions Inventories and Projections (TFEIP) in June 1999 in Roskilde, Denmark. The main aim of the workshop was to exchange experiences with the implementation of tools for data collection and reporting in participating countries, to review progress in national reporting of air emissions data, to exchange ideas on streamlining of reporting at national and international level and to present various EEA and ETC/AE products and reports.

New products and the service provided by ETC/AE were demonstrated. Many countries intend to use the new tools but need help and some time for testing. The new tools combined with direct technical assistance are regarded as the two main elements for comparable national data collection and timely reporting.

The air emissions workshops further discussed how to improve data flows and streamlining of reporting by EEA member countries to international bodies, avoiding duplication and aiming at efficient use of the data for various purposes. The proceedings of the workshop are available from the ETC/AE website.

The TFEIP meeting considered revised chapters of the joint EMEP/CORINAIR Atmospheric Emission Inventory Guidebook. The second version of the Guidebook was published on the EEA website in November 1999 and a limited number of printed copies (3 volumes) were distributed early 2000. The guidebook is a reference work on good emissions inventorying practice and a checklist to ensure all relevant source categories are included.

3.2. Integrated assessment

3.2.1. Overview of national programmes to reduce GHG emissions

An overview of national programmes was provided in the Topic report No 8/1999 prepared by the ETC/AE. This report was a contribution to the collection of information required under the Monitoring Mechanism for anthropogenic CO_2 and other greenhouse gas emissions in the European Community (Council Decision of 26 April 1999, 99/296/EC amending 93/389/EEC).

The report is based on information submitted by Member States to the European Commission under the Monitoring Mechanism and on Member States' Second National Communications and subsequent Annual Submissions to the UNFCCC, as available to the European Commission by April 1999. Additional information sources used for the preparation of the report were the Community's Second Communication to UNFCCC (July 1998), CO_2 emission estimates and GDP data from EUROSTAT, and EU CO_2 emissions projections from the pre-Kyoto energy scenario (COM (97) 196).

The report presents GHG inventories for EU15 as a whole and for individual Member States for 1990, 1994, 1995 and 1996. The information available did not provide a complete EU15 inventory for CO_2 emissions for 1996 nor for 1997, as would have been expected according to the requirements (see further information in section 3.1.2 on the EC GHG inventory 1990-1996). In addition, the report summarises national climate change policies and provides an evaluation of

progress towards stabilisation of CO_2 emissions in EU Member States at 1990 levels by the year 2000.

Main Findings: *Emission trends:* Table 2 shows anthropogenic emissions of CO_2, CH_4 and NO_2 of EU15 and individual Member States in 1996. Based on the indicative 1996 CO_2 emission estimates, the overall trend in total CO_2 emissions for the EU showed an increase of 0.2 % during the period 1990 to 1996, while emissions increased by 2.7 % from 1995 to 1996. This large increase was partly caused by relatively cold weather conditions and subsequent increases of energy consumption for space heating (compared to previous years).

Table 2: Anthropogenic emissions of GHG 1996 (Gigagramme)

	CO_2		CH_4	N_2O
MEMBER STATE	Emissions	Removals		
Austria	64,026	13,753	447	7
Belgium	128,547	2,057	591	35
Denmark	73,236	981	425	34
Finland	66,400	14,300	270	19
France[1]	493,512	128,095	2,712	297
Germany	918,932	35,006	3,573	224
Greece	91,978	0	457	29
Ireland	34,819	6,497	800	26
Italy	447,644	36,199	2,516	162
Luxembourg	7,098	295	24	1
Netherlands	184,870	1,700	1,179	72
Portugal	50,841	1,152	834	14
Spain	247,703	28,970	2,370	90
Sweden	63,352	31,774	261	26
United Kingdom	593,422	18,672	3,712	189
EU-15	**3,466,381**	**319,451**	**20,170**	**1,227**

Cells marked light grey contain 1995
Cells marked dark grey contain 1994

[1] French emission data include metropolitan area and overseas territories

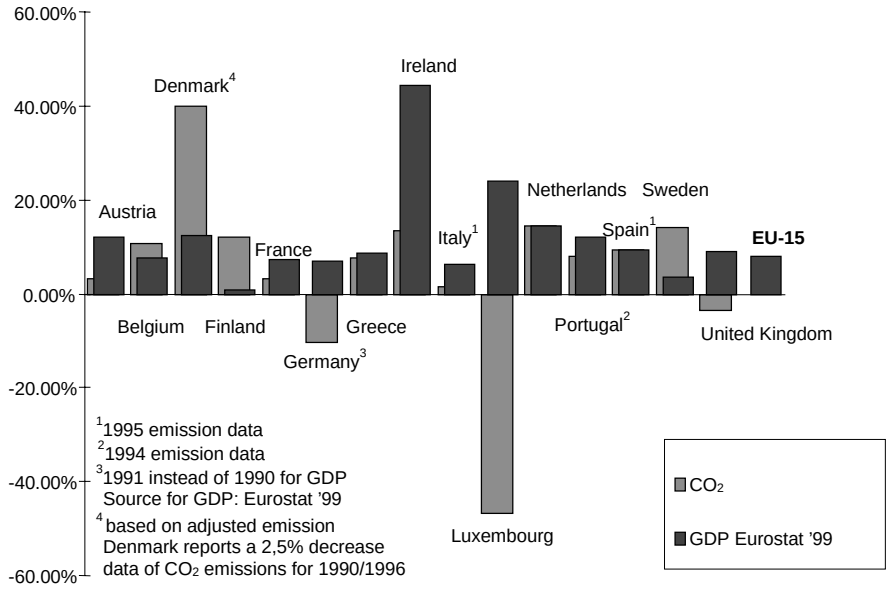
Only three of the 15 Member States show decreasing CO_2 emission trends from 1990 to 1996, while significant increases are observed for some of the other Member States. The (near) stabilisation of emissions for the EU as a whole between 1990 and 1996 strongly depends on the reductions in Germany and the United Kingdom. Germany, having the largest national CO_2 emissions in the EU (26 % of the estimated EU15 emissions in 1996) reduced its emissions of CO_2 by 96 Tg between 1990 and 1996. This was mainly caused by the economic restructuring of the five new *Länder* following German reunification. In the UK, the second largest CO_2 reduction took place (21 Tg), mainly caused by fuel switching from coal to natural gas. Luxembourg reduced its CO_2 emissions by 6 Tg, during the same period. All other Member States reported increases in their CO_2 emissions from 1990 to 1996, with a total increase of 131 Tg.

It is important to obtain actual national emission estimates for all Member States for the year 1996 in order to confirm actual trends from 1990 to 1996.

The GDP trends for EU15 over the periods 1990-1995 and 1990-1996 showed a 6 % and 9 % increase respectively, while between 1960 and 1990, growth for each 5 year period varied in EU Member States between 8 % and 28 %. This indicates that the trend in CO_2 emissions observed for the period between 1990 and 1996 (+0.2 %) and the earlier reduction of 2.4 % below 1990 levels in 1995 were partly related to the relatively low GDP growth in this period. Other reasons for the apparent decoupling of CO_2 emissions and GDP growth are increases in energy efficiency,

the dematerialization of industries and the effects of policies and measures to reduce GHG emissions. Figure 3 presents trends in CO_2 emissions and GDP growth in the 15 EU Member States for the period 1990 to 1996.

Figure 3: Anthropogenic CO_2 emission trends 1990/1996 and trend in GDP in 1990/1996



National programmes: The Member States' own emission projections for the year 2000, including expected effects of measures in place, indicate a projected decrease in CO_2 emissions for five Member States (or six, if Denmark's electricity import/export adjusted data are taken into account). The EU15 CO_2 emission estimate for 2000, calculated by adding up the 'with measures' national emission projections for 2000, indicates a projected decrease of 2 % below 1990 levels (see Table 3).

Table 3: Reported historic and projected anthropogenic CO_2 emissions (Gigagramme)

	Inventory		Projection 2000	
MEMBER STATE	1990	1996	without measures	with measures
Austria	62,042	64,026	63,500	57,300
Belgium[1]	116,090	128,547	129,300	125,200
Denmark[1]	52,277	73,236	66,000 [3]	54,309 [3]
Finland	59,300	66,400	-	60,000
France[2]	478,001	493,512	492,417 [4]	474,417 [4]
Germany	1,014,500	918,932	960,400	893,900
Greece	85,349	91,978	106,000 [5]	98,000 [5]
Ireland	30,719	34,819	-	34,998
Italy	441,653	447,644	459,038	446,200
Luxembourg	13,300	7,098	7,423	7,423
Netherlands[1]	161,360	184,870	189,000 [6]	189,000
Portugal	47,123	50,841	-	50,103
Spain	226,423	247,703	-	258,247
Sweden[1]	55,443	63,352	-	60,100
United Kingdom	614,825	593,422	707,600	578,000
EU-15	**3,458,405**	**3,466,381**	**-**	**3,387,197**

Cells marked light grey contain 1995 estimates
Cells marked dark grey contain 1994 estimates

[1] Four Member States submitted adjusted figures (for temperature or electricity trade). These were as follows:

Country	1990	1995	1996
Belgium	121100	-	-
Denmark	60233	58917	58736
Netherlands	167600	180400	-
Sweden	57620	58470	-

For Belgium, the projection data in Table 1 originates from the first Belgian National Communication to the UNFCCC (January 1997)

[2] For France, inventory data is presented for the metropolitan area and overseas territories, whereas projections for 2000 relate only to the metropolitan area

[3] The reported projected anthropogenic emissions for 2000 without and with measures are the same with or without corrections (based on temperature and precipitation projected to be normal).

[4] Overall projections for France in 2000 have been reprocessed by IFEN, based on trends for combustion related emissions only, proposed in France's Second National Communication to the UNFCCC. For this projection non energy-emissions and sinks have not been changed compared to their 1990 level.

[5] Figures for 'without measures' and 'with measures' are based on different scenario assumptions.

[6] The number presented for the Netherlands under 'without measures' presents an estimation of emissions for 2000 based on all *measures taken until 1 January 1997*.

However, it should be noted that the national emission estimates and especially the national emission projections include several uncertainties related to predictions of socio-economic developments and expected results of mitigating policies and measures. The differences in the various models and assumptions employed by Member States are not always transparent and fully documented in the national programmes. Table 4 briefly comments on the emission projections for 2000 presented by Member States.

Table 4: Brief evaluation of CO_2 emission projections for 2000, by Member State

Member State	Comments
Austria	CO_2 emissions for the year 1996 are 3 % above the emissions in 1990 Meeting the stabilisation target for 2000 in reference to 1990 still seems achievable, according to 2000 projection with measures, depending on the impact of such national measures
Belgium	In spite of measures CO_2 emission is forecasted to grow by 8 % for 1990 to 2000. Fulfilling the national target of a 5 % reduction or the EU stabilisation target (both based on 1990) seems unlikely.
Denmark	The national 5 % reduction target for 2000 is expected to be reached but only if corrections for temperature and electricity trade are taken into account
Finland	Emissions have risen by 12 % from 1990 to 1996, it is not clear whether the projected measures will bring emissions back to nearly 1990 levels by 2000 (significant changes to older projections)
France	The increase of CO_2 emissions in France in the period between 1990 and 1996 could be reversed by 2000 as a result of measures The fossil fuel related emission per capita is projected to be 6.2-6.5 tonnes CO_2 in 2000, in line with the French target of an upper limit of 7.3 tonnes/capita
Germany	With measures, a 12 % reduction of CO_2 emissions between 1990 and 2000 is expected, which is clearly in line with the EU stabilisation target The national target of 25 % reduction by 2005 could be difficult to reach
Greece	Reduction of GHG emission is technically possible; however, the national programme identifies various practical restrictions in reducing GHG emission With measures, the increase in 2000 is expected to be approximately 15 % compared to 1990 levels
Ireland	With measures, CO_2 emissions will increase by 14 % compared to 1990 levels by 2000 The increase is in line with the national objective to limit the increase to 20 % over the period 1990-2000
Italy	CO_2 emissions are projected to rise by 1 % from 1990 to 2000, which is almost in line with the national objective of stabilisation
Luxembourg	With measures, emissions of CO_2 for 2000 will be reduced by 44 % compared to 1990, which exceeds the stabilisation objective
The Netherlands	The projected CO_2 emissions in 2000 are expected to be 17 % higher than the 1990 emissions. The national target is 3 % emission reduction from the 1990 levels which seems unlikely to be reached

Portugal	The projected CO_2 emissions in Portugal in 2000 show an increase of 6 % from the 1990 emission levels, in spite of measures Substantial further increase is expected after 2000
Spain	The projected CO_2 emissions in the year 2000 are 14 % above 1990 emission levels, with measures implemented This is almost in line with the national target of limiting the emission increase to a range of 11-13 % in 2000
Sweden	The CO_2 emissions after implementation of measures are projected to increase by 8 % between 1990 and 2000, which is not in line with the target of stabilisation of emissions in 2000 at the 1990 emissions level
United Kingdom	The CO_2 emissions are projected to decrease by 6 % from 1990 levels which exceeds the national objective to stabilise greenhouse gas emissions by the year 2000 at 1990 emission levels

It is informative to compare the EU15 emission estimates for 2000 based on data from the Member States, with the alternative 'top-down' estimate, which was prepared by the European Commission based on a consistent energy scenario for EU15. The CO_2 emission trends from this pre-Kyoto 'business as usual' energy scenario are based on the assumption of an absence of EU policy action for CO_2 abatement after 1997. The main result of this pre-Kyoto 'business as usual' scenario is a projected rise in energy-related CO_2 emissions in the European Union by 2 % in 2000 from 1990 levels. According to this estimate, transport is the strongest growing sector, with CO_2 emissions in 2000 increasing by 22 % compared to 1990.

In order to properly monitor whether progress in the Community as a whole is sufficient to ensure stabilisation of CO_2 emissions at 1990 levels in the year 2000, the results of both estimates described above should be compared. Combining the two projection evaluations suggests that the EU15 CO_2 emissions could be within +/-2 % of 1990 levels by 2000.

It should be noted that a decrease or increase within this band-width is in the range of uncertainty of the underlying estimates. This range of uncertainty can only be reduced when more recent emission estimates are available. This underlines the need to ensure timely reporting by the Member States under the Monitoring Mechanism and UNFCCC. In particular, a complete picture of the 1996 emission estimates for all Member States – rather than estimates partly based on 1995 or 1994 data – is essential to accurately monitor the progress of the European Union towards the stabilisation target for CO_2 emissions in 2000.

3.2.2. Air Emissions in Europe 1980-1996

'European Emissions of Atmospheric Pollutants, 1980-1996' (draft Topic report) was prepared by ETC/AE with contributions from the PTL/AE. It provides information and interpretation of European Air Emissions data including data from the East and Central European Countries. This report presents emission trends for the major environmental issues (Climate Change, Acidification, Tropospheric Ozone Formation and Toxic Air Pollution). The major polluting sectors (Transport, Industry, Energy Production and Agriculture) are highlighted and trends explained. The report also takes a critical look at the mechanisms for collating air emissions data in Europe and presents an assessment of the reliability of the data and the comparability between countries.

The report provides air emission estimates across European countries, selected indicators and other information available by October/November 1999. Data used to discuss and present indicators in this report have been officially submitted by the countries to the various international reporting obligations. In this way data and the related indicators are a building block for and fully consistent with those presented in the first Environmental signals 2000 report (EEA, 2000) and the first report under the Transport and Environment Reporting Mechanism. Both reports were prepared by EEA in 1999 for publication in 2000.
The geographic scope of the topic report is EEA member countries as well as Central and Eastern European Countries.

Environmental Targets and achievements

The UNFCCC Kyoto Protocol is not yet in force, pending a sufficient level of ratification, which is not expected to take place before COP 6 in 2000.

😐	Greenhouse gas emissions increase, but small in comparison to increasing primary energy demand and GDP.
☹	It is expected that GHG emissions increase according to a 'business as usual' scenario.
☹	GHG emissions resulting from the transport sector have and will continue to increase steadily and are likely to increase EU total GHG emissions.

The new **multi-pollutant Protocol of UNECE/CLRTAP** (signed in December 1999 by many European countries, including EU Member States) uses an integrated approach and introduces national emission ceilings for SO_2, NO_X, NMVOCs and for the first time also for NH_3 (ammonia) for 2010. Ammonia is mainly originating from agriculture (manure). The EU is also following this integrated approach within the proposal for a National Emission Ceilings Directive (1999), which is linked to a proposal for an ozone abatement strategy. In the proposed NECD, also emission ceilings are given for SO_2, NO_X, NMVOCs and NH_3 by EU Member State, to be achieved by 2010, which are stricter than the CLTAP targets.

☺	Emissions of acidifying and tropospheric ozone forming gases reduce as the energy sector adopts abatement strategies for NO_X and SO_2 while road transport reduces NO_X, CO and NMVOC with catalytic converters. SO_2 also reduces as natural gas and renewable fuels (low in sulphur) begin to replace high sulphur fuels such as coal and oil. The EU as a whole has already met the sulphur reduction targets laid down in the two sulphur Protocols (Helsinki 1985, Oslo 1993).
☺	In the EU15 NO_X emissions are now well below the 1988 Sofia Protocol target (to stabilise emissions at 1987 levels), despite many countries failing to reduce their emissions.
😐	The reduction effects of EU wide legislation on road transport has been slow due to low turnover of vehicle fleets in some countries prolonging the use of older high-emissions vehicles.
😐	Increasing vehicle use is offsetting NOX reductions from new vehicle technologies.
😐	Significant changes in agricultural practices will be necessary to reduce EU emissions of ammonia, nitrous oxide, and methane to target levels.

The Convention on **LRTAP – Heavy Metal Protocol** (Arhus 1998) requires countries to reduce emissions of heavy metals. Lead, Cadmium and Mercury are toxic pollutants that can be transported over long distances. Waste treatment and disposal, and some industrial processes are the main sources of Heavy Metals emissions.

☺	Many EU countries are phasing-out leaded petrol (gasoline).
☹	Cadmium and Mercury are still found in waste streams stemming from discarded batteries, electronic-electrical or medical equipment;
😐	Cement production and the mercury based chloro-alkali industry cause the highest release of mercury;
☹	End-of-pipe technology for removing mercury is expensive, and techniques were not well established in the EU in 1990.

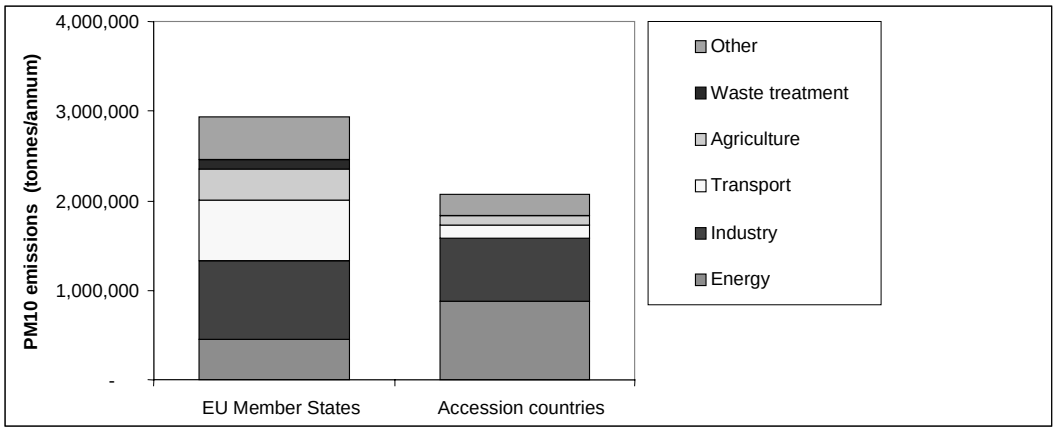
The Convention on **LRTAP – POP Protocol** (Arhus 1998) was adopted to control, reduce, or eliminate discharges, emissions, and losses of POPs to the environment. Waste incineration, wood preservation, and wood combustion are the main sources of emissions of some of the POPs – Dioxins and Furans, and polycyclic aromatic hydrocarbons (PAH).

☺	Upgrading of various incinerators and regulations on fuel quality have helped to reduce emissions of Dioxins and Furans in recent years in the EU;
☹	There is still incomplete implementation of EU legislation on waste management, scarcity of data and delays in adopting measures remain issues of concern;

☹ Implementation of techniques to abate emissions of Dioxins and Furans in fuel combustion and industrial processes is complex and has not been successfully applied in all EU or the Accession Countries; ☹ PAH emissions from wood treatment, residential wood combustion and ferrous and non-ferrous metal industry still contribute significantly to POP emissions in the EU and Accession Country emissions;

Particulate Matter (PM_{10}) estimates are scarcely reported by the countries. Main sources are stationary combustion (of coal) and road transport. Under the related EU Framework Directive on air quality assessment limit values for fine particulate including PM_{10} and $PM_{2.5,}$ and TSP are being set in Daughter Directives. Figure 4 shows 1990 emissions of PM_{10} for the 15 EU Member States and the 10 Accession countries by main source sector.

Figure 4: PM10 emissions in 1990 [source: Berdowski et al. 1997]



☹ Uncontrolled combustion of coal in stationary sources and diesel in transportation contribute significantly to PM_{10} emissions in Europe. ☹ PM_{10} emission reductions that occur, due to gas replacing coal for stationary combustion in many countries, may be offset by increased road transport emissions. ☹ CEE country urban area PM_{10} emissions are influenced by high industry and energy production emissions within the urban boundary

Summary: The report shows that improvements have been made in the quality and timeliness of inventory estimates, and that these data can be used for preparation of useful emission indicators at the European level. However it is also shown that improvements are still required on all relevant quality aspects (accuracy, consistency, comparability, transparency, completeness) and in particular timeliness. Uncertainties are however inevitable in any estimate of national emissions or removals. It is important that these uncertainties are understood, properly communicated and where possible reduced to improve effective policymaking and performance monitoring.

It is also expected that coordinated national emission databases will improve the quality of the estimates because of the consistent use of the required socio-economic statistics and of other common elements. Also increased cooperation between national organisations responsible for compiling the inventories and the national statistical offices is important.

3.3. Periodical reporting

3.3.1. EEA Environmental signals 2000 report

The EEA yearly indicator-based report series (Environmental signals) is a collection of concise environmental assessments based on the information provided through selected indicators. It fills

the gaps between the three to five yearly integrated assessment reports that EEA produces on the environment in Europe.

The first report in the series (Environmental signals 2000) contains sectoral and issue chapters. In the sectoral chapters, the contribution to various environmental problems is shown by the relative importance of each of the problems for the sector, and in a time series of the sectoral emissions/discharges/waste production. In the chapters on issues, total emissions are presented split up, if relevant, into sectoral contributions. This shows the development of sectoral contributions to the respective issue. The geographical coverage is the 18 EEA member countries. The indicators cover the period 1980 to 1997/1998 or the last decade, depending on relevance and data availability.

ETC/AE contributed to the report by providing emission data and information (including the description of state and trends of emissions and deviations from environmental targets) and contributed to the chapter on climate change. Based on emissions of CO_2, CH_4, N_2O, and HFC, PFC, SF_6 weighted GWP factors (global warming potentials) were used to develop the indicator 'Aggregated emissions of GHGs'. The results and assessment of this indicator are as follows:

Relevance of the indicator: The indicator is an estimate of the total global warming potential of EU15 GHG emissions. The main GHG is CO_2 (79 % contribution), followed by CH_4 (11 %), N_2O (9 %) and the three halogenated gases (1.3 %). Emissions of all these gases have to be reduced to limit climate change. Energy (26 %), industry (21 %), transport (18 %) and agriculture (9 %) are the largest sources.

Policy relevance and policy references: Through the UNFCCC Kyoto Protocol the EU and its Member States are committed to achieve an 8 % reduction of greenhouse gases emissions (CO_2, CH_4, N_2O, HFCs, PFCs, SF_6) by 2008 to 2012 based on the 1990 levels. The EU agreed on a system of burden sharing between Member States, which means a differentiated emission reduction target for each Member State.

Assessment: GHG emissions have shown a small decrease since 1990 despite increases in GDP. This was mainly caused by the economic restructuring of the five new *Länder* following German reunification, improved energy efficiency in various countries and fuel switching from coal to natural gas in the UK.

3.3.2. Transport and Environment Reporting Mechanism

The Transport and Environment Reporting Mechanism (TERM) was set up in 1998 on request of the Council – to monitor progress and effectiveness of the transport and environment integration strategies in the EU. The main output of TERM is a regular indicator based report, prepared jointly by the European Commission (various DGs and Eurostat) and EEA.

'Are we moving in the right direction?' – the first indicator-based report for TERM, has identified about 30 key indicators that can be tracked and compared with concrete policy objectives. In some cases, proxy indicators were used because of data limitations. In the report seven questions are addressed, which policy makers in the EU regard as key to understanding whether the current policy measures and instruments are influencing transport/environment interactions in a sustainable direction.

ETC/AE contributed to the report with information and data, description of indicators and trend analyses, by using results from the CORINAIR database and by performing a comparison of emission estimates from road transport carried out by the countries with those undertaken centrally by the ETC/AE partner POSEIDON using the COPERT model.

Main findings: The environmental performance of the transport sector has generally been deteriorating in recent years. There has been some progress in implementing technical improvements such as less polluting vehicles and cleaner fuels, however cars are getting heavier and more powerful. Utilisation patterns also need to be improved, as occupancy rates and load factors are falling. Reversing these trends, for example by using pricing signals to change buying and driving behaviour, is an important challenge for policy-makers.

Growing transport volumes are rapidly outweighing technical improvements. The modal mix continues to deteriorate, with a dominance of road transport and a rapid increase in aviation. Major efforts are needed to reverse these trends and reduce the coupling between transport demand and economic growth, using measures such as improved land-use planning and accessibility policies, fair and efficient pricing, and public education.

Access to work and basic services has increasingly become dependent on car transport, with many in the Community (about 30 % of EU households are without a car) finding access to basic services increasingly difficult. Journey lengths and frequencies have increased as a result of urban sprawl and inadequate coordination between transport and land-use planning.

In most countries the shares of more environmentally friendly modes such as rail, inland waterways, cycling and walking are falling. Nordic countries make much greater use of taxes, other pricing mechanisms and land-use planning than countries in southern Europe. A few Member States have introduced environmental action plans for the transport sector and set national targets.

The Common Transport Policy provides some strategies which already include integration actions, for example fair and efficient pricing, revitalisation of rail, promotion of combined transport, and making best use of existing infrastructures. Implementation of these strategies, however, is facing many difficulties. The concepts of demand management, accessibility and eco-efficiency are not sufficiently reflected in EU transport policies. Several environmental targets, such as the Kyoto and other emission targets, have not been allocated to sectors, and transport objectives are seldom linked to quantitative targets.

A key message from this report is that substantial efforts have to be made to improve data availability and ensure regular updating. The European Commission and in particular Eurostat, EEA/EIONET and the Member States all have an important role to play in achieving the necessary data improvements.

The ***second TERM*** report also to be prepared by the European Commission and EEA is intended to develop into a fully multi-modal assessment that includes road, rail, aviation, inland waterways, short-sea shipping, cycling and walking.

4. Products/outputs produced by ETC/AE (1995-1999)

Type of product	Title	Eea report no.
General	Annual Summary report 1995	Topic report 9/1996
	Annual Summary report 1996	Topic report 5/1997
	Annual Topic Update 1997	Topic report 4/1998
	Annual Topic Update 1998	Topic report 12/1999
Methodology and data	Review of CORINAIR 90 – Proposals for Air Emissions 1994	Topic report 6/1996
	Recommendations for Revised Data System	Topic report 12/1996
	Review study on Urban Emission Inventories	Topic report 30/1996
	Atmospheric Emission Inventory Guidebook, First Edition	Technical report, CDROM and EEA website
	Atmospheric Emission Inventory Guidebook, Second Edition	Technical report, EEA website
	CORINIAR 90: Summary report no 1 (Sectors)	Topic report 7/1996
	CORINAIR 90: Summary report no 2 (Sub-sectors)	Topic report 8/1996
	CORINAIR 90 Summary report no 3 (Large point sources)	Topic report 20/1996
	CORINAIR 94 Inventory	Topic report 8/1997
Software	CollectER Methodology and software manual	Technical report No 31
	TrainER manual for self-training use of CollectER	Technical report No 33
	COPERT 2 User manual and Methodology & Emission Factors	Technical reports Nos 5 and 6
	ReportER – new output module for CRF	Technical report No 32
	COPERT III – Methodology and Emission Factors	Technical report
Databases	CORINAIR 90 and CORINAIR 94	ETC/AE website
	Air emissions 80-96	EEA website
	Air emissions database Version 2.2	EEA website (Data service)
Information and Assessment reports	Air Pollution in Europe 1997 (jointly with ETC/AQ)	EEA Monograph No 4
	Overview of national programmes to reduce GHG emissions	Topic report 8/1999
	Annual European Community GHG Inventory 1990-1996	Technical report No 19

5. Plans and projects for 2000

The following two tables present overviews of tasks, products and services the ETC/AE will carry out in 2000. Table 5 is mainly addressed to NFPs and NRCs for their planning of contributions.

Table 5.1: Main events/activities and their expected output

Event/activity	Event date	Response deadline	Expected output	Output date
Workshops	15-18 May 2000		Report of the EIONET Air Emissions Workshop	June 2000
Country visit to	-	-	-	
Questionnaires	1 Sep 1999	1 Nov 1999	Evaluation report of use of CORINAIR software tools incl. Proposals for future work in line with the TERESA project	March 2000
Data Update Requests *)	1 Dec 1998	31 Dec 1998	EU15 emission inventory 90-98 for EMEP/CLRTAP (database and technical report)	May 2000
	1 March 2000	15 April 2000	EU15 GHG emission inventory for UNFCCC (database and technical report)	June 2000
Draft reports for review	1 June 2000	1 July 2000	Topic report 'Progress assessment of GHG emission trends 90-98' **)	August 2000
	1 June 2000	1 July 2000	TERESA DEM software modules, intermediate results	August 2000
	1 Sep 2000	1 Oct 2000	EIONET status report, part air emissions	1 Nov 2000
	1 Oct 2000	1 Nov 2000	Consolidated CORINAIR mode, software and technical manuals/documentation (CollectER and ReportER)	Dec 2000
	1 Oct 2000	1 Nov 2000	TERESA DEM software modules, final results	Dec 2000
	1 Oct 2000	1 Nov 2000	Air emissions in Europe 80-98 (Topic report)	Dec 2000
	1 Dec 2000	1 Jan 2001	Air emission inventory (PM_{10}) for Clean Air for Europe programme	Feb 2001
	15 Nov 2000	1 Dec 2000	Annual topic update 2000 (Topic report)	15 Dec 2000

*) Data request to MS is done by DG ENV for reporting of EU15 inventories to the amended CO_2/GHG Monitoring Mechanism, UNFCCC and CLRTAP/EMEP. EEA-ETC/AE assists in data collection, validation and reporting. MS are requested to always send electronic copies of their national submissions to EEA. The EIONET project on air emissions data flow will help in this process.

**) The report will be prepared as part of assistance to DG ENV

Annex 1: List of NRCs for Air Emissions inventories

EEA country	Contact person	Institution/Address	Tel./Fax/E-mail
Austria	Mr Manfred Ritter	Federal Environment Agency Spittelauer Lände 5 A-1090 Vienna	Tel.: +43-13-13-04-55-82 Fax: +43-13-13-04-54-00 E-Mail: ritterm@ubavie.gv.at
Belgium	Mr Jan Voet *)	IRCEL/CELINE (NFP-Belgium) Kunstlaan-Avenue des Arts 10/11 B-1210 Bruxelles	Tel.: +32-22-27-56-76 Fax: ++32-22-27-56-99 E-Mail:voet@irceline.be
Denmark	Ms Jytte Boll Illerup	NERI Dept. of Atmospheric Environment Frederiksborgvej 399 – PO Box 358 DK-4000 Roskilde	Tel.:+45-46-30-12-89 Fax: +45-46-30-12-12 E-Mail: JBI@dmu.dk
Finland	Mr Marko Ekqvist	Suomen Ympäristökeskus PO Box 140 FIN-00251 Helsinki	Tel.: +35-89-40-30-04-09 Fax: +55-89-40-30-04-90 E-Mail: marko.ekqvist@vyh.fi
France	Mr Jean-Pierre Fontelle	Centre Interprofessionel Technique d'Etude de la Pollution Atmosphérique (CITEPA) 10 rue du Faubourg Poissonnière F-75010 Paris	Tel.: +33-14-48-36-883 Fax: +33-14-02-20-483 E-Mail: citepa@compuserve.com
Germany	Ms Marion Dreher	Federal Environment Agency, FB II 4.6 Bismarckplatz 1 D-14193 Berlin	Tel.: +49-30-89-03-24-02 Fax: +49-30-89-03-22-85 E-Mail: marion.dreher@uba.de
Greece	Ms Dimitra Koutendakis	National Observatory of Athens Lofos Nymphon Thissio GR-11810 Athens	Tel.: +30-13-46-38-03 Fax: +30-13-42-28-75 E-mail: dkouten@env.meteo.noa.gr
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