1. **INTRODUCTION**

Reducing atmospheric emissions from ships is a high environmental priority for the European Commission. A recent emissions quantification study for the Commission\(^1\) suggests that by 2020 ships in EU sea areas are likely to emit as much acidifying air pollution as all land-based sources combined.

In November 2002 the Commission adopted a Communication to the European Parliament and to the Council on an EU strategy to reduce atmospheric emissions from seagoing ships\(^2\). The Communication explains the environmental impacts of ships’ emissions of air pollutants, greenhouse gases and ozone-depleting substances, and sets out a number of policy objectives and actions to reduce these impacts.

The Commission has already undertaken some follow-up actions, including holding a stakeholder workshop on market-based instruments and abatement technologies in September 2003\(^3\), and initiating a study to explore the feasibility of using market-based instruments to reduce ship emissions in EU seas\(^4\).

The EU institutions have now completed their considerations of the ship emissions strategy, with the adoption in December 2003 of a European Parliament Resolution and Council Conclusions\(^5\). Both institutions call on the Commission to carry out further follow-up actions. Of particular relevance to this proposed contract are the requests for the Commission to:

- consider how emissions from international maritime traffic could be included in Directive 2001/81/EC on national emissions ceilings
- report on possible actions to reduce ship greenhouse gas emissions
- promote the development and use of emissions abatement technologies and market based instruments and develop proposals as appropriate
- facilitate the take-up of shore-side electricity for ships in port, by producing a report describing examples of its current use, and its costs and benefits

2. **OBJECTIVES**

The service contract contains three distinct tasks:

(i) to make preliminary assignments of ship emissions to European countries
(ii) to investigate costs, benefits and practicalities of abatement technologies
(iii) to work up practical details of possible market-based instruments

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3. Workshop proceedings: [http://www.europa.eu.int/comm/environment/air/background.htm#transport](http://www.europa.eu.int/comm/environment/air/background.htm#transport)
3. **Work Required**

3.1. **Task 1: preliminary assignments of ship emissions to European countries**

Under this task, the contractor should make preliminary annual assignments of ship emissions to EU Member States, acceding and candidate countries. The emissions to be assigned are sulphur dioxide, nitrogen oxides, volatile organic compounds and carbon dioxide. The seven different approaches below should be used, plus at least one more which the contractor should determine themselves.

A. *Assignment according to location of emissions*

   Estimate how much is emitted by seagoing ships in each country’s waterways, ports, 12 mile territorial waters, exclusive economic zones and pollution control zones, where such zones have been claimed. To the extent possible, disaggregate results by area, and by type of ship movement (domestic / intra-EU / international; inland / seagoing).

B. *Assignment according to flag of ship*

   Estimate how much is emitted by seagoing ships in EU sea areas (Baltic, North Sea, NE Atlantic, Mediterranean, and Black Sea) and worldwide by each country’s shipping fleet. Disaggregate results to the extent possible by type of ship movement, as above.

C. *Assignment according to industry fuel sales estimates*

   Assuming average fuel sulphur content of 2.7%, for heavy fuel oil and EU standard 0.2% sulphur content for marine gas and diesel oils, and applying standard emission factors per tonne fuel, estimate how much is emitted in EU sea areas and worldwide as a result of marine fuel sold in each country. Disaggregate results to the extent possible by type of ship movement, as above.

D. *Assignment according to reported fuel consumption*

   Assuming average fuel sulphur content of 2.7% for heavy fuel oil and EU standard 0.2% sulphur content for marine gas and diesel oils, and applying standard emission factors per tonne fuel, estimate how much is emitted by shipping in each country. Disaggregate results to the extent possible by type of ship movement, as above.

E. *Assignment according to freight tonnes loaded*

   Using shipping freight statistics and standard emission factors per tonne kilometre, assign ship emissions to each country corresponding to the weight of freight loaded and shipped within EU sea areas and worldwide.

F. *Assignment in proportion to national emissions*

   Looking at each country’s national emissions as reported to the EU, assign total ship emissions as quantified by Entec in the same proportion.

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6 “EU+13”: current 15 Member States, plus 10 acceding countries, plus Bulgaria, Romania & Turkey.
G. Assignment according to country of departure / destination

Using ship movement data and standard emission factors, assign ship emissions within EU sea areas to country of departure (where the country of destination is outside the EU+13), country of destination (where the country of departure is outside the EU+13), and shared equally between country of departure and destination (where both are in the EU+13).

The Commission has at its disposal a number of data sources which could be made available to the successful contractor, including:

- Entec 2002 emissions quantification study for the Commission, which estimated and assigned ship emissions to 50km gridsquares and to individual ports, and disaggregated ship movements by flag and type of movement*
- Beicip Franlab 2002 marine fuels advice for the Commission, which estimated marine fuel sales volumes by Member State and Accessing Country
- Countries’ annual reports to the EU on emission inventories and projections under the National Emissions Ceilings Directive, and to the UNFCCC on international bunkers (see http://unfccc.int/resource/natcom/nctable.html)
- Eurostat data on vessels entering and leaving ports, on freight loaded and unloaded, and on freight flows, which will be provided free of charge for this contract
- EU TRENDS project (Transport & Environment Database System)
- TREMOVE transport emissions model (see http://www.tremove.org)

For each approach, the contractor should illustrate in numerical and graphical formats how year 2000 ship emissions in each country compared to land-based emissions for that year as reported to the Commission. Projections for each country should also be provided for 2010, 2015 and 2020, assuming a continuous 1.5% annual growth rate in ship emissions. The 2010 figures should be compared to future national emissions targets for 2010 as defined by the National Emissions Ceilings Directive and the Kyoto Protocol.

The contractor should analyse, comment upon and recommend solutions to any methodological problems for the different assignment approaches e.g. reliability of different data sources, how to distinguish different types of ship movement, or how to account for off-shore bunker fuel sales. They should also recommend which approaches they believe would be the cheapest, simplest, fairest, most appropriate or most consistent to apply on an annual basis in future.

3.2. Task 2: investigation of costs, emission reduction potential and practicalities of ship emissions abatement technologies

Under this task, the contractor should investigate and report on the current investment costs, operating costs (with and without taxes), costs per tonne of emissions abated, emissions reduction potential, lifetime, and practicalities of a number of existing ship emissions abatement technologies, to include at least those listed below.

The data should be developed in cooperation with the TREMOVE consortium and IIASA in such a way that it can be input directly into the TREMOVE transport model and the RAINS emissions model (see http://www.iiasa.ac.at/rains/). Different vessel types should be considered, and aggregated into small/medium/large categories.

A. **Shore-side electricity in ports**
   - investment & operating costs for different types of port and different types of ship, costs per unit of fuel used and per tonne SO2, NOx, PM, and VOCs abated, expected lifetime of equipment, and estimated cost and length of time needed to apply to all EU port berths for vessels on regular services
   - benefits in terms of quantified air and noise emissions reductions in ports, (also any side effects on emissions of CO, N2O, CH4, CO2)
   - practicalities of installation and use, including at least one case study; commentary on current take-up & applicability to different vessel types

B. **NOx abatement technologies – selective catalytic reduction (SCR), humid air motors (HAM), exhaust gas recirculation (EGR), water injection, internal engine measures (ie delayed fuel injection)**
   - investment & operating costs for different types of ship, costs per unit of fuel used and per tonne of NOx, PM and VOC abated, expected lifetime of equipment, estimated cost of applying to all new EU-flagged vessels, estimated cost and time needed to retrofit all existing EU-flagged vessels
   - benefits in terms of quantified reductions of NOx, PM and VOCs (also any side effects on emissions of CO, N2O, CH4, CO2)
   - practicalities of installation and use, including urea supply and storage, fuel quality and consumption, emissions monitoring and tamper-proofing. Case-studies for each technology, and commentary on current take-up and applicability to different vessel types

C. **Exhaust gas cleaning – Ecosilencer sea water scrubber (analysis to the extent possible using results available from ongoing sea trials)**
   - investment and operating costs for different types of ship, costs per unit of fuel used and per tonne of SO2, NOx, PM and VOC abated, expected lifetime of equipment, estimated cost of applying to all new EU-flagged vessels, estimated cost and time needed to retrofit all existing EU-flagged vessels
   - benefits in terms of quantified reductions of SO2, NOx, PM & VOCs (also any side effects on emissions of CO, N2O, CH4, CO2, marine pollution)
   - practicalities of installation and use, including storage and disposal of sludge, emissions monitoring and tamper-proofing; case-study of P&O sea trial, commentary on likely take-up and applicability to different vessel types

In order to complete this task the contractor should review the relevant information provided at the 4 September 2003 stakeholder workshop on ship
emissions abatement technologies\textsuperscript{7}, and in the US Environmental Protection Agency’s 2003 final rulemaking on Category 3 Marine Diesel Engines\textsuperscript{8}, and follow this up bilaterally with the organizations concerned.

Finally the contractor should provide a table comparing the costs per tonne abated for each ship emissions technology to those for abatement technologies used in stationary sources in industry.

3.3. **Task 3: developing practical details of possible EU market-based instruments to reduce ship emissions of NOx, SO2 and CO2**

Under this task, the contractor should build upon the analyses contained in the 2004 NERA study for the European Commission\textsuperscript{9}, and develop practical details on the specific elements of three market-based instruments that the study identified as promising approaches, plus one other instrument. The instruments are briefly explained below, and the work required set out:

A. **Simple Credit-Based Approach** - allowing vessels to generate credits based upon a simple formula for determining Business As Usual levels (e.g., the MARPOL Annex VI NOx standards) and simple periodic monitoring of emission rates and vessel activity to verify actual emissions.
   
   - Develop possible methods for certification of credits, and procedures for the certification of relevant baselines.

B. **Consortia Benchmarking** - allowing vessels to “opt in” to a (local) trading consortium. In exchange for flexibility, a lower average would be set and more complex locational formulas and monitoring would be needed.
   
   - Propose how the scheme(s) might be administered, and by whom.

C. **Voluntary Differentiated Dues** - providing ports with an environmentally differentiated framework, with ports free to use the framework or not.
   
   - Draft detailed guidelines on a framework or index scheme for port due differentiation on air emissions criteria, drawing on existing environmental differentiation schemes, eg differentiated port and fairway dues in Sweden.

D. **Subsidies** – subsidising the take-up and use of low-emission technologies, for newbuilds and retrofits.
   
   - Propose how Member States and/or the EU could subsidise the take-up and use of low-emission technologies, taking into account state aid guidelines on environmental protection, shipbuilding and maritime transport.

For each of the instruments, the contractor should also undertake the following tasks, again building on the analysis already made by NERA:

\textsuperscript{7} Workshop proceedings: \url{http://www.europa.eu.int/comm/environment/air/background.htm#transport}

\textsuperscript{8} See \url{http://www.epa.gov/otaq/regs/nonroad/marine/ci/r03004.pdf}

\textsuperscript{9} Evaluation of the Feasibility of Alternative Market-Based Mechanisms to Promote Low-Emissions Shipping in European Sea Areas; final report to be published in February on this website: \url{http://www.europa.eu.int/comm/environment/air/future_transport.htm}
– Estimate the emission reduction potential (SO2, NOx, VOC and CO2) for each instrument, and for possible combinations of instruments
– Discuss the appropriate degree of geographic differentiation, taking into account different emissions and different environmental impacts
– Specify how to determine compliance, and how to treat violations
– Identify the necessary monitoring requirements and describe these in detail
– Identify and evaluate potential legal, political and administrative obstacles

4. EXPERIENCE / EXPERTISE OF THE SUCCESSFUL CONTRACTOR

It is envisaged that the successful contractor will be a company or consortium having experience / expertise in each of the following areas:

– air emissions, with experience of using and analysing emissions inventories and fuel reporting statistics, and working with GIS data
– engineering, with up-to-date knowledge of different emission control and monitoring technologies for mobile sources
– shipping, with a good understanding of the maritime industry
– economics, with experience of conducting cost-benefit analysis for abatement technologies, and understanding of the practical application of market-based instruments in environmental policy

5. DURATION OF THE CONTRACT

This is a twelve month contract from date of signature.

6. VALIDITY OF THE OFFER

The offer should be valid for six months.

7. DELIVERABLES

The contractor is expected to commence work immediately after signature of the contract, and to submit reports to the Commission on Tasks 1, 2 and 3 after 4, 6 and 8 months respectively. These should include the required numerical & graphical data, plus commentary.

Togethery they will constitute an interim report.

The contractor should then prepare a final report. The draft final report should be submitted within 10 months in electronic format. The final report should be submitted within 12 months in electronic format and in print (30 hard copies).

The contractor should allow for two meetings in Brussels as part of the tender. It is anticipated that a kick-off meeting will be held shortly after the beginning of the project, with a second meeting after submission of the Task 1 data.

8. SUBCONTRACTING

Subcontracting will be permitted, where the subcontractor is the sole responsibility of the main contractor, subject to the following conditions:
the Contractor shall not subcontract without prior written authorisation from the Commission nor cause the Contract to be performed in fact by third parties, unless it was approved of by the Commission.

- even where the Commission authorises the Contractor to subcontract to third parties, he shall nonetheless remain bound by his obligations to the Commission under the Contract.

- the Contractor shall make sure that the subcontract does not affect rights and guarantees to which the Commission is entitled by virtue of the Contract.

The part subcontracted should not, as a guideline, exceed 30% of the total contracting sum.

9. **METHOD OF PAYMENT**

This contract will be paid on a lump sum basis.

A pre-financing payment of 30% will be paid upon signature of the contract.

*An interim payment of 40% will be paid upon acceptance by the Commission of the interim report.*

A final payment of 30% will be paid upon acceptance by the Commission of the final report.

The Commission is exempt from all taxes and dues, including value added tax, pursuant to the provisions of Articles 3 and 4 of the Protocol on the Privileges and Immunities of the European Communities with regard to its financial contribution under the contract.

10. **EXCLUSION CRITERIA**

1. Potential contractors will be excluded from participation in the contract procedure:

a) if they are bankrupt or being wound up, are having their affairs administered by the courts, have entered into an arrangement with creditors, have suspended business activities, are the subject of proceedings concerning those matters, or are in any analogous situation arising from a similar procedure provided for in national legislation or regulations;

b) if they have been convicted of an offence concerning their professional conduct by a judgment which has the force of *res judicata*;

c) if they have been guilty of grave professional misconduct proven by any means, which the contracting authority can justify;

d) if they have not fulfilled obligations relating to the payment of social security contributions or the payment of taxes in accordance with the legal provisions of the country in which they are established, the country of the contracting authority or the country where the contract is to be performed;
e) if they have been the subject of a judgment which has the force of *res judicata* for fraud, corruption, involvement in a criminal organisation or any other illegal activity detrimental to the Communities’ financial interests;

f) if, following another contract or grant award procedure financed by the Community budget, they have been declared to be in serious breach of contract for failure to comply with their contractual obligations.

**Potential contractors must certify that they are not in one of the situations listed above by providing:**

i) for points a), b) and e), a recent extract from the judicial record or, failing that, a recent equivalent document issued by a judicial or administrative authority in the country of origin or provenance showing that those requirements are satisfied;

ii) for point d), a recent certificate issued by the competent authority of the State concerned. Where no such certificate is issued in the country concerned, it may be replaced by a sworn or, failing that, a solemn statement made by the interested party before a judicial or administrative authority, a notary or a qualified professional body in their country of origin or provenance;

Depending on the national legislation of the country in which the tenderer or candidate is established, the documents referred to in paragraphs i) and ii) shall relate to legal persons and natural persons including, where considered necessary by the contracting authority, company directors or any person with powers of representation, decision-making or control in relation to the candidate or tenderer.

iii) Potential contractors must sign and attach the declaration concerning the exclusion criteria and any conflict of interest (See Annex C page 8).

2. Contracts will not be awarded to potential contractors or tenderers in the following cases:

a) **If there is a conflict of interest:**

   - Potential contractors or tenderers must state that they:
     - are not involved in any conflict of interest in connection with the contract;
     - have not made and commit themselves not to make any offer of any type whatsoever from which an advantage could be derived in connection with this contract;
     - have not agreed to, have not sought, or accepted any advantage,

   - financial or other, constituting an illegal practice or involving corruption, either directly or indirectly, as an incentive or reward relating to the award of the contract, to or from any party whatsoever.
b) If they are guilty of misrepresentation in supplying the information required by the contracting authority as a condition of participation in the contract procedure, or if they fail to supply this.

11. Selection Criteria

A. Technical and professional capacity

1. Tenderers should have demonstrable experience in all areas that are part of this call for tender, and the core team should have a good knowledge of English.

B. Financial standing

2. Tenderers should provide evidence of their financial standing, by furnishing (extracts from) financial statements of the last three years.

C. Authorisation to perform the contract

3. A tenderer must prove that he is authorised to perform the contract under national law, as evidenced by inclusion in a trade or professional register, or a sworn declaration or certificate, membership of a specific organisation, express authorisation or entry in the VAT register.

D. Access to the market

4. A tenderer must indicate in which State they have their headquarters or domicile and to present the supporting evidence normally acceptable under their own law.

12. Award Criteria for the Contract

(1) Methodology: this criterion serves to assess the suitability and strength of the proposal in terms of the technical content, completeness, originality of ideas, and the delivery of results of the appropriate quality and accuracy.

(2) Project management and availability: this criterion serves to assess the quality of project planning, team organisation and time share attributed to each of the members which should be clearly outlined in the tender.

(3) Understanding: this criterion serves to assess whether the tenderer has understood all aspects of the tasks required, as presented under point 3 above, as well as the contents of the proposed final product.

13. Points System

Points: A maximum of 40 points shall be attributed to criterion 1, a maximum of 30 points to criterion 2 and a maximum of 30 points to criterion 3. Selected companies will have to score a minimum of 30 points for
criterion 1, 20 points for criterion 2 and 20 points for criterion 3 with a minimum total of 75 points.

**Budget:** The budget (including fees, travel and all other costs) is a maximum of €200,000, excl. VAT. The price quoted must be a firm, non-revisable price and must be quoted in euro.

**Price:** The bid offering the best value for money will be chosen, providing the minimum number of points is achieved. This is calculated by dividing the price by the number of points awarded.