

ANNEX 1: MAIN ELEMENTS FOR THE CONSTRUCTION OF THE CAFE BASELINE SCENARIO

For the CAFE baseline scenario, it is envisaged that three main elements are needed: i) projections of emission generating activities, ii) emission inventories and emission control options and iii) information about the penetration of emission control measures. The role of these elements in the construction of the CAFE baseline are discussed in this annex.

A.1 Projections of Emission Generating Activities

Baseline projections will include assumptions about the general economic development, such as

- (i) GDP growth rates for the different economic sectors,
- (ii) energy (specifying demand and supply of different fuel types at the various economic sectors),
- (iii) agricultural production (e.g., number of animals, type of agricultural practice),
- (iv) transport (e.g., fuel consumption by vehicle types, off-road activities, etc.) and
- (v) industrial production (distinguishing a different kinds of goods and their production methods).

RAINS will compile three perspectives of future economic development and its consequences to the use of, e.g., energy and transport services. One will reflect the most recent projections made for the European Commission (i.e., the Energy Outlook 2030 developed by DG-TREN¹).

In order to understand the significance of the Kyoto Protocol, additional analysis is required. This is because it is not known at the moment to what extent the Member States will take advantage of the flexible mechanisms² of the Kyoto Protocol and what the consequent effects on the fuel mix (and thus air pollution) are likely to be. It needs to be emphasised that the emissions of greenhouse gases after 2012 are not governed by the first commitment period (2008-12) of the Kyoto Protocol.

Thus, a variant with additional climate policies will be analysed as a second baseline scenario.

¹ The forthcoming Energy Outlook 2030 does not make assumptions on how Member States are likely to achieve their Kyoto commitments. Thus, the exact consequences to energy mix are not known either, given the potentials for reducing non-CO₂ gases as well as flexible mechanisms, etc. The energy baseline includes current policies and those in the process of being implemented. However, the construction of Kyoto scenarios is under consideration as part of Energy Outlook 2030. Such Kyoto scenarios involve new additional policies to reduce CO₂ emissions that have not yet been agreed or implemented.

² International Emissions Trading, Joint Implementation and Clean Development Mechanism.

Using the same macro-economic assumptions as applied for the energy projections, the baseline development of the transport sector will be developed under the TREMOVE contract using the SCENES model.

As it is possible that views of Member States and Accession Candidate Countries on the driving forces of emissions are slightly different from those of the Commission, it is important to include such views when the CAFE baseline is developed. Thus a third baseline will reflect projections of different Member States. Naturally it is desirable that these projections are as close as possible, but it is understandable that, e.g. due to timing differences, some divergences may appear.

Nevertheless, the baseline variant scenarios need to be based on full compliance with existing and adopted international agreements as well as Community-wide and national legislation. Thus, they must comply not only e.g. with the Air Quality, LCP and NEC directives but also with the greenhouse gas emission reduction targets that the EU Member States have ratified in the Kyoto Protocol³.

In order to comply with the CAFE work plan, Member States and Accession Candidate Countries will need to provide their national projections of emission generating activities, i.e., by December 2002, following article 8.1 of the NEC Directive (see also section 4.2.1) and the guidelines for estimating and reporting emission data of the CLRTAP. Member States are furthermore obliged to provide projections of activity data (energy, transport, agriculture, waste) and of greenhouse gas emissions under the EU Monitoring Mechanism for CO₂ and other greenhouse gas emissions (Council Decision 93/389/EEC) by 31 December 2002⁴. It would be very helpful if Accession Candidate Countries also provided such information – on a voluntary basis. All this information will also be useful for CAFE.

A.2 Emission Inventories and Emission Control Options

A.2.1 Emission Inventories

The second ingredient for an emission baseline scenario is an accurate description of the structural composition of the emission sources in the base year. If the year 2000⁵ will be used as base year for CAFE, detailed emission inventories for this year will be necessary for the analysis.

According to NEC directive (article 8.1.), Member States must provide to the Commission emission inventories for the year 2000 (and 2001) before **31 December**

³ When developing the baseline scenarios it is also important to deal with possible non compliance of existing legislation. This issue was raised in the note “Wisdom starts from facing the facts: Construction of the baseline in CAFE”, which was discussed in the CAFE Steering Group on 11-12 December 2001. The note stated e.g. that *“the CAFE Secretariat is of the view that the CAFE baseline should include implementation failure where there are clear signs that this is likely to occur.”*

⁴ A workshop was organised, under the Monitoring Mechanism, on national energy and greenhouse gas projections in February 2002. Information is available at:
http://etc-acc.eionet.eu.int/docs/meetings/0201_EnProjWS_27feb2002/meeting0201.html

⁵ Note: a report at the end of the year is for the previous year's emissions. Thus the report at the end of 2002 is reporting the emissions of 2001.

2002 as well as projections for 2010, using the *nomenclature for reporting (NFR)* as agreed upon by the CLRTAP (see below).

In addition, under the CLRTAP, all Member States and Accession Candidate Countries are obliged to report their emissions for the year 2000 (and 2001) in the NFR⁶ that suits the needs for integrated assessment modelling **before February 15, 2003**. For the construction of the CAFE baseline and variant scenarios it is of important that all Parties to CLRTAP follow these reporting requirements.

Under the EU greenhouse gas monitoring mechanism the Member States shall also report by 31 December 2002 their emissions by sources and removals by sinks of the Kyoto Protocol greenhouse⁷ in the year 2000, and all underlying activity data (e.g. energy balances, number of animals) in the Common Reporting Format (CRF). These underlying data can provide additional information for improving the quality of emission inventories and activity data within CAFE.

Lastly, under the IPPC directive, Member States will have to report before June 2003 on emissions coming from main industrial sources (Commission decision of 17 July 2000 on European Pollutant Emission Register, EPER). The data in EPER may be a useful source when the inventories are validated.

The emission inventories from Member States are essential to calibrate the databases of the RAINS model, so that emission projections have a validated starting point. In other words, with the calibration we ensure that the emission control measures introduced in Member States and Accession Candidate Countries by the year 2000 are accurately reflected in RAINS baseline and other scenarios.

A.2.2 Emission Control Options

The RAINS model contains databases describing the technical and economic features of available emission control options. The present RAINS databases for controlling SO₂, NO_x, VOC and NH₃ emissions were reviewed by Member States in the course of preparing the NEC directive. For CAFE it will be necessary

- (1) to include information about new emission control technologies that could realistically gain relevant market shares in the coming years,
- (2) to incorporate non-technical measures, and
- (3) to describe the remaining emission control potentials in more detail (e.g., for small domestic stoves, off-road mobile sources, etc.).

It is planned that these extensions will be carried out in cooperation with the IPTS/JRC⁸ Sevilla and the Expert Group on Techno-Economic Issues (EGTEI) established under

⁶ For details please consult the *Draft Guidelines for Estimating and Reporting Emissions Data* available at <http://www.unece.org/env/documents/2002/eb/ge1/eb.air.ge.1.2002.7e.pdf>

⁷ These are CO₂, CH₄, N₂O and fluorinated gases (HFC, PFC and SF₆)

⁸ The IPPC Bureau is based at the IPTS. The European IPPC Bureau catalyses an exchange of technical information on best available techniques under the IPPC Directive 96/61/EC by compiling reference

CLTRAP, with the possibility of holding a specific workshop where these issues will be discussed with stakeholders. The revised databases will be made available for review to all stakeholders.

A.3 Penetration of Emission Control Measures

The third essential element of an emission baseline scenario is a thorough understanding of the penetration of emission control measures at the various sources in each country. While the general provisions of Community-wide legislation are clearly specified, information about country-specific implementation plans will be critical for an accurate emission projection.

Under Article 8(2) of the National Emission Ceilings Directive 2001/81/EC, Member States are obliged to report 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 to the Commission **by 31 December 2002**. The contractors will review the information provided by Member States and introduce it into the model databases.

Note that by date of accession, the Accession Candidate Countries (ACC) need to agree what their country specific emissions ceilings would be. The Commission has specified that the ACC would adhere at least to the ceilings of the Gothenburg Protocol. As part of the screening exercise the ACC have informed the Commission on the steps they have taken to implement the NEC directive. By accession, the ACC need to give the list of measures. In other words, for the CAFE baseline, information on these measures will not arrive on time, unless the ACC provide this on voluntary basis. If no information were provided, we would know that the baseline emissions would be compatible with the Gothenburg Protocol but we would not know how the emissions would be reduced.

The deadline for submitting the plans and programmes to meet the limit values of the First Air Quality Daughter Directive is 31 December 2003, i.e., not in time for the development of the CAFE baseline, but perhaps still useful for further integrated assessment modelling. For instance the plans and programmes reported by countries could be plugged into the integrated assessment model and we could see their cost and environmental implications.

documents (BREFs). The results of the IPPC Bureau provide therefore an important input for the CAFE baseline analysis.