

Technical report No 32

# ReportER

## User manual

Prepared by:  
Tinus Pullus, TNO,  
Jozef Skákala & Jan Svetlik, Spirit Informacne Systemy

ETC/AE

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Project manager:  
André Jol  
European Environment Agency

Cover design: Rolf Kuchling, EEA

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European Environment Agency  
Kongens Nytorv 6  
DK-1050 Copenhagen K  
Denmark  
Tel: +45 33 36 71 00  
Fax: +45 33 36 71 99  
E-mail: [eea@eea.eu.int](mailto:eea@eea.eu.int)

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# 1. Introduction

**ReportER** is a software tool developed for the National Reference Centres on Air Emissions to help report the national inventory to the UN Framework Convention on climate Change (UNFCCC) and the UNECE Convention on Long Range Transport of Air Pollutants (LRTAP).

**ReportER** has been prepared by the European Topic Centre on Air Emissions (ETC/AE) as part of the work on CORINAIR (CORe INventory for AIR emissions) for the European Environment Agency. The new system is a complete revision of the previous software package CORINAIR94 that was made available by ETC/AE to NRCs in 1996.

This version of the **ReportER** software (version 1.0) enables the National Reference Centre to create a set of IPCC format summary tables and EMEP reporting tables based on the national emission inventory data as stored in the **CollectER** annual inventory databases. The following functionality is available:

- calculation of aggregate emissions for IPCC format reporting from an existing **CollectER** format database and generation of the summary reporting tables according to the 1996 revised IPCC guidelines;
- calculation of aggregate emissions for EMEP reporting from an existing **CollectER** database and generation of a summary (11 main sectors) and detailed (SNAP level 2) table in EMEP format (SNAP = Selected Nomenclature for sources of Air Pollution, used within CLRTAP/EMEP and within the **CollectER** software system).

Apart from this document, a **TrainER** document is available, helping the user to explore all possibilities of the CORINAIR software system (**CollectER** and **ReportER**) on a dummy inventory, as well as a User Guide for **CollectER**:

- TrainER Compiling a National Emission Inventory using the **CollectER** and **ReportER** system, EEA Technical Report, 1999;
- **CollectER** Installation and User Guide (version 1.2), ETC/AE, final draft, April 1999.

It is strongly advised to read this document and gain experience, using for example the dummy inventory, before using either **CollectER** or **ReportER** for an official national inventory.

The new **ReportER** system is available at the ETC/AE's CIRCLE Interest Group, including the documentation needed to run the tools:

<http://etc-ac.eionet.eu.int:8980/etc-circle/Public/IRCindex.pl>

After inclusion of comments by NRCs and others the software will be made more widely available at the ETC/AE public Internet web site. For any general questions on the software the contact point is Tinus Pulles, e-mail: pulles@mep.tno.nl.

Help desk and other support is provided on behalf of the ETC/AE by Spirit Inc. (xspirit@savba.sk) in Bratislava to the participating countries upon request.

## 1.1. Working environment

**ReportER** is an application written in the C++ programming language in the Visual C++ Development Environment. **ReportER** is implemented under the Windows95™ operating system on PC based personal computers. This software uses two databases,

- the first one contains the **ReportER** working data,
- the second one is the **CollectER** database, from which reports should be created.

Both databases are MS-Access (.mdb) database files. Database files are accessed using DAO supporting programme.

No direct printing is implemented in the current version. **ReportER** exports the resulting tables either to an Excel spreadsheet, in which the IPCC formats are copied, or as tab separated value files, that can be imported into most common spreadsheet or word processing formats. These commercial software programmes can be used for printing the results.

To run **ReportER** The following files are needed:

- one application file called 'ReportER.exe' and
- one 'ReportER.mdb' database file.

For its function there should be at least one **CollectER** format database files of the type '.mdb'. This file contains the base year of the national Emission Inventory.

- In addition the **ReportER** tool needs MS Excel template files, containing the exact formats in which the reports can be exported. The MS Excel templates are placed in a subdirectory 'ExcelDir' of the **ReportER** programme directory.

When the user does not have a license for MS Excel or MS Access, the programme operates without any problem, with the exception of the export to MS Excel. In this case export, the tab separated text export can be used.

### 1.1.1. Hardware and software requirements

As mentioned above, **ReportER** works in MS Windows 95 environment on PC based computers. The optimal software and hardware configuration is:

- a PC 486 or higher,
- 16 MB RAM or more,
- MS Windows 95™,
- minimal 50 MB free space on HDD,
- colour monitor,
- graphic adapter with minimal resolution 600 x 800,
- mouse,
- at least one **CollectER** format database file,
- MS Office (Standard or Professional),

### 1.1.2. Distribution and installation

#### Installation

**ReportER** version 1.0 is distributed on 3 diskettes or can be downloaded by National Reference Centres from the ETC/AE's CIRCLE Interest Group, including the documentation needed to run the tools

<http://etc-ae.eionet.eu.int:8980/etc-circle/Public/IRCindex.pl>

### Set up

- **From the down loaded file:** Unzip the file to a temporary directory, read the Readme file and run SETUP.EXE
- **From diskette:** Please read carefully the Readme file and then install the software by running SETUP.EXE from the first diskette.

Setup is self-explanatory and should be trouble free. If it is not, please inform SPIRIT at once.

### Files installed

There are 4 main files copied into the destination directory:

- ReportER.exe           The programme
- ReportER\_man.html    The help files
- ReportER.mdb           The **ReportER** database, containing conversion tables for IPCC format and EMEP format
- ReportER\_Read.me     Important information

In addition 2 files are needed to browse the ReportER\_man.html file, which should be:

- Hh.exe
- Hctrl.ocx

and 2 more files (MS Excel templates) stored in the .\ExcelDir folder are:

- IPCC.xlt
- UNECE.xlt

Besides these, files of the MS-DAO jet engine 3.0 are installed.

An 'Uninstall' option is available. For removing of the **ReportER** package use the standard 'add/remove software' procedure in the Windows Control Panel.

A 'ReportER.ini' file is created at the first runnig of **ReportER**. Two lines will be saved in this 'ini' file. The first one contains the path and name of the **CollectER** database file opened during the latest run. (e.g. DBNAME=C:\CollectER\Data\country95.mdb), the second one contains the path to **ReportER** own working database file ReportER.mdb.

## 2. How to use ReportER

The current version of the **ReportER** software is designed to generate the following two sets of reports:

- UNFCCC (IPCC-format) summary reports according to the 1996 revised IPCC Guidelines for National Greenhouse Gas Inventories;
- UNECE/CLRTAP (EMEP/CORINAIR format) reports, according to the joint EMEP/CORINAIR Atmospheric Emission Inventory Guidebook.

As a source of data for both sets of reports **ReportER** uses data as stored in a **CollectER** database file. This file contains national emission inventory data for one year, the base year.

If the National Reference Centre wants to produce an IPCC-format or EMEP-format report, he has first to open one of the available **CollectER** database files. After this selection, both types of reports are available to the user.

### 2.1. UNFCCC (IPCC format) report

The aim of the UNFCCC (IPCC format) reporting option is to produce reports in the form of text files or MS Excel files from data stored in the **CollectER** database file.

The reports satisfy the current requirements regarding summary tables of the UNFCCC (in agreement with the 1996 IPCC Guidelines for national Greenhouse Gas Inventories) on annual reporting of CO<sub>2</sub> and other greenhouse gas emissions. It should be noted that within the framework of UNFCCC/SBSTA there is an ongoing discussion in 1998/1999 on revision of the current UNFCCC Guidelines (see for example the 'Draft revised text of the UNFCCC Guidelines for Reporting Inventory Data by Annex 1 Parties, FCCC/SBSTA/1999/INF.1/Add.1, 23 February 1999). This can result in different and more detailed reporting requirements (or 'Common reporting format') than the summary tables currently produced by the **ReportER** software. After formal adoption of the revised UNFCCC Guidelines, EEA/ETC-AE will consider the needs for revision and further improvement of the software to be in line with these requirements.

The MS Excel sheets, within one MS Excel workbook are created in the format of the 'summary tables' 1 through 7 as presented in the IPCC Guidelines (Volume 1, 'Reporting Instructions'). Summary table 8 cannot be extracted from the data as stored in the national inventory. This table should be filled out manually by the user. The template however is available to the user.

The 'IPCC-format' reporting option calculates the emissions of the greenhouse gases CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O and the ozone precursors NO<sub>x</sub>, CO and NMVOC from the selected **CollectER** database according to IPCC source and sink categories.

#### 2.1.1. *Specific issues concerning the IPCC-format report*

A number of specific issues are taken into account in **ReportER**. These issues are derived from specific choices made in the IPCC guidelines.

- In table 1A 'Fuel Combustion Activities', CO<sub>2</sub> from combustion of biomass fuels and biomass-containing waste fuels is reported for information but it is not included in the national totals. Default fractions of organic C in wastes are

assumed. The National Reference Centre can edit the contribution ratio of the fuel according to his actual requirements.

- CO<sub>2</sub> emissions in IPCC sector 3 (solvent and other product use) results from the ultimate oxidation of NMVOCs to CO<sub>2</sub> in the atmosphere. The CO<sub>2</sub> emissions from solvent use thus are calculated from the NMVOC emissions using the following expression:

$$Emission(CO_2) = C_{content} \times Emission(NMVOC) \times \frac{44}{12}$$

C<sub>content</sub> is the carbon content of the solvents and is set by default to 0.85. The user can modify the default value of C<sub>content</sub>. The numbers 44 and 12 represents the molecular weights of CO<sub>2</sub> en C respectively.

- CO<sub>2</sub> emissions from agriculture are reported from agricultural soils only (if available in the **CollectER** database).
- CO<sub>2</sub> emissions from SNAP sector 09 originating from organic wastes should not be reported in the IPCC-format report. They are reported in memo items for information purposes only. Again default ratios are set. However, the National Reference Centre can edit these values according to his own requirements.
- all emissions from international aviation and marine are reported in memo items for information only. They are not included into national totals.
- SNAP sub-sectors 1101 through 1120 are excluded from reporting except for N<sub>2</sub>O emissions from the SNAP subsectors 1105 and 1106

### 2.1.2. *Producing the report*

The IPCC format report is produced by conversion of emissions from SNAP97 subsectors (designed to meet reporting requirements of both CLRTAP and UNFCCC) used in the **CollectER** system into IPCC-format source and sink categories. Also the fuels used in the **CollectER** system are converted into IPCC-type fuels. The conversion tables used during this conversion are stored in the **ReportER** working database 'ReportER.mdb'. The user should and can not modify these conversion tables.

The current version of the IPCC-format reporting module requires that the SNAP97 coding has been used for the file containing the national emission inventory.

When selecting the IPCC-format report option the user first has to calculate the emissions by clicking the relevant button.

When the emissions have been calculated, the user can select one of eight reports (report groups). The reports are numbered according to the summary tables in the 1996 IPCC Guidelines. The **ReportER** software performs the appropriate conversion on emission data and loads the results into a working grid. The user has the possibility to browse the results of the conversion.

### 2.1.3. *Exporting*

Finally the user can export the data into Excel sheets (some tables need more than one sheet), in the predefined format (1996 IPCC Guidelines) or into a tab separated text file.

Since **ReportER** does not provide printing, the user should always export the results to a spreadsheet or word processing tool and use this tool's printing functions.



## 2.2. UN/ECE CLRTAP (EMEP format) report

This reporting option produces summary tables as required by UNECE/CLRTAP following the EMEP/CORINAIR format (SNAP level 1 and 2).

The report is in agreement with the current UNECE/CLRTAP reporting requirements, making use of the joint EMEP/CORINAIR Atmospheric Emission Inventory Guidebook (second edition, draft available on <http://www.aeat.co.uk/netcen/airqual/TFEI/unece.htm> to be published in 1999 on the EEA internet web site <http://www.eea.eu.int>).

The software uses the tables UNECE\_Head and UNECE\_Nem in the working database. The first of these contains the codes of pollutants used in the UNECE reports. The second table is used to determine SNAP codes and pollutants, which are not reported in the UNECE report.

### 2.2.1. Specific issues concerning the EMEP-format report

All emissions of CO<sub>2</sub> in the UNECE LRTAP (EMEP format) report are, by definition, equal to those in the IPCC report:

- In table 1A 'Fuel Combustion Activities', CO<sub>2</sub> from combustion of biomass fuels and biomass-containing waste fuels is reported for information but it is not included in national totals. The National Reference Centre can specify the contribution ratio of the fuel according to actual requirements.
- CO<sub>2</sub> emissions in IPCC sector 3 (solvent and other product use) results from the final oxidation of NMVOCs to CO<sub>2</sub> in the atmosphere. The CO<sub>2</sub> emissions from solvent use thus are calculated from the NMVOC emissions using the following expression:

$$Emission(CO_2) = C_{content} \times Emission(NMVOC) \times \frac{44}{12}$$

$C_{content}$  is the carbon content of the solvents and is set by default to 0.85. The user can modify the default value of  $C_{content}$ . The numbers 44 and 12 represent the molecular weights of CO<sub>2</sub> en C respectively.

- CO<sub>2</sub> emissions from agriculture are reported only from agricultural soils if available
- CO<sub>2</sub> emissions from SNAP sector 09 originating from organic wastes should not be reported in the IPCC report. They are reported in memo items for information purposes only. However, the National Reference Centre is allowed to set this according to his own requirements.
- emissions of all other pollutants (except CO<sub>2</sub>) from domestic and international aviation and marine cruise are not reported. CO<sub>2</sub> from domestic airport and cruise traffic is reported as it is in the IPCC-format report.

Both reports (IPCC format and EMEP format) use two special tables defining the contribution of special fuels to CO<sub>2</sub> emission as well as SNAP codes for which no CO<sub>2</sub> emissions are reported in both types of reports.

Producing and exporting the UNECE/CLRTAP (EMEP format) tables is fully analogous to what has been described above for the IPCC-format reports.

## 3. Detailed description of ReportER functions

This chapter describes all functions of the **ReportER** tool in detail.

### 3.1. Main menu options

After start up of **ReportER** a window similar to the **CollectER** main window appears on the screen. In the upper part of this window there is a bar in which the main menu is displayed. Depending on the active dialogues or windows in **ReportER**, a secondary menu appears. On this secondary menu the items **Edit** and **Window** appear. **Edit** and **Window** are derived from standard Windows95™ tools.

#### 3.1.1. Main menu: File

The main menu item **File** opens a roll-down menu with the following items:

- **Open Database** – opens a **CollectER** database file. The database is represented as a single file. The name of this database file was created by the National Reference Centre using **CollectER** or equivalent. It is recommended to include the year code in the name of database file.
- **Compact Database** – performs compacting of the open database to defragment the file and free disk space. If you delete data, your database can become fragmented and use disk space inefficiently. Compacting the database makes a copy of the database, rearranging how the database file is stored on disk.
- **Close Database** – enables the user to close the open **CollectER** database. Nevertheless the **ReportER** database remains open and the user is allowed to view the data in this database.
- **Exit** – exits the application.

The name of the open database file is displayed in the main window caption and the year of the current inventory is displayed in the upper right corner of this window.

#### 3.1.2. Main menu: Edit

This menu option is activated only if any of the windows from the '**Root Data**' or '**Reports**' main menu option is active. This option contains the standard Windows95 items:

- **Copy** – copies content of the area marked with mouse cursor into clipboard.
- **Cut** – removes content of the area marked with mouse cursor.
- **Paste** – pastes content of the clipboard into the area which is marked by mouse cursor.
- **Undo** – cancels last action – recalls previous state.

#### 3.1.3. Main menu: Root data

The menu **Root data** allows the user to view and modify code

- **Pollutants** – after this option is initialised, a new window containing a list of the pollutants appears on the screen. These pollutants are used for IPCC-format reporting. National Reference Centre has no possibility to add or remove items in this list. There is only one control button on this window. Its caption is **Close** and it closes this screen.

- **IPCC categories** – after activation of this option a window, containing a grid with a list of all IPCC source categories appears on the screen. The National Reference Centre have no possibility to add or remove items from this list. There is only one control button on this window. Its caption is **Close** and it closes this screen.
- **IPCC-SNAP-pollutants** – is a special option which enables the user to determine the emission contribution for individual pollutants produced by a particular activity (SNAP) to a particular IPCC source category. After activation of this option a window containing a grid with the already defined records appears on the screen. In most cases these default values should produce the correct IPCC format reports.

In some cases however, the user might want to modify the default contributions or add new ones. To this end, this window contains a set of buttons from which only two are enabled immediately after activation of the window. Following push buttons can be used with this window:

- √ **Edit** – starts editing mode. After its activation the National Reference Centre can edit fields in the grid by double clicking of a field. All editing has to be done very carefully, because inputted values are not checked. After finishing of the editing, all work has to be saved using the **Save** button or it can be cancelled using the **Cancel** button. Along with the activation of the **Edit** button all remaining buttons are enabled.
- √ **Insert** – enables insertion of a new record in the table. The new record is to be saved using the **Save** button.
- √ **Delete** – deletes the record marked by cursor. After deletion of the record, content of the grid must be written into database using the **Save** button. The **Cancel** button cancels deletion so no record will be deleted if the **Cancel** button was used immediately after **Delete**.
- √ **Save** – this buttons saves the content of the grid into the database table. At the same time it disables editing and enables to leave this dialogue using the **Close** button.
- √ **Cancel** – cancels all changes which were not previously saved with **Save** button.
- √ **Close** – closes this working window.
- **Emission exclusions** – this option opens a window, containing a grid with the already defined list of SNAP codes for which emissions of some pollutants are excluded from reporting in the EMEP format report. The National Reference Centre can modify these rules but this should be done very carefully. Working with this dialogue is fully analogous to what was described for the previous dialogue.

The following two options affect CO<sub>2</sub> reporting for both IPCC format and EMEP format reports:

- **CO<sub>2</sub> contributions by SNAP** – enables the user to exclude all or part of CO<sub>2</sub> emissions produced by a particular SNAP from reporting. Contribution ratios are prefilled for the SNAP activities related to the ‘waste sector’ 09. After activation of the option a window containing the already defined exclusions appears on the screen. The window contains the same buttons as previously described that are used in the same way.
- **CO<sub>2</sub> contributions by Fuels** – enables the user to define contribution ratios of particular fuel group to the CO<sub>2</sub> emission in both reports. The CO<sub>2</sub> contribution ratios by fuel groups concern only SNAP sectors with fuel combustion, which are sectors 01, 02, 03, 07 and 08. This is to be able to exclude emissions from biomass fuels. After activation of this option a window

containing the already defined exclusions appears on the screen. The window contains the same buttons as previously described that are used the same way.

### 3.1.4. Main menu: Reports

The main menu option **Reports** is a crucial part of the **ReportER** software, because here data are assembled for both types of reports. In the IPCC format report a transformation between SNAP codes and codes as used in appropriate reports (IPCC source categories for IPCC format reports) is performed and the appropriate aggregations are calculated.

- **IPCC format (Revised 1996 Guidelines) reporting** – after choosing this option a new window will appear on the screen with a set of push buttons in this window:
  - √ **Calculate** – if the National Reference Centre wishes to assemble IPCC format reports, he has to activate this button first. With activating this button the emissions are calculated (similarly as in **CollectER**).
  - √ **Table i** – after clicking any of the **Table** buttons, a new window appears on the screen. This window contains a grid in which the aggregated emissions according to IPCC source categories as defined for the actual IPCC table are displayed. The table number corresponds to the IPCC summary tables as defined in the revised guidelines. The National Reference Centre can browse the data and generate required output reports.

The following buttons, enabled after a report is activated, allow for export of the data:

- √ **Excel** – this button is used to export the IPCC format report into an MS Excel file, which has the form as required by IPCC. The National Reference Centre can choose between storing the actual report into a new MS Excel file or storing it into an already existing Excel file. In both cases a standard MS window appears, which allows the user to choose existing the file or to define a new reporting file. After the filename was chosen, MS Excel becomes active and the appropriate MS Excel sheet will be displayed. The user can return to **ReportER** using the Windows95 task bar or the 'Alt-Tab' combination and generate a new a IPCC reporting table when needed. All tables will be copied on individual sheets within a single Excel workbook.
- √ **Export** – this button is used to export all data into a tab separated text file. After activation a standard MS open file dialogue appears on the screen. The user can enter the name of the file, which will be used for the data.
- √ **Close** – this button closes the window.
- **EMEP format reporting** – after choosing this option a new window will appear on the screen. This window allows aggregation of the data in the open **CollectER** database to the levels as needed in the EMEP format reports. The following buttons appear in this window:
  - √ **Calculate** – if the National Reference Centre wishes to assemble a EMEP format report, he has to activate this button first. After its activation a set of five buttons will be enabled. This set of buttons compile and export the EMEP format reports.
  - √ **Summary** – after clicking of the **Summary** button, a new window appears on the screen. This window contains a grid in which emissions according to the 11 CORINAIR/EMEP main sectors (SNAP level 1) are displayed. The user can browse the summary data and generate the required output reports.
  - √ **Sub-sector** – after clicking of the **Sub-sector** button, a new window appears on the screen. This window contains a grid in which EMEP emissions

according to the SNAP level 2 from the actual **CollectER** inventory is displayed. National Reference Centre can browse assembled data and generate required output reports.

Both the Summary and Sub-sector windows contain buttons performing the same functions as for the IPCC format report.

- **Excel** – this button is used to generate IPCC format report into an MS Excel file. The National Reference Centre can choose between storing actual report into new MS Excel file or storing it into an already existing Excel file. In both cases a standard MS window appears, which allows the user to choose existing file or to define new reporting file. After the file was chosen, MS Excel gets active and the appropriate MS Excel sheet will be displayed. The user can return into **ReportER** using the Windows95 task bar or the 'Alt-Tab' combination and generate new a IPCC format reporting table. All tables will be copied on individual sheets within a single Excel spreadsheet.
- **Export** – this button is used to export all data into a comma separated text file. After activation standard MS window appears on the screen. The user can enter name of the file, which will be used for the data.
- **Close** – this button closes currently opened screen.

#### *3.1.5. Main menu: View*

There is only one option **Status bar** available. If activated the status bar showing the actual status of application will be displayed on the bottom of the screen.

#### *3.1.6. Main menu: Window*

This option is active only if there is active any of the windows, which can be activated from main menu options **Root Data** or **Reports**. The sub-menu of this main menu option contains standard Windows95 items:

- **Cascade** – cascades opened windows.
- **Tile** – tiles the windows on the screen.
- **Arrange Icons** – rearranges icons on the screen.
- List of active windows – in the second part of this menu option a list of active windows is displayed.

#### *3.1.7. Main menu: Help*

- **Index** – displays content of this file.
- **About ReportER** – basic information about this programme

### **3.2. Other useful information**

#### *3.2.1. Controls*

Push (Command) Buttons – choosing a push button initialises an immediate action, such as carrying out or cancelling a command. There are two basic types of push buttons used in **CollectER**:

- function buttons – activating these buttons performs common or special functions, e.g. **Calculate**, **Edit**, **Close**, etc. for common functions, **Table i**, **Summary** etc. for special functions. The function of the button is determined with its caption. Special buttons usually display new screens.

- Drop-down list boxes – Combo boxes – appears initially as a rectangular box with the current selection marked by selection cursor. When the user selects the arrow in the square box at the right, a list of available choices appears. If there are more items than can fit in the box, scroll bars are provided.
- Option Buttons – so called ‘radio buttons’ represents mutually exclusive options. The user can select only one option at a time.
- Check Boxes -a check box next to an option means you can select or clear the option. The user can select as many check box option as needed. When a check box is selected, it contains the sign that looks like ‘v’.