

# **RECOMMENDATIONS**

**on developing and reporting  
national programmes under the  
National Emission Ceilings Directive**

**Working Group on Implementation  
of the  
Clean Air For Europe (CAFE) programme**

**3 April 2006**

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# 1. Background

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## 1.1 Legislative context

Articles 6, 7 and 8 of the National Emission Ceilings Directive (NECD)<sup>1</sup> lay down the reporting requirements for Member States for their national programmes and emission inventories and projections. The Member States were required by the Directive to inform the Commission of their national programmes for the first time by 31<sup>st</sup> December 2002. Under Article 6(2), the NECD states that national programmes should include:

*‘... information on adopted and envisaged policies and measures and quantified estimates of the effect of these policies and measures on emissions of the pollutants in 2010. Anticipated significant changes in the geographical distribution of national emissions shall be indicated.’*

With respect to emissions projections, Article 8(1) of the NECD states that *‘Member States shall [...] report their national emissions inventories and their emission projections for 2010 [...] Emission projections shall include information to enable a quantitative understanding of the key socio-economic assumptions used in their preparation.’*

Although 10 Member States have acceded the EU after the first date by which Member States were obliged to draw up national programmes, the requirement mentioned in article 6 (3) to *‘... update and revise ...’* national programmes by 1 October 2006, applies equally to all Member States.

The NECD states in Article 8(4) that the Commission has to establish guidance with respect to reporting on national programmes:

*‘The Commission shall [...] establish provisions to ensure consistent and transparent reporting of national programmes.’*

The information sent by the EU-15 Member States by 2002 was evaluated in two studies (EEA, 2004; Entec 2000a) and along with a wealth of useful information a considerable number of shortcomings was noted. In view of the importance of adequate monitoring the progress in Member States and the need of efficient exchange of information on national programmes between Member States and the Commission, the Commission proposed to the Clean Air for Europe Steering Group to develop guidelines on the development and reporting of national programmes.

The recommendations in this document have been drawn up by the Working Group on Implementation (Annex F), established by the European Commission as a part of the CAFE programme. The Working Group could build upon a detailed proposal for guidelines that had been drafted beforehand by ENTEC (Entec, 2005b) in the framework of a consultancy study for DG Environment.

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<sup>1</sup> Directive 2001/81/EC – OJ L 309, 27.11.2001, p.22.

## 1.2 Purpose and structure of the recommendations

The purpose of these recommendations is to improve the standard of reporting of national programmes under the NECD and ensure better harmonisation with existing national plans and programmes for policy areas closely linked to air pollution, and in particular those relating to emissions of greenhouse gases. The purpose is also to give recommendations to the Member States when developing the programmes under the NECD. Hence, these recommendations aim at achieving a number of benefits, including:

- *Higher quality emission inventories and projections* enabling earlier and more accurate definition of any required additional emission reduction measures and associated policies, thus facilitating potentially lower cost compliance solutions;
- *National Programmes that fully comply with the requirements of the NECD* thus meeting legal requirements and making the process of reporting under the Directive as efficient as possible;
- *Greater harmonisation of reporting requirements* thus reducing the administrative burden and facilitating greater consistency in assumptions and parameters etc, enabling the Commission and Member States to learn from each other.

In line with the three purposes given above, the recommendations are clustered in three chapters:

- *Chapter 3 How to prepare emission inventories and projections*
- *Chapter 4 How to prepare national programmes*
- *Chapter 5 How to report on national programmes*

Table 2 in the next chapter, listing the contents of the reports on the national programmes, gives a more detailed reference to the various sections of the guidance.

## 2. Scope and structure of the reports on national programmes

All Member States are encouraged to ensure that their national programmes include all of the information presented in Table 1. This table indicates also where in this guidance report the recommendations can be found.

**Table 1 Report on national programme: content and structure**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Guidance on |                                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Preparation | Reporting                            |
| <b>1. Executive Summary</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | -           | Section 5.2                          |
| <b>2. Political and administrative procedure of adoption of national programme</b><br><br>Description of the political and administrative procedure of preparation and adoption of the national programme. It includes a description of the political procedure for adoption as well as any consultation(s) that has been undertaken with stakeholders. Political status of the national programme is also be specified.                                                                                                                                                                                                                                                                                                                         | Section 4.2 | Section 5.3<br>Annex C<br>(table C2) |
| <b>3. Policies and measures</b><br><br>Information on the policies and measures taken into account in the emission projections for each sector and pollutant including: <ul style="list-style-type: none"> <li>- Name of policy or measure;</li> <li>- Objective of policy or measure;</li> <li>- Pollutant(s) affected;</li> <li>- Type of policy instrument;</li> <li>- Status of policy or measure;</li> <li>- Implementing body;</li> <li>- Quantitative impact of policy or measure on emissions of each pollutant in 2010 (in kts); and,</li> <li>- Clear indication of which policies and measures have been taken into account in the emission projections ('with measures' and, where relevant, 'with additional measures').</li> </ul> | Section 4.3 | Section 5.4<br>Annex C<br>(table C3) |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |             |                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------------------|
| <p><b>4. Emission inventories and projections</b></p> <p>Historic emissions and emission projections ('with measures' and 'with additional measures') for the source sector categories set out in the nomenclature for reporting (NFR). Where an emission ceiling for a pollutant is projected to be exceeded under a 'with measures' scenario, a 'with additional measures' emissions projection is needed taking into account additional policies and measures beyond those that have already been implemented or adopted.</p> <p>The level of uncertainty associated with the emissions data should be investigated, resulting in quantitative estimates of the associated uncertainty where possible.</p> <p>The socio-economic assumptions and model parameters taken into account in the emission projections should be made clear.</p> | Chapter 3   | Section 5.5<br>Annex A, B, D         |
| <p><b>5. Geographical distribution of emissions</b></p> <p>Indication of any anticipated changes in the geographical distribution of emissions</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | -           | Section 5.6<br>Annex C               |
| <p><b>6. Costs and benefits of policies and measures</b></p> <p>Information on costs of policies and measures and potential benefits for health and the environments</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | -           | Section 5.7<br>Annex C<br>(table C1) |
| <p><b>7. Evaluation and monitoring of the national programme</b></p> <p>Procedure for evaluating and monitoring the implementation of their national programme and progress towards achieving NECs should be clearly documented in the national programme including descriptions and values of any indicators to monitor and evaluate progress with policies and measures over time.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Section 4.4 | Section 5.8                          |

## 3. How to prepare emission inventories and projections

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### 3.1 Principles of emission estimation

Member States are required by Annex III of the NECD to use ‘...*the methodologies agreed upon by the Convention on Long-Range Transboundary Air Pollution and are requested to use the joint EMEP/CORINAIR guidebook in preparing these inventories and projections.*’ Member States should ensure that the principles outlined in the UNECE Guidelines for Estimating and Reporting Emission Data under the Convention on Long-Range Transboundary Air Pollution (2003) are adhered to for the preparation of emission inventories and projections. The historic and projected emissions data presented should be ‘...transparent, consistent, comparable, complete and accurate.’ These are defined in the UNECE guidelines for reporting under the CLRTAP as the following (amendments have been made to adapt the principles to reporting under the NECD):

**a. Transparency:** There should be sufficient and clear documentation that individuals or groups other than the inventory compilers can understand how the inventory was compiled and can assure themselves it meets any good practice requirements required for the reported inventory. The transparency of emission reporting is fundamental to the success of the process for the use, review and improvement of information;

**b. Consistency:** Estimates for different inventory years, gases and categories are made in such a way that differences in the results between years and categories reflect real differences in emissions. Inventory annual trends, as far as possible, should be calculated using the same method and data sources in all years and should aim to reflect the real annual fluctuations in emissions or removals and not be subject to changes resulting from methodological differences... *Under certain circumstances<sup>2</sup>, emission data using different methodologies for different years can be considered to be consistent if they have been recalculated in a transparent manner, taking into account guidance in the EMEP/CORINAIR Atmospheric Emission Inventory Guidebook<sup>3</sup>;*

**c. Comparability:** The national inventory is reported in a way that allows it to be compared with national inventories for other countries. This should be reflected in appropriate use of the reporting guidelines and reporting tables and use of the classification and definition of categories of emissions presented in the EMEP/CORINAIR guidebook and *the applicable methodologies and formats* [specified in Annex III of the NECD and in these reporting guidelines].

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<sup>2</sup> These circumstances may occur when some activity or other data is missing for historical years so alternative methodologies may need to be employed to estimate emissions for these years.

<sup>3</sup> Referred to as the EMEP/CORINAIR Guidebook from this point onwards.

*d. Completeness:* Estimates are reported for all relevant categories of sources<sup>4</sup>, compounds<sup>5</sup> and geographic areas within the scope of these reporting requirements and any associated documents (e.g. the CORINAIR Guidebook) as well as other existing known relevant source categories that are specific to individual Parties and, therefore, may not be included in the Guidebook. Where elements are missing their absence should be clearly documented internally using the appropriate notation keys and highlighted in association with any published data.

*e. Accuracy:* That the national inventory contains neither over- nor underestimates so far as can be judged. This means making all endeavours to remove bias from the inventory estimates.

## 3.2 Methodologies

As specified in Annex III of the NECD, Member States should use the EMEP/CORINAIR Guidebook to estimate emissions and projections for each source. However, the Guidebook allows Member States to use different national or international methodologies if they are considered to be more representative of the national situation and are compatible with the Guidebook. However, when using alternative methods, the transparency of the inventory should be maintained and therefore a description of the chosen alternative method should also be recorded. To comply with the inventory quality requirements of consistency any time series data provided for the NEC should be consistent. Where methods are revised for the latest year or base year these revisions should be applied to the other years of the inventory and new estimates compiled. The following text is taken from the UNECE Guidelines for Estimating and Reporting Emission Data under the Convention on Long-Range Transboundary Air Pollution (2003) sections 15, 16 and 17.

*15. The aim of recalculations is to ensure consistency of the time series and thus the improvement of accuracy and/or completeness. The inventories of an entire time series, including the base year and all subsequent years for which inventories have been reported, should be estimated using the same methodologies, and the underlying activity data and emission factors should be obtained and used in a consistent manner. Where the methodology or manner in which underlying activity data and emission factors are gathered have changed significantly, each Party should recalculate all inventory data for the base and subsequent years to the extent practicable.*

*16. However, in some cases activity data or other data may be missing for some historical years, including the base year. In this case, emissions for these years may need to be estimated with alternative methodologies. In these instances, each Party should demonstrate that the time series is consistent. The alternative methodologies should be documented in a transparent manner, taking into account guidance provided by the EMEP/CORINAIR Guidebook.*

*17. Recalculations cannot change emission ceilings that are set in Protocols in absolute terms. In those Protocols, the base year emission data are given for information only and do not restrict a Party's ability to refine its base year inventory, and subsequent year*

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<sup>4</sup> NECD national programmes should cover all sources excluding international shipping and aviation outside of the LTO cycle. France, Portugal and Spain also have specific territories which are exempt from inclusion under the NECD (Article 2).

<sup>5</sup> Under the NECD Member States must report data on NO<sub>x</sub>, SO<sub>2</sub>, VOC and NH<sub>3</sub>.

*inventory, as improved information becomes available. Recalculations may also have an impact on emission reduction or control obligations that are relative to base year emissions. If there are significant changes in emissions data, a Party may report on such exceptional circumstances, in particular with reference to article 7, paragraph 1 (b)(iv), of the 1999 Gothenburg Protocol.*

Emission projections for 2010 for each of the pollutants should also be estimated and aggregated to the relevant source sector categories set out in Annex B for reporting. Member States should calculate a **‘with measures’** projection for each of the NECD pollutants taking into account all currently implemented and adopted policies and measures. Member States also are encouraged to calculate a **‘with additional measures’** projection taking into account all planned policies and measures especially if the **‘with measures’** projection has shown that an emission ceiling will be exceeded.

Member states should ensure that these projections are consistent with national projected Socio-economic assumptions such as traffic, population and economic growth/decline. Consistency with other reported projections, including those under the EUMM and CLRTAP are encouraged where timeframes permit.

Member States may also calculate a **‘without measures’** projections to illustrate the achievements of the **‘with measures’** and **‘with additional measures’** projections. A **‘without measures’** projection should exclude all policies and measures implemented, adopted or planned after the year chosen as the starting year for this projection.

These projections should be calculated so that they comply with the quality requirements identified in a – e above. Importantly the methodology, assumptions, documentation and data for projected estimates should be transparent and enable independent in depth review.

### ***QA/QC Procedures***

Member States are encouraged to use appropriate QA/QC procedures to ensure data quality and to verify<sup>6</sup> and validate<sup>7</sup> their emissions data. These procedures should be consistent with those described in the EMEP/CORINAIR Guidebook and the Intergovernmental Panel on Climate Change (IPCC) report *‘Good Practice Guidance and Management of Uncertainties’* (IPCC GPG, 2000) or any future updates of this document. Member States may want to refer to reports under the monitoring mechanism or other reports submitted to the Commission, under the UN/ECE CLRTAP or under the UNFCCC.

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<sup>6</sup> Verification defined in the IPCC GPG (2000) report as *‘...the collection of activities and procedures that can be followed during the planning and development, or after completion of an inventory that can help to establish its reliability for the intended applications of that inventory. Typically, methods external to the inventory are used to check the truth of an inventory, including comparisons with estimates made by other bodies or with emission and uptake measurements determined from atmospheric concentrations or concentration gradients of these gases.’*

<sup>7</sup> Validation defined in the IPCC GPG (2000) report as *‘...the establishment of sound approach and foundation. In the context of emission inventories, validation involves checking to ensure that the inventory has been compiled correctly in line with reporting instructions and guidelines. It checks the internal consistency of the inventory. The legal use of validation is to give an official confirmation or approval of an act or product.’*

### *Uncertainty*

Member States are encouraged to undertake a sensitivity analysis of their emission projections, focused on the key input variables in their projection models. Member States may consider to define a **high**, **central** and **low** scenario for the key input variables and to quantify projected emissions for these scenarios. Member States may also consider to developing a measure of robustness of their predictive model and its methods used for their assessments. Member States may consider the use of multi-variant scenarios, using combinations of input variables.

## 4. How to prepare the national programme

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### 4.1 General

For easy reference, this guidance on the preparation of national programmes follows the structure of the report to the Commission described in Chapter 5. However, the national programme as it is laid down in national documents may differ from the report to the Commission. The national programme should be best fit for its purpose within the Member States, and the documents may e.g. much more detailed than the report on the national programme to be sent to the Commission.

### 4.2 Political and administrative procedure of adoption

#### *Authorities involved*

Member States are encouraged to involve all relevant Governmental Agencies, ministries and/or regional or even local authorities during the development of their national programme in order to ensure that the most accurate and coherent baseline data is used for developing emission inventories and projections and that all potential issues have been identified. To the extent possible, all consultations carried out during the development of the national programme should be clearly documented.

#### *Stakeholder consultation*

Member States are encouraged to undertake consultation with relevant stakeholders at the different stages of the process (programme preparation, implementation and review) in a transparent manner. Consultation during the early stages of development will ensure that the emissions baseline, that forms the basis of the emission projections, is as accurate as possible. Consultation might also improve the acceptance of the policies and measures proposed in the national programme when it is eventually implemented. To the extent possible, all consultations carried out during the development of the national programme should be clearly documented.

#### *Co-ordination with other reporting requirements*

Member States are encouraged to co-ordinate, to the extent feasible, the development of their NECD national programme and associated emission inventories and projections with other national plans, programmes and reporting requirements, inter alia those related to:

- the Convention on Long Range Transboundary Air Pollution (CLRTAP),
- the Community Greenhouse Gas Reporting Mechanism (Decision 280/2004/EC)
- the Monitoring Directive,
- the UNFCCC,
- the Ambient Air Quality Directive (96/62/EC),
- Large Combustion Plant Directive (LCPD 2001/80/EC),
- the Nitrates Directive (Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources),
- the IPPC Directive (96/61/EC) and

- the Water Framework Directive (2000/60/EC).

Improved co-ordination will highlight the co-benefits of policies and measures and ensure greater consistency between submissions. In particular, increasing the linkages with climate change reporting should encourage the promotion and increased consideration of policies and measures that reduce both greenhouse gases and NECD pollutants. Linkages and co-ordination between these different reporting requirements should be highlighted in the national programme.

### 4.3 Policies and measures

Member States are encouraged to consider a range of policy instruments for achieving their NECs. These options include economic instruments, information sharing, RTD, as well as the more traditional regulatory (command and control) instruments. In addition to NECD specific measures, Member States are encouraged to evaluate the potential for emissions reduction from policies and measures that are not focused on NECD but that may have benefits or compromises to the NECD targets. Information on economic instruments have a specific interest as these are often based on national circumstances, also, this type of instrument can be more cost-effective than other instrument to achieve emission reductions. Examples of economic instruments include:

- *Emissions trading.* For example, in the Netherlands a NO<sub>x</sub> trading scheme is being introduced for large installations in the industry, energy, refineries and waste processing sectors. Petrochemical plants, refineries and power plants > 20 MWth capacity will trade in permits based on emissions per unit of energy whereas permits for steel, aluminium, cement, saltpetre and phosphate plants as well as incinerators will be based on emissions per product unit. This trading scheme will be used to meet the industry-specific emission ceiling for NO<sub>x</sub> of 55kt by 2010 and will come into force in 2005.
- *Emission charges.* In Sweden an aviation charging scheme is aimed at reducing emissions from the landing and take-off cycle. This has been in place since 1998. Sweden has also implemented a NO<sub>x</sub> charge for emissions from large stationary sources in the form of the NO<sub>x</sub> Act (1990).
- *Energy taxes* have been developed by a number of different Member States (for example, Finland has levied a tax on fossil fuels since 1997 calculated on the basis of CO<sub>2</sub> emissions).
- *Congestion charging.* Both Sweden and the UK are considering, or have already implemented, *congestion charging* and the establishment of *low emission zones* to reduce emissions from transport.
- *Higher taxes on more polluting vehicles.* Several Member States levy higher taxes on older and more polluting vehicles to encourage the purchase and use of cleaner vehicles (for example, Germany has implemented an emissions based Motor Vehicle Tax).
- *Energy efficiency grants.* Several Member States provide energy efficiency grants to encourage the use of more efficient technologies and processes such as low NO<sub>x</sub> domestic boilers, for example.

If Member States choose to implement economic instruments, these should be reported as for other policies and measures (described in the next chapter and set out in Annex C). In particular, details should be provided on the type of instrument (for example, tax, charge, subsidy, emissions trading etc.), objectives of the instrument, timescales for implementation, the sectors and organisations concerned and how it will be monitored and regulated.

Member states are encouraged to develop a prioritised list on the basis of feasibility (within the timescale) and cost. The list should be prepared and developed through more detailed assessment work to arrive at a set of measures and, if necessary, additional measures designed to meet the NECD obligations.

Member States should develop a review mechanism for the policies and measures related to the achievements of the NEC.

Member States should consider any negative impacts that chosen measures may have on other programmes or pollutants (e.g. use of energy intensive abatement technology) and show that this consideration has been made for the chosen measures.

## **4.4 Evaluation and monitoring of the national programme**

To ensure successful implementation of the national programme, it is important to define procedures for monitoring and evaluating the implementation and the progress towards the NEC targets. Member States can then see whether the necessary steps are indeed being taken. They can detect deviations from the plans and where necessary they can take measures to improve the implementation.

It is very useful to define indicators for monitoring the state of implementation. For national programmes the most relevant indicator is of course the national emission of the NEC pollutant. However, this is not specific enough for quantifying the implementation status of individual measures comprising the national programme. Therefore, a set of indicators should be chosen that give better insight in the performance of the various elements of the programme.

Indicators can be of various types:

- Indicating new resources allocated by the responsible authorities (e.g. the number or man-years of civil servants within local and regional authorities involved or the number of relevant licences issued).
- Indicating changes in the activities within the sectors addressed (e.g. the number of sources with new provisions installed or the increase in the number clean vehicles sold, the average mileage of passenger cars, etc.).
- Indicating changes in the emissions of the target sector (e.g. the national emission by agriculture or the emission of public transport in cities).
- Indicating changes further ‘downstream’ in the cause-effect chain: concentrations, exposure, effects. For national emission programmes, this type of indicators is less suitable as they usually cannot be quantitatively traced back to the effect of specific measures. However, if they can be directly related to a source type, e.g. soot trends at traffic sites, they could be of use.

Indicators can be chosen at various integration levels:

- Indicating changes at the national, regional, local or individual source level. For national programmes, the national indicators will often aggregate regional and/or local indicators.
- Indicators at the sectoral level or individual source level.
- Indicators for the effect of reduction programmes or individual policies and measures.

Important features of indicators are:

- Traceability to base data. It should be possible to trace back why changes occur (or do not occur).
- Demonstrable progress over time. An appropriate indicator shows in one glance whether the distance to target decreases as planned.
- Simplicity and clarity. The indicator used should be suitable for communication between the actors involved. Simplification might cause a subjective element in the value of the indicator, which should be explicitly communicated.
- Specificity and sensitivity to the measure in question. Perhaps the most important feature is that the indicator should show only the changes that are due to the measure or programme in question. Changes that would have happened anyway, also when the measure was not taken should not affect the indicator. This often requires an analysis for subtracting the inherent development from the observed total change.

Especially the European Environment Agency has been very active in the development of indicators. A wealth of information can be found at its website <http://www.eea.eu.int/>.

## **5. How to report on the national programme to the Commission**

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### **5.1 General**

Each Member State should only submit one complete report on the national programme which should be applicable to the entire Member State, rather than reports on separate plans for different regions. The report should comprise a brief written report on the National Programme following the reporting format in Annex C and the emissions inventory and data spreadsheets to present the estimates and underlying data in Annexes A, B and D.

The report on the NECD national programme must be submitted in an official language of the European Commission. It is strongly recommended to add a translation into English, possibly of only the most relevant parts (this translation would not have an official status).

In view of the shortcomings in some of the reports sent by 2002 (see the references given in Chapter 1), Member States should consider redrafting their 2002 report along the lines given in these recommendations, thus allowing better comparison and more insight in the progress in the period 2002-2006. These redrafted reports should then be added as an annex to the 2006 report, with the status of a clarification of the 2002 report.

### **5.2 Executive summary**

As indicated in Annex C the report to the Commission should include an executive summary summarising the information provided in the programme and highlighting whether or not the NECs are likely to be achieved under implemented and adopted policies and measures or whether additional policies and measures are required. The executive summary should be of no more than 10 pages. Particularly for the executive summary it is strongly recommended to add a translation in English.

### **5.3 Political and administrative procedure of adoption**

Member States should report information on the political and administrative procedure for preparation and adoption of the programme. This information should be both informative and as short as possible. The lists in Annex C can be used as a guide. As indicated in Annex C the report should include the following information:

- i. a basic description of the procedure for preparation and adoption;
- ii. the regulatory status of the national programme;
- iii. the authorities that have been involved in the development of the programme;
- iv. the consultation(s) that undertaken with stakeholders;

- v. any co-ordination with other national plans, programmes and reporting requirements.

## 5.4 Policies and measures

An overview of the possibilities to reduce emissions under the NECD should be reported as an introduction to the policies and measures reporting to illustrate the breadth of actions considered and, as far as appropriate, the rationale for excluding some measures from further analysis.

A prioritised list of important policies and measures derived from the overview should be presented and further elaborated provided in subsequent sections of the report.

The elaboration should include detailed reporting on planned, adopted and/or implemented policies and measures which limit and/or reduce emissions of the four NECD pollutants, taking all appropriate levels of administration into account. This should include the following information, which should be reported in the format specified in Annex C:

- i. name and brief description of policy or measure;
- ii. the objective of the policy or measure. This should highlight the key benefits of the policy or measure including identification of the source categories affected;
- iii. NECD pollutant(s) affected;
- iv. the type of policy instrument;
- v. the status of implementation of the policy or measure (where relevant, a policy or measure should be described as implemented, adopted or planned);
- vi. the responsible body or bodies for implementing the policy or measure should be described;
- vii. aggregated quantitative estimate of the impact of policy or measure on emissions of each NECD pollutant in 2010 and 2020 should be provided (expressed in kilotonnes). This may be expressed as a range of potential impacts to reflect the uncertainty in any estimates.
- viii. clear indication of whether the policy or measure has been taken into account in the 'with measures' or 'with additional measures' emission projections.
- ix. Indication of the impacts of this measure on greenhouse gas emissions (e.g. is it an energy intensive measure that increases GHG emissions).

Separate tables should be presented for each sector although Member States may present separate text and tables describing cross-sectoral policies and measures. The following aggregate sectors should be considered:

- Combustion in power plants and industry;
- Transport;
- Commercial, residential and other stationary combustion (unregulated combustion);

- Fugitive emissions from fuels;
- Industrial processes;
- Solvent and other product use;
- Agriculture;
- Waste; and,
- Other (to be specified)

Where applicable, groups of measures can be aggregated to reduce the burden on reporting. However, where aggregation occurs the documentation should clearly define assumptions and aggregation methodologies.

## 5.5 Emissions and projections

The report to the Commission should include information on national inventories and projections, as it has been reported in the latest submission to the Commission according to Art. 8(1) of the NECD.

Reporting tables are provided in Annexes A, B and D. These tables provide a structure and identify specific variables for reporting. While Member States are encouraged to report their data in the structured tables provided or referenced, more simple and database orientated reports could also be sent as long as they contain all of the variables specified in the tables (including annotation keys for data not included (see Annex E) in comma delimited text files and conform to the referenced “Simple” format provided in these annexes.

**Data on Historic Emissions:** Historic emissions should be reported for each of the pollutants for the source sector categories as defined in Annex A. Where the data is available, Member States should report emissions data from 1980 onwards. As a minimum, emissions data for the latest year available must be reported and/or data for the year used as the starting point of the emission projections.

**Data on Emissions Projections:** Emission projections for 2010 for each of the pollutants should also be reported for the sectors and years in the table set out in Annex B. As far as available, projection data may be reported on a more detailed level of NFR. As a minimum, a ‘with measures’ projection should be reported; different projections scenarios should be clearly distinguished:

- A ‘**with measures**’ projection taking into account all currently implemented and adopted policies and measures;
- A ‘**with additional measures**’ projection taking into account all planned policies and measures;
- A business as usual ‘**without measures**’ projection should exclude all policies and measures implemented, adopted or planned after the year chosen as the starting year for this projection.

**Data on socio-economic assumptions:** Member States are required by Article 8(1) of the NECD to report quantitative information on the key socio-economic assumptions and model

parameters behind their emission projections. To improve transparency and ensure consistency with reporting under the EU Greenhouse Gas Monitoring Mechanism, Member States should report, if used, the assumptions and parameters listed in Annex D Part 1 and are also encouraged to report the parameters on projections listed in Annex D Part 2. These assumptions and parameters should be reported for 2010 and the year chosen as the starting year for the projections. Where assumptions and data are the same as that used for reporting under the monitoring mechanism the Member State may refer to that data submission but should also provide linking references in their report so that the projected emissions data are transparent.

**Background information:** Member States are encouraged to provide a report outlining the key background and explanations behind the reported emissions and activity data. This report should be brief but aimed at making the reported data transparent. The report should include:

- Explanation of sources excluded from the estimates, including the reason(s) for exclusion.
- Explanation of sources reported that are grouped in categories defined as “Other” or “Included Elsewhere” (IE).
- Explanation of the significant emission trends and the reasons behind dips and jumps in the time series.
- An explanation of the links between the socio-economic data and the projections.
- An explanation of the data sources, methods and assumptions used for the estimates or reference to standard methods and assumptions adopted from the EMEP/CORINAIR Guidebook.
- An explanation of inconsistencies with similar data reported under the EUMM and referred to under the NECD reporting.
- An assessment of the uncertainties (as quantitative as possible) of the projected and historic emissions estimates by pollutant. If no quantitative estimates can be provided then at least indications of main uncertainties should be provided.
- A brief description of the QA/QC procedures and inventory infrastructure to aid potential reviewers finding information and assessing the transparency of the inventory.

Where appropriate this report can refer to other reports provided to the EU or to the UNECE as long as the reports make reference to consistent data.

## 5.6 Geographical distribution of emissions

Article 6(2) of the NECD requires Member States to indicate in their national programmes if any significant changes in the geographical distribution of emissions are anticipated in 2010. If no changes are anticipated then this should be specified in the national programme.

## **5.7 Costs and benefits of policies and measures**

Member States are encouraged to report on:

- the additional costs (in Euros) and cost effectiveness (€/tonne pollutant abated) of individual policies and measures in national programmes; and
- the additional benefits for health (for example, reduction in incidences of air pollution related illnesses, such as asthma, or hospital admissions) and/or the environment (for example, reduction in the number of exceedances of critical loads for acidification or eutrophication) associated with policies and measures in national programmes.

Where this information is provided, supporting information should be provided to enable the Commission to understand the scope, basis and key assumptions behind the estimates of additional costs and benefits. Member States are encouraged to refer to methodologies employed for the CAFE cost benefit analysis for calculating and reporting the costs and benefits associated with each policy and measure. See Annex C.

## **5.8 Evaluation and monitoring of the national programme**

It is recommended to include a description of the indicators used for monitoring the progress of the programme. The list should for each indicator indicate to which part of the programme, policy or measure it relates. For each indicator, the initial value and an indication of the envisaged development over time in the years up to 2010 could be included in the report. The list could be given in tabular form.

## 6. References

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EEA (2003) Reporting of key parameters underlying projections. Final Version, European Topic Centre on Air and Climate Change, European Environmental Agency, March 2003

EEA (2004) An initial assessment of Member States' national programmes and projections under the National Emission Ceiling's Directive (2001/81/EC). European Topic Centre on Air and Climate Change (ETC/ACC) Technical Paper 2003/8 for the European Environment Agency, April 2004.

Entec (2005a) National Emission Ceilings Directive Review – Task 1 – In depth analysis of the NEC national programmes. Draft final report for DG Environment, European Commission, February 2005.

Entec (2005b) National Emission Ceilings Directive Review – Task 2 – Proposals for guidelines for the reporting of national programmes under the NECD. Report for DG Environment, European Commission, May 2005.

EEA (2004a) EMEP/CORINAIR Emission Inventory Guidebook - 3<sup>rd</sup> edition September 2004 Update, European Environment Agency, September 2004.

IPCC GPG (2000) Penman, J., Kruger, D., Galbally, I., Hiraishi, T., Nyenzi, B., Emmanul, S., Buendia, L., Hoppaus, R., Martinsen, T., Meijer, J., Miwa, K. and Tanabe, K. (2000) Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories, Intergovernmental Panel on Climate Change (IPCC) National Greenhouse Gas Inventories Programme, May 2000. Available at: <http://www.ipcc-nggip.iges.or.jp/public/gp/english/> Accessed January 2005.

UNECE (2003) Air Pollution Studies No. 15 – Guidelines for Estimating and Reporting Emission Data under the Convention on Long-range Transboundary Air Pollution. Prepared by the Convention's Task Force on Emissions Inventories and Projections and the secretariat, United Nations Economic Commission for Europe, Geneva, 2003.

UNFCCC (2000) Review of the implementation of commitments and of other provisions of the convention – UNFCCC guidelines on reporting and review. Conference of the Parties, fifth session, 25 October – 5 November 1999. Published 16 February 2000.

UNFCCC (2003) Review of the implementation of commitments and of other provisions of the convention – UNFCCC guidelines on reporting and review. Conference of the Parties, eighth session, 23 October – 1 November 2002. Published 28 March 2003.

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# Annex A

## Reporting historic emissions data

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Reporting should be for years 1980 to the latest year (reporting year –2 years) and use the reporting tables for the CLRTAP/UNECE reporting [table1\\_v2004-1.xls](http://www.emep.int/emis2006/reporting_templates.html) on [http://www.emep.int/emis2006/reporting\\_templates.html](http://www.emep.int/emis2006/reporting_templates.html). Member states are required to complete table 1 including the extension sheet for the relevant NECD pollutants (NO<sub>x</sub>, SO<sub>2</sub>, VOC and NH<sub>3</sub>). As a minimum, emissions data for the latest year available must be reported and/or data for the year used as the basis of the emission projections.

Exclusions permitted for NECD reporting from these tables are:

- The additional pollutants in these tables
- The following sectoral lines in the tables
  - 1 A 3 a ii (ii) Civil Aviation (Domestic, Cruise)
  - 1 A 3 a i (i) International Aviation (LTO)
  - 1 A 3 a i (ii) International Aviation (Cruise)
  - 1 A 3 d i (i) International maritime Navigation
  - 1 A 3 d i (ii) International inland waterways (Included in NEC totals only)
  - 5 E 5 E Other
  - X (11 08 Volcanoes)

Fully completed tables used to report under CLRTAP will be accepted as long as these are provided within the appropriate time limits for reporting.

The notation keys in Annex F should be used to annotate emissions sources not reported.

Simple reporting format for Historic Emissions:

| Country                             | Date of Submission | Inventory Submission Year | NFR Code             | NFR description | Pollutant                                                          | Year | Emission | Notes                                                                                             |
|-------------------------------------|--------------------|---------------------------|----------------------|-----------------|--------------------------------------------------------------------|------|----------|---------------------------------------------------------------------------------------------------|
| Country code (e.g. DE, ES, UK, AT.) | dd/mm/yy           |                           | NFR code (see above) |                 | Short name (NO <sub>x</sub> , SO <sub>2</sub> , NH <sub>3</sub> .) |      | Gg       | Use this field to include a note or where the emission are excluded and an annotation key is used |

# Annex B

## Format for reporting projected emissions

Member States should report in the format below for projected emissions and indicate if these estimates are with or without measures, and additional measures included. The aggregation is based on the detailed NFR taken from Annex IV B of the UNECE Guidelines for Estimating and Reporting Emission Data under the Convention on Long-range Transboundary Air Pollution, 2003 and adapted to the Common Reporting Format used under UNFCCC. The notation keys in Annex E should be used to annotate emissions sources not reported.

Please note that the format below should be used for each NECD-substance. However, Member States could report the projected emissions in one integrated table as well.

| Substance: .....                                                         | Emissions in Kilotonnes     |                     |                      |                            |                          |
|--------------------------------------------------------------------------|-----------------------------|---------------------|----------------------|----------------------------|--------------------------|
|                                                                          | Aggregation for projections | Reference Year 2000 | Latest Historic Year | Projected Target Year 2010 |                          |
| Business As Usual                                                        |                             |                     |                      | With Measures              | With Additional Measures |
| 1 A 1 Energy industries (Combustion in power plants & Energy Production) |                             |                     |                      |                            |                          |
| 1 A 2 Manufacturing Industries and Construction (Combustion in industry) |                             |                     |                      |                            |                          |
| 1 A 3 b Road Transport                                                   |                             |                     |                      |                            |                          |
| 1 A 3 Other Transport                                                    |                             |                     |                      |                            |                          |
| 1 A 4 Other sectors                                                      |                             |                     |                      |                            |                          |
| 1 B Fugitive emissions (from fuels)                                      |                             |                     |                      |                            |                          |
| 2 Industrial processes                                                   |                             |                     |                      |                            |                          |
| 3 Solvent and other product use                                          |                             |                     |                      |                            |                          |
| 4. Agriculture                                                           |                             |                     |                      |                            |                          |
| 6. Waste                                                                 |                             |                     |                      |                            |                          |
| Other sectors not included above                                         |                             |                     |                      |                            |                          |
| Other sectors not included above                                         |                             |                     |                      |                            |                          |
| Other sectors not included above                                         |                             |                     |                      |                            |                          |
|                                                                          |                             |                     |                      |                            |                          |
| <b>Total Emission</b>                                                    |                             |                     |                      |                            |                          |

Reporting format for Projections:

| <i>Country</i>                               | <i>Date of Submission</i> | <i>Inventory Submission Year</i> | <i>Aggregation for Projections Sector</i> | <i>Pollutant</i>                     | <i>Year</i> | <i>Measures</i>               | <i>Emission</i> | <i>Notes</i>                                                                      |
|----------------------------------------------|---------------------------|----------------------------------|-------------------------------------------|--------------------------------------|-------------|-------------------------------|-----------------|-----------------------------------------------------------------------------------|
| <i>Country code (e.g. DE, ES, UK, AT...)</i> | <i>dd/mm/yy</i>           |                                  | <i>NFR aggregation (see above)</i>        | <i>Short name (NOx, SO2, NH3...)</i> |             | <i>None, With, additional</i> | <i>Gg</i>       | <i>Use this field to include a note or where the emission are excluded and an</i> |

# Annex C

## Reporting format for the National Programme

Table C1 Executive Summary

|                                                                                                    |                   |                                                          |
|----------------------------------------------------------------------------------------------------|-------------------|----------------------------------------------------------|
| <b>Summary of implemented P&amp;Ms</b>                                                             |                   |                                                          |
| <i>Text</i> _____                                                                                  |                   |                                                          |
| <b>Will the national ceilings be achieved for:</b>                                                 | SO <sub>2</sub>   | <input type="checkbox"/> Yes <input type="checkbox"/> No |
|                                                                                                    | NO <sub>x</sub>   | <input type="checkbox"/> Yes <input type="checkbox"/> No |
|                                                                                                    | VOC               | <input type="checkbox"/> Yes <input type="checkbox"/> No |
|                                                                                                    | NH <sub>3</sub>   | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| <b>If no, summary of additional P&amp;Ms to achieve NEC</b>                                        |                   |                                                          |
| <i>Text</i> _____                                                                                  |                   |                                                          |
| <b>Significant changes in the geographical distribution of emissions anticipated for 2010 for:</b> | SO <sub>2</sub>   | <input type="checkbox"/> Yes <input type="checkbox"/> No |
|                                                                                                    | NO <sub>x</sub>   | <input type="checkbox"/> Yes <input type="checkbox"/> No |
|                                                                                                    | VOC               | <input type="checkbox"/> Yes <input type="checkbox"/> No |
|                                                                                                    | NH <sub>3</sub>   | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| <b>If yes, please specify</b> _____                                                                |                   |                                                          |
| <i>Text</i> _____                                                                                  |                   |                                                          |
| <b>Other information</b>                                                                           | <i>Text</i> _____ |                                                          |

Table C2 Procedure of adoption

|                                               |                                                                                                                                                                                                                                                                  |
|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Procedure for preparation and adoption</b> |                                                                                                                                                                                                                                                                  |
| <i>Text</i> _____                             |                                                                                                                                                                                                                                                                  |
| <b>Regulatory status of the programme</b>     | <input type="checkbox"/> In planning<br><input type="checkbox"/> before adoption<br><input type="checkbox"/> adopted<br><input type="checkbox"/> Other _____                                                                                                     |
| <b>Authorities involved</b>                   | <input type="checkbox"/> National Government<br><i>Specify ministries/departements</i> _____<br><input type="checkbox"/> Regional or local Governments<br><i>Specify names</i> _____<br><input type="checkbox"/> Others not listed<br><i>Specify names</i> _____ |
| <b>Consultations undertaken</b>               | <input type="checkbox"/> Industry<br><i>Specify names</i> _____                                                                                                                                                                                                  |

|                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                  | <input type="checkbox"/> Industry associations<br><i>Specify names</i> _____<br><input type="checkbox"/> NGO's Environment<br><i>Specify names</i> _____<br><input type="checkbox"/> Public<br><i>Specify how</i> _____<br><input type="checkbox"/> Other _____<br><i>Specify how</i> _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Consultations: Approach (time frame, method to consider response), Problems and Barriers encountered</b><br><i>Text</i> _____ |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Other national Plans and Programmes &amp; Directives considered in the preparation of the National Programme</b>              | <input type="checkbox"/> Monitoring Mechanism and to the UNFCCC<br><input type="checkbox"/> Emissions Trading<br><input type="checkbox"/> National Kyoto Strategy (National Climate Change Programmes)<br><input type="checkbox"/> Plans under the AQFWD ( 96/62/EC)<br><input type="checkbox"/> Ozone depletion data reporting under the Montreal protocol<br><input type="checkbox"/> IPPC (96/61/EC)<br><input type="checkbox"/> Fuel sulphur content (1999/32/EC )<br><input type="checkbox"/> Large Combustion Plant Directive (2001/80/EC)<br><input type="checkbox"/> Quality of petrol & diesel fuels Directive (98/70/EC)<br><input type="checkbox"/> Directives on waste incineration (94/67/EEC and 2000/76/EEC)<br><input type="checkbox"/> Petrol Storage & Distribution (94/63/EC)<br><input type="checkbox"/> Limitation of emissions of VOCs from organic solvents (99/13/EEC)<br><input type="checkbox"/> EURO vehicle standards I-V (98/69/EC)<br><input type="checkbox"/> Labeling & limitation of solvents in products COM(2002)750<br><input type="checkbox"/> Other _____ |
| <b>Other information (optional)</b><br><i>Text</i> _____                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

**Table C3 Policies and measures (One table per measure or group of measures)**

|                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                    |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>P&amp;M (group) No.</b>                                                             | Number [automatic running number]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                    |
| <b>Name of policy or measure (or group)</b>                                            | Text [max. 30 characters]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                    |
| <b>Brief description of policy or measure (or group)</b><br>Text [max. 256 characters] |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                    |
| <b>Sector(s) targeted for reduction</b>                                                | <u>Main</u><br><input type="checkbox"/> Energy Supply<br><input type="checkbox"/> Transport<br><input type="checkbox"/> Industrial Process<br><input type="checkbox"/> Domestic<br><input type="checkbox"/> Agriculture<br><input type="checkbox"/> Waste                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <u>Supplementary</u><br><input type="checkbox"/> Energy Supply<br><input type="checkbox"/> Transport<br><input type="checkbox"/> Industrial Process<br><input type="checkbox"/> Domestic<br><input type="checkbox"/> Agriculture<br><input type="checkbox"/> Waste |
| <b>Objective of measure(s), activities affected</b>                                    | <input type="checkbox"/> Energy Efficiency: Buildings<br><input type="checkbox"/> Energy Efficiency: Industry<br><input type="checkbox"/> Energy Efficiency: Transport<br><input type="checkbox"/> Waste and resource efficiency<br><input type="checkbox"/> Increase Renewable<br><input type="checkbox"/> Reduce Congestion<br><input type="checkbox"/> Reduce specific emissions<br><input type="checkbox"/> Reduce fuel consumption<br><input type="checkbox"/> Resource Sustainability<br><input type="checkbox"/> Agricultural Sustainability<br><input type="checkbox"/> Technological change<br><input type="checkbox"/> Behaviour change<br><input type="checkbox"/> Fuel quality (including S content)<br><input type="checkbox"/> ELVs<br><input type="checkbox"/> Energy efficiency<br><input type="checkbox"/> Abatement technology<br><input type="checkbox"/> Fuel switching<br><input type="checkbox"/> Product switching<br><input type="checkbox"/> Technique switching<br><input type="checkbox"/> Sustainable transport<br><input type="checkbox"/> Agricultural measures<br><input type="checkbox"/> Waste recycling<br><input type="checkbox"/> Renewables<br><input type="checkbox"/> Eco-labelling<br><input type="checkbox"/> Green taxes<br><input type="checkbox"/> Sector emission ceilings<br><input type="checkbox"/> Best practice / guidance<br><input type="checkbox"/> Emissions trading<br><input type="checkbox"/> Controls on solvent use & content<br><input type="checkbox"/> Congestion charging<br><input type="checkbox"/> Publicity & promotion |                                                                                                                                                                                                                                                                    |

|                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                       | <input type="checkbox"/> Rural development<br><input type="checkbox"/> Other _____                                                                                                                                                                                                                                                                                                          |
| <b>NECD pollutants affected</b>                                                                                                                                       | <input type="checkbox"/> NOx <input type="checkbox"/> SO2 <input type="checkbox"/> VOC <input type="checkbox"/> NH3                                                                                                                                                                                                                                                                         |
| <b>Type of instruments</b>                                                                                                                                            | <input type="checkbox"/> Economic<br><input type="checkbox"/> Fiscal<br><input type="checkbox"/> Negotiated agreements<br><input type="checkbox"/> Voluntary agreements<br><input type="checkbox"/> Regulatory<br><input type="checkbox"/> Information<br><input type="checkbox"/> Education<br><input type="checkbox"/> Research<br><input type="checkbox"/> Other _____                   |
| <b>Status of policy, measure or group</b>                                                                                                                             | <input type="checkbox"/> implemented, current mitigation impact<br><input type="checkbox"/> implemented, future mitigation impact<br><input type="checkbox"/> adopted<br><input type="checkbox"/> planned<br><input type="checkbox"/> expired<br><input type="checkbox"/> Other _____                                                                                                       |
| <b>Implementing entity or entities</b>                                                                                                                                | <input type="checkbox"/> National Government<br><i>Specify name</i> _____<br><input type="checkbox"/> Local or Regional Government<br><i>Specify name</i> _____<br><input type="checkbox"/> Industry<br><i>Specify name</i> _____<br><input type="checkbox"/> Industry associations<br><i>Specify name</i> _____<br><input type="checkbox"/> Others not listed<br><i>Specify name</i> _____ |
| <b>Estimate of mitigation impact, by pollutant, in 2010 (kt) if available quantify by pollutant or indicate where included in the model parameters of projections</b> | NOx _____ kt reduction from 2010<br>SO2 _____ kt reduction from 2010<br>VOC _____ kt reduction from 2010<br>NH3 _____ kt reduction from 2010                                                                                                                                                                                                                                                |
| <b>Is the policy or measure included only in the 'With measures' projections reported under annex B?</b>                                                              | <input type="checkbox"/> Yes <input type="checkbox"/> No                                                                                                                                                                                                                                                                                                                                    |
| <b>Is the policy or measure included only in the 'With additional measures' projections reported under Annex B?</b>                                                   | <input type="checkbox"/> Yes <input type="checkbox"/> No                                                                                                                                                                                                                                                                                                                                    |
| <b>Mitigation impact of measure on Greenhouse Gas (GHG) emissions in target year (2010)</b>                                                                           | <input type="checkbox"/> Specific GHG emission reduction measure/group<br><input type="checkbox"/> Significantly reduces GHG's<br><input type="checkbox"/> Significantly increases GHGs<br>Please specify impact.....<br><input type="checkbox"/> Other comments.....                                                                                                                       |

|                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>How is progress monitored</b></p>    | <p><input type="checkbox"/> Specific reporting<br/> <i>Identify reporting commitments</i> _____</p> <p><input type="checkbox"/> Using national annual emissions inventories &amp; Projections</p> <p><input type="checkbox"/> State of the Environment Reporting</p> <p><input type="checkbox"/> Other activity based indicators<br/> <i>Identify indicators</i> _____</p> <p><input type="checkbox"/> Nationally coordinated annual review<br/> <i>Specify name and status</i> _____</p> <p><input type="checkbox"/> Other _____</p> |
| <p><b>Other information (optional)</b></p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

# Annex D

## Socio-economic assumptions and model parameters to be reported

**Table D1 Parameters on Projections<sup>8</sup>**

*Detailed Table:*

| Activity                                            | Projected Target 2010               |                   |                                         | Units | Notes 2010 on Measures included excluded..          |
|-----------------------------------------------------|-------------------------------------|-------------------|-----------------------------------------|-------|-----------------------------------------------------|
|                                                     | Latest Reference Historic Year 2000 | Business As Usual | With Additional Measures <sup>(b)</sup> |       |                                                     |
| <b>Assumptions for general economic parameters:</b> |                                     |                   |                                         |       |                                                     |
| 1. Gross Domestic Product (GDP)                     |                                     |                   | -                                       | -     | Value                                               |
| 2. Population                                       |                                     |                   | -                                       | -     | Thousand People                                     |
| 3. International coal prices                        |                                     |                   | -                                       | -     | € per tonne or GJ (Gigajoule), Other please specify |
| 4. International oil prices                         |                                     |                   |                                         |       | € per barrel or GJ                                  |
| 5. International gas prices                         |                                     |                   |                                         |       | € per m3 or GJ                                      |
| <b>Assumptions for the energy sector:</b>           |                                     |                   |                                         |       |                                                     |
| 1) Total gross inland consumption                   |                                     |                   |                                         |       |                                                     |
| 1. - Oil (fossil)                                   |                                     |                   |                                         |       | Petajoule (PJ)                                      |
| 2. - Gas (fossil)                                   |                                     |                   |                                         |       | Petajoule (PJ)                                      |
| 3. - coal                                           |                                     |                   |                                         |       | Petajoule (PJ)                                      |
| 4. - wood                                           |                                     |                   |                                         |       | Petajoule (PJ)                                      |
| 5. - bio-oils                                       |                                     |                   |                                         |       | Petajoule (PJ)                                      |

<sup>8</sup> These parameters are the same as those requested under *COMMISSION DECISION of 10 February 2005 laying down rules implementing Decision No 280/2004/EC of the European Parliament and of the Council concerning a mechanism for monitoring Community greenhouse gas emissions and for implementing the Kyoto Protocol (notified under document number C(2005) 247) (2005/166/EC)*. Member States may refer to these reports for this data if the information is consistent with the emissions projections reported under the NEC.

|                                                                                                                                                               |                                                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|
| 6. – solar                                                                                                                                                    | Petajoule (PJ)                                            |
| 7. - Other renewable<br>(wind, geothermal etc)                                                                                                                | Petajoule (PJ)                                            |
| Total electricity production<br>by fuel type                                                                                                                  |                                                           |
| 8. - Oil (fossil)                                                                                                                                             | GWh                                                       |
| 9. - Gas (fossil)                                                                                                                                             | GWh                                                       |
| 10. – coal                                                                                                                                                    | GWh                                                       |
| 11. – Renewable                                                                                                                                               | GWh                                                       |
| <b><u>Assumptions for Industry: (for industrial sectors contributing more than 1% of the national total for the base or target year)</u></b>                  |                                                           |
| <i>For Member States using<br/>macroeconomic models:</i>                                                                                                      |                                                           |
| 12. The share of the industrial sector in GDP and growth rate. (e.g. iron & steel, other metals, cement, coke production, pulp and paper, petroleum refining) |                                                           |
| ...A row for each industrial<br>sector....                                                                                                                    | % share                                                   |
| <i>For Member States using other models:</i>                                                                                                                  |                                                           |
| 13. The physical<br>production index: (e.g.<br>iron & steel, other metals,<br>cement, coke production,<br>pulp and paper, petroleum<br>refining)              |                                                           |
| ...A row for each industrial<br>sector....                                                                                                                    | GVA or index<br>units                                     |
| <b><u>Assumptions for the transport sector</u></b>                                                                                                            |                                                           |
| <i>For Member States using macroeconomic models:</i>                                                                                                          |                                                           |
| 14. The growth of<br>transport relative to GDP                                                                                                                |                                                           |
|                                                                                                                                                               | Transport<br>units? What<br>should these<br>units be..... |
| <i>For Member States using other models:</i>                                                                                                                  |                                                           |
| 15. Passenger person<br>kilometres                                                                                                                            | Million<br>passenger km                                   |
| 16. The growth of freight<br>tonne kilometres                                                                                                                 | Million tonne<br>km                                       |
| 17. Fleet turnover<br>assumptions (vehicle<br>replacement)                                                                                                    | % of new<br>vehicles per<br>year                          |
| <b><u>Assumptions for buildings (in residential and commercial or tertiary sector)</u></b>                                                                    |                                                           |
| <i>For Member States using macroeconomic models:</i>                                                                                                          |                                                           |
| 18. The level of private<br>consumption (excluding<br>private transport)                                                                                      | XXX                                                       |
| 19. The share of the<br>tertiary sector in GDP and<br>the growth rate                                                                                         | % share                                                   |
| <i>For Member States using other models:</i>                                                                                                                  |                                                           |

|                                                                            |                                |
|----------------------------------------------------------------------------|--------------------------------|
| 20. The rate of change of floor space for tertiary buildings and dwellings | XXX                            |
| 21. The number of dwellings and number of employees in the tertiary sector | XXX                            |
| <b><u>Assumptions in the agriculture sector</u></b>                        |                                |
| <i>For Member States using macroeconomic models:</i>                       |                                |
| 22. The share of the agriculture sector in GDP and relative growth         | % share                        |
| <i>For Member States using other models:</i>                               |                                |
| The livestock numbers by animal type                                       |                                |
| 23. enteric fermentation beef,                                             | Thousand Places <sup>8</sup> . |
| 24. enteric fermentation cattle                                            | Thousand Places <sup>8</sup> . |
| 25. enteric fermentation dairy cows                                        | Thousand Places <sup>8</sup> . |
| 26. enteric fermentation sheep                                             | Thousand Places <sup>8</sup> . |
| 27. manure management beef,                                                | Thousand Places <sup>8</sup> . |
| 28. manure management cattle                                               | Thousand Places <sup>8</sup> . |
| 29. manure management dairy cows                                           | Thousand Places <sup>8</sup> . |
| 30. manure management sheep                                                | Thousand Places <sup>8</sup> . |
| 31. manure management Pigs                                                 | Thousand Places <sup>8</sup> . |
| 32. manure management Poultry                                              | Thousand Places <sup>8</sup> . |
| 33. The area of crops by crop type                                         |                                |
| ... Please add rows and specify crop type....                              | Hectares                       |
| The emissions factors                                                      |                                |
| 34. enteric fermentation beef,                                             | Tonnes NH3 /thousand places    |
| 35. enteric fermentation cattle                                            | Tonnes NH3 /thousand places    |

|                                                                                                                                                                                           |                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| 36. enteric fermentation dairy cows                                                                                                                                                       | Tonnes NH3 /thousand places     |
| 37. enteric fermentation sheep                                                                                                                                                            | Tonnes NH3 /thousand places     |
| 38. manure management beef,                                                                                                                                                               | Tonnes NH3 /thousand places     |
| 39. manure management cattle                                                                                                                                                              | Tonnes NH3 /thousand places     |
| 40. manure management dairy cows                                                                                                                                                          | Tonnes NH3 /thousand places     |
| 41. manure management sheep                                                                                                                                                               | Tonnes NH3 /thousand places     |
| 42. manure management Pigs                                                                                                                                                                | Tonnes NH3 /thousand places     |
| 43. manure management Poultry                                                                                                                                                             | Tonnes NH3 /thousand places     |
| 44. fertilizer use                                                                                                                                                                        | Tonnes NH3/tonne fertilizer     |
| <b><u>Assumptions in the waste sector</u></b>                                                                                                                                             |                                 |
| 45. Waste generation                                                                                                                                                                      | Tonnes total or tonnes / capita |
| 46. The organic fractions of municipal solid waste                                                                                                                                        | %                               |
| 47. Municipal solid waste disposed to landfills, or (                                                                                                                                     | in tonnes or %                  |
| 48. Municipal solid waste disposed incinerated                                                                                                                                            | in tonnes or %                  |
| 49. Municipal solid waste disposed composted                                                                                                                                              | in tonnes or %                  |
| [8] One animal place is equivalent to the average number of livestock for any one year and takes account of animals that do not live for a whole year but are replaced by more livestock. |                                 |

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*Simple Reporting format for Projection Parameters:*

| Country                              | Date of Submission | Aggregation for Projections Sector | Pollutant                    | Year | Measures               | Emission |
|--------------------------------------|--------------------|------------------------------------|------------------------------|------|------------------------|----------|
| Country code (e.g. DE, ES, UK, AT..) | dd/mm/yy           | NFR aggregation (see above)        | Short name (NOx, SO2, NH3..) |      | None, With, additional | Gg       |

## **D2 Recommended parameters on projections**

### Assumptions for general economic parameters

- GDP growth rates split by industrial sectors in relation to 2000
- Comparison projected data with official forecasts

### Assumptions for the energy sector

- National coal, oil and gas energy prices per sector (including taxes) – suggested sectors are electricity and heat generation, industry, commercial, residential and transport. Constant prices should be quoted.
- National electricity prices per sector as above (may be model output)
- Total production of district heating by fuel type

### Assumptions for the industry sector

#### *For Member States using macroeconomic models:*

- Share of GDP for different sectors and growth rates
- Rate of improvement of energy intensity (1990 = 100)

#### *For Member States using other models:*

- Index of production for different sectors
- Rate of improvement or index of energy efficiency

### Assumptions for buildings (in residential and commercial or tertiary sector)

#### *For Member States using macroeconomic models:*

- Share of tertiary and household sectors in GDP

- 
- Rate of improvement of energy intensity

*For Member States using other models:*

- Number of households
- Number of new buildings
- Rate of improvement of energy efficiency (1990 = 100)

#### Assumptions for the transport sector

*For Member States using econometric models:*

- Growth of transport relative to GDP – split by passenger and freight
- Improvements in energy efficiency – split by vehicle type
- Improvements in energy efficiency – split by vehicle type, specify whether it applies to whole fleet or new cars
- Rate of change of modal split (passenger and freight)
- The growth of passenger road kilometres
- The growth of passenger rail kilometres
- The growth of passenger aviation kilometres
- The growth of freight tonne kilometres on the road
- The growth of freight tonne kilometres by rail
- The growth of freight tonne kilometres by navigation

#### Assumptions for the agriculture sector

*For Member States using econometric models:*

- Agricultural trade (import/export)
- Domestic consumption (e.g. milk/beef consumption)

*For Member States using other models:*

- Development of area of crops, grassland, arable, set-aside, conversion to forests etc
- Macroeconomic assumptions behind projections of agricultural activity
- Description of livestock (e.g. by input/nutrient balance, output/animal production, milk production quota/productivity of cattle)
- Development of farming types (e.g. intensive conventional, organic farming)

- 
- Distribution of housing/grazing systems and housing/grazing period
  - Parameters of fertiliser regime:
    - Details of fertiliser use (type of fertiliser, timing of application, inorganic/organic ratio);
    - Volatilisation rate of ammonia, following spreading of manure on the soil;
    - Efficiency of manure use.
  - Parameters of manure management system:
    - Distribution of storage facilities (e.g. with or without cover):
      - Nitrogen excretion rate of manures;
      - Methods of application of manure.
    - Extent of introduction of control measures (storage systems, manure application), use of best available techniques
  - Parameters related to NH<sub>3</sub> emissions from agricultural soils (e.g., Nitrogen leaching fraction, emission factor for direct emissions, Nitrogen content in crop residues)
  - Amount of manure treatment

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## Annex E

### Notation keys

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| Definition                   | Explanation                                                                                                                                                                                                                                                                                                                                    |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Not estimated (NE)           | Emissions and removals occur but have not been estimated or reported.                                                                                                                                                                                                                                                                          |
| Included elsewhere (IE)      | Emissions and removals for this activity or category are estimated and included in the inventory but not presented separately for this category. The category where these emissions and removals are included should be indicated.                                                                                                             |
| Confidential information (C) | Emissions or removals are aggregated and included elsewhere in the inventory because reporting at a disaggregated level could lead to the disclosure of confidential information.                                                                                                                                                              |
| Not applicable (NA)          | The activity or category exists but relevant emissions and removals are considered never to occur.                                                                                                                                                                                                                                             |
| Not occurring (NO)           | An activity or process does not exist within a country...                                                                                                                                                                                                                                                                                      |
| Not mandatory (NM)           | According to Para. 9 in the Emission Guidelines, Emission inventory reporting should cover all years from 1980 onwards, if data are available. However, "NM" (Not Mandatory) is introduced to ease the reporting where emissions are not strictly required by the different Protocols. E.g. for some Parties emissions of NMVOC prior to 1988. |

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## **Annex F**

# **Members of the CAFE Working Group on Implementation**

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|                     |                                                        |
|---------------------|--------------------------------------------------------|
| Hans Herremans      | Ministry of VROM, Netherlands (chair)                  |
| Andreas Barkman     | European Environmental Agency                          |
| Bruno Celard        | Europaia                                               |
| Eduard Dame         | DG Environment, European Commission                    |
| Riccardo DeLauretis | APAT, Italy                                            |
| Alenka Fritzel      | Environmental Agency, Slovenia                         |
| Justin Goodwin      | AEAT / European Topic Centre on Air and Climate Change |
| Michael Harryman    | DEFRA, United Kingdom                                  |
| Dick van den Hout   | TNO / Consultant to the Commission                     |
| Pasi Iivonen        | Ymparisto, Finland                                     |
| Duncan Johnstone    | DG Environment, European Commission                    |
| David Knight        | AMINAL, Belgium                                        |
| Bostjan Paradiz     | JRC, European Commission                               |
| Manfred Ritter      | Umweltbundesamt, Austria                               |