



TERMS OF REFERENCE

DK-Copenhagen: Outlooks on water use for the 2005 State of the Environment and Outlook Report

Open call for Tender

EEA/RNC/03/007

1. Background information

The 2005 State of the Environment and Outlook report

According to Council Regulation EC/993/1999 article 2 (vi), a key task of the European Environment Agency (EEA) shall be:

(vi) “to publish a report on the state of, trends in and prospects for the environment every five years, supplemented by indicator reports focusing upon specific issues”

The most recent ‘State of the Environment and Outlook Report’, entitled ‘Europe’s Environment at the Turn of the Century’ was published in 1999. The next State of the Environment and Outlook report is due to be published in 2005 (SoEOR2005), in order to comply with the EEA Council Regulation and to support the mid-term review of the 6th Environment Action Programme (EAP). The report will provide an assessment of both the past trends and outlooks for Europe’s environment. The timeframe for the outlooks for the SoEOR2005 report is as follows:

- 2003: Data collection and preparation of preliminary outlooks and projections;
- 2004: Final outlooks and projections, analysis, writing of assessments, review.

The development of outlooks

The overall objectives of the outlook activities undertaken at the EEA are the following:

1. To provide outlooks across sectors and themes according to the SoEOR2005 report requirements and which are relevant to decision-makers and give insights (and early warnings if necessary) on what might be expected from the future.

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2. To enhance the development of a long-term systematic approach to outlooks in the EIONET network (European Environment Information and Observation Network) so as to make sure they are incorporated in EEA regular reporting.

In the context of the SoEOR2005 report, outlooks are developed for the following sectors and themes: air and climate change (energy, transport, agriculture, etc.), waste and material flows, water, terrestrial environment and land use development, and nature protection and biodiversity. Both quantitative and qualitative outlooks are developed for the SoEOR2005 report. This is in line with EEA Council Regulation EC/993/1999 article 2 (vii) stating that a key task of the Agency shall be:

(vii) “to stimulate the development and application of environmental forecasting techniques so that adequate preventive measures can be taken in good time”

2. Overall objectives of EEA work on water use outlooks

The overall objectives of the work of the EEA on water use outlooks are to a) provide quantitative outlooks of water use for the next EEA State of the Environment and Outlook report and supplement the state-of-the-environment information for water; b) provide insights on the effects of key driving forces on future water use and on the possible effects of policy options to reduce water stress; c) to assess the climate change impacts in terms of water use; and d) to gain experience in quantitative modelling and outlooks on water issues and contribute to enhance the development of a long-term systematic approach to outlooks in the EIONET network.

3. Specific objective of the study

The specific objective of the study is to provide quantitative assessments of future changes in water use in EEA member countries for the next 20 to 30 years. This includes providing insights on the possible effects of key driving forces on future water use and developing scenarios and projections, which are relevant to decision-makers and give early warnings if necessary on future water stress issues. It also includes assessing climate change impacts in terms of water use. The study is to represent a value added to recent outlooks of water use.

4. Results

The results of the study shall be provided to the EEA in a final edited report in English no later than eleven months after the signing of the contract¹. A draft report shall be provided to the EEA (no later than eight months after the signing of the contract) as well as a final draft report (no later than ten months after the signing of the contract).

The results of the study can be published under the name of the contractor in scientific journals if the contractor wishes to do so. In that case, the contractor has to acknowledge the EEA funding.

¹ The EEA shall provide the contractor with guidelines on writing styles and formatting of the report.

5. Activities

The study on water use outlooks shall focus in particular on the effects of key driving forces and the development of a baseline projection, sensitivity runs and alternative scenarios. This study is meant to complement the outlook work carried out on phosphorous and waste water treatment by the European Topic Centre on Water. In addition, the climate change impacts in terms of water use will also have to be addressed by the contractor, on the basis of the climate change baseline scenario developed by the European Topic Centre on Air and Climate Change. In that perspective, the contractor will be provided with historic water quantity data held by the EEA. EEA indicator fact sheets related to water quantity can be found at the following address: <http://ims.eionet.eu.int/Topics/W/indicators>

The contractor will have to rely on extensive modelling experience in the water area and a very good knowledge of water use at national and European levels. The contractor will demonstrate that they have directly contributed to water use outlooks and projections for EEA's member countries, and provide a proven track record accordingly.

The EEA and the contractor will share responsibility for the coordination effort. When appropriate, the contractor shall closely liaise with the various groups involved in EEA's outlook activities (i.e. the EEA, the European Topic Centres (ETCs), the Institute for Prospective Technological Studies (Joint Research Centre-European Commission) and other consultants).

Activity

Undertake quantitative assessments of water use outlooks, including a baseline projection, sensitivity runs on key driving forces and alternative scenarios. Water use outlooks are to highlight water use and availability and the resulting water stress. In addition to the analysis of future sectoral water use, the climate change impacts in terms of water use will have to be addressed by the contractor, on the basis of the climate change baseline scenario developed by the European Topic Centre on Air and Climate Change for the EEA.

Scope of the study

EEA 31 member countries (Austria, Belgium, Bulgaria, Czech Republic, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden, Turkey, United Kingdom). Detailed results should be reported at national level. When relevant and possible, results should be given at sub-national levels, e.g. at catchment or watershed levels, or on a case study basis. If results are reported in form of maps, these have to be documented by background data.

Timeframe

Projections for the next 20 to 30 years. In the final report, the results should be reported by steps of 5 years as a maximum. However, the database of the results, which should be delivered to the EEA in Microsoft Access or Excel formats, will have to include the entire outlook data used for the final report.

Detailed tasks and sequence of activities

5.1 Provide an overview of the most recent and important outlooks on European and national water use

Provide an overview of the most recent and important outlooks on European and national water use. In particular, this implies providing a summary or synthesis, a comparison and an analysis of the main results. Due attention will have to be paid to differences in assumptions on the driving forces of water use.

5.2 Detailed description and discussion of the driving forces for water use

Provide a detailed description and discussion of the (economic, sectoral, political and social) driving forces for water use and how the key driving forces are reflected/modelled within the quantitative tool to be used for the projections. Both demand and supply side (sectoral and technical) driving forces affecting water uses will have to be analysed. The key driving forces will include the following:

1. Water demand: households and changes in lifestyles, industry, agriculture and horticulture, tourism, economic growth, etc. A non-exhaustive list of driving forces are given below:
 - Population trends (net growth rates, ageing population, population density, etc.)
 - Number and size of households, urbanisation
 - Households' appliances (dishwashers, washing machines, etc.), baths, drinking water, etc.
 - Cooling water for the energy sector and electricity consumption
 - Development of the industrial water use (chemical industry, etc.)
 - Irrigation and crops patterns, number of livestock
 - Water prices and its effect on uses.
2. Water resources / supply side: efficiency of water use, water supply infrastructure, etc. A non-exhaustive list of driving forces are given below:
 - Leakages and saving devices
 - Efficiency of households' appliances (e.g. water per cycle)

A sub-set of key driving forces should be defined in light of their importance to water use in the future and the policy options. The selection criteria of the driving forces should be made explicit.

Undertake an extensive discussion of the key assumptions, modelling approach and tools to be used to undertake the projections (capabilities, drawbacks and limitations of the approach). The discussion will also focus on the capabilities and drawbacks of the modelling tool to simulate the effects of the key driving forces.

5.3 Analysis of the future development of the key driving forces and running the baseline scenario for water use

The baseline scenario for water use will be based on an analysis of the future development of the key driving forces. The main uncertainties will be identified and discussed. In order to ensure consistency and coherence between EEA's outlooks activities across sectors and themes, the assumptions on the future development of the driving forces of water use will have to build on existing driving forces used by the

EEA for the SoEOR2005 report, in particular for population trends, economic growth and energy and agriculture activities.

Report on the baseline scenario for water use: key results in terms of water use, water availability and water stress, and main implications for environment policies of EEA member countries. The key findings, as well as the possible early warnings, will have to be highlighted. A comparative assessment of the baseline scenario with the most recent and important outlooks of water use will also be done. The sensitivity runs on key driving forces will be reported and the baseline projection will be re-interpreted in light of these.

Below are given the water use indicators and sub-indicators for which the results shall, as a minimum, be reported:

- Water exploitation index (permitting to determine whether an area is under water stress, e.g. water shortage)
 - Freshwater resources/availability
 - Total water abstraction/withdrawals
- Water use by sectors
 - Water use by agriculture
 - Water use by industry
 - Water use by households/domestic sector
 - Water use by the energy sector

5.4 Development of two alternative scenarios to the baseline projection for water use and assessment of climate change impacts

The contractor will develop two alternative scenarios to the baseline projection based on an alternative analysis of the future development of the key driving forces. Storylines will be developed, including the possibilities for possible political measures affecting water uses. Based on their relevance to water uses and the characteristics of the modelling tool used by the contractor, the alternative scenarios will be discussed and agreed between the contractor and EEA experts.

The two alternative scenarios will be reported on the same level of details as the baseline projection. Focus will be paid to the comparison of the results with those of the baseline projection and their analysis. Policy options included in the scenarios and their effects on water uses will also have to be discussed. The key findings, as well as the possible early warnings, will have to be highlighted. A comparative assessment of the alternative scenarios with the most recent and important outlooks of water use will also be done.

The contractor, on the basis of the climate change baseline scenario developed by the European Topic Centre on Air and Climate Change for the EEA, will assess the climate change impacts in terms of water use. In that perspective, the EEA will provide the contractor with climate change indicators, e.g. for temperature and precipitation. Attention could be focussed on the impacts of river discharges, flooding (frequency, discharge, etc.) as well as desertification/droughts on resources and demand. A comparative analysis of the climate change impacts on water use with the most recent and important assessments could also be done.

5.5 Final report to the EEA

The results of the study shall be reported to the EEA in a draft report (no later than eight months after signing the contract), a final draft report (no later than ten months after the signing of the contract) and a final report (no later than eleven months after the signing of the contract). These reports should contain the following indicative chapters, which will be further discussed and defined with the EEA during the course of the study:

	Executive summary
Chapter 1.	Introduction (key questions to be answered, relevance and consistency issues, links with other EEA's outlook activities, etc.)
Chapter 2.	Methodology for undertaking the study (modelling tools, assessment approach, etc.)
Chapter 3	Detailed description and discussion of the (economic, sectoral, political and social) demand and supply side driving forces for water use. Discussion of the sub-set of key driving forces in light of their importance to water use in the future and the policy options. The capabilities and drawbacks of the modelling tool to simulate the effects of the key driving forces are discussed.
Chapters 4	Analysis of the future development of the key driving forces and the baseline scenario: water use, water availability and water stress. The main uncertainties affecting water use are discussed and the sensitivity runs on key driving forces are reported. Rationales for the development of alternative scenarios to the baseline projection. Discussion of the policy options to be included.
Chapter 5	Assessment of the future development of the key driving forces in the alternative scenarios to the baseline projection. Comparison of the results of the alternative scenarios with those of the baseline projection. Assessment of the climate change impacts in terms of water use.
Chapter 6	A comparative assessment of the results of the study (i.e. baseline projection, sensitivity runs, alternative scenarios and climate change impacts) with the most recent and important outlooks on European and national water use. This implies providing a summary or synthesis, a comparison and an analysis of the main results.
Chapter 7	Conclusions: main findings, key signals and possible early warnings.
	References
	Annexes (with data results tables of all the scenarios)

6. Deliverables and timetable

The contractor must deliver according to the following timetable:

Within a month after signing of the contract	Kick-off meeting (in Copenhagen) or tele/videoconference with EEA project managers to discuss the detailed activities and implementation plan. The contractor will be provided with historic water quantity data held by the EEA.
No later than three months after signing	Progress meeting (in Copenhagen) or

of the contract	tele/videoconference with EEA project managers.
No later than four months after signing of the contract	Discussion and agreement between the contractor and the EEA experts on the development of the two alternative scenarios to the baseline projection.
No later than five months after signing of the contract	The EEA will provide the contractor with climate change indicators for the assessment of the impacts in terms of water use.
No later than eight months after signing of the contract	Delivery of draft report to the EEA containing drafts of all chapters .
Within nine months of signing of the contract	Comments from the EEA to draft report.
No later than ten months after the signing of the contract	Delivery of final draft report to EEA: the report should include the EEA comments on the draft version and be format edited. Delivery of final draft database of results (in Microsoft Access or Excel formats).
No later than eleven months after the signing of the contract	Delivery of final report to EEA: the report should include the EEA comments on the final draft version and be language and format edited. Delivery of final database of results (in Microsoft Access or Excel formats).