

Öhrlings

PRICEWATERHOUSECOOPERS 

The Swedish Shipowners' Association's response to
Discussion Paper
"A COMMUNITY STRATEGY ON AIR POLLUTION FROM SEAGOING SHIPS"
Gothenburg February 26th, 2002

Short version*
Proposal of Emissions Trading Scheme of sulphur dioxide and nitrogen oxides

* Full version can be downloaded from Swedish Shipowners' Association's homepage, www.sweship.se

INTRODUCTION and BACKGROUND

Sulphur dioxide (SO₂) and nitrogen oxides (NO_x) are harmful gaseous pollutants. In order to restore nature that have been damaged and to prevent future environmental problems, emissions of these pollutants have to be reduced substantially.

Sulphur dioxide is related to fuel quality and is created when fuel with sulphur content is burned. Once in the air the sulphur dioxide turns into sulphuric acid. After being transported in the air streams, in some cases several hundreds of kilometres, it falls down and causes acidification* of land, lakes, buildings and other cultural heritages.

Nitrogen oxides emissions are primarily stemming from engine performance, and not fuel quality, but can cause acidification and are also contributors to smog* and overload of nutrients which for example makes the lakes bloom (eutrophication*). Nitrogen oxides can also be transported long distances in the atmosphere.

Land based emitters of sulphur dioxide and nitrogen oxides have decreased their emissions gradually during the past decades. Future reductions will be achieved, though at a relatively high cost. Meanwhile, ships have not decreased their emissions at the same rate. As a result the shipping industry will contribute to a larger and larger part of these emissions. Actions need to be taken to ensure that the emissions from shipping are decreased.

Regulators have proposed and tried different approaches to attack this problem. However, these solutions will in our opinion, in many ways restrain the development of shipping. Instead, shipping should be promoted since it is more environmentally friendly and energy efficient than the transportation of goods on road. Congestion, accidents and noise problems are other motives for the transfer of transportation from road to sea.

In view of this, the Swedish Shipowners' Association (SSA) proposes an emission trading system as a financial incentive for the reduction of sulphur dioxide and nitrogen oxides emissions, where the shipping industry will participate in the trading on a voluntary basis.

* Further descriptions in section "some further explanations".

WHY AN EMISSIONS TRADING SCHEME?

“We are convinced there are possibilities to obtain substantial emissions reductions, at a short time horizon, and at a comparable low cost by using market-based mechanisms”

First, previous and current experiences of emissions trading in North America have been very successful, in particular, the sulphur dioxide trading. Reductions in emissions have surpassed environmental targets. Companies participating in the trading schemes have been able to adopt the most cost-effective strategies to reduce emissions. The outcome for the environment and society as a whole has, therefore, fulfilled expectations.

Secondly, the regulatory approach on the shipping industry has, until now, not been very successful. The documents from International Maritime Organisations (IMO) MARPOL* convention, concerning regulations for the prevention of air pollution from ships, has not yet been ratified, and the proposed 4.5% demand on sulphur content in fuel would not be sufficient to obtain necessary environmental impact.

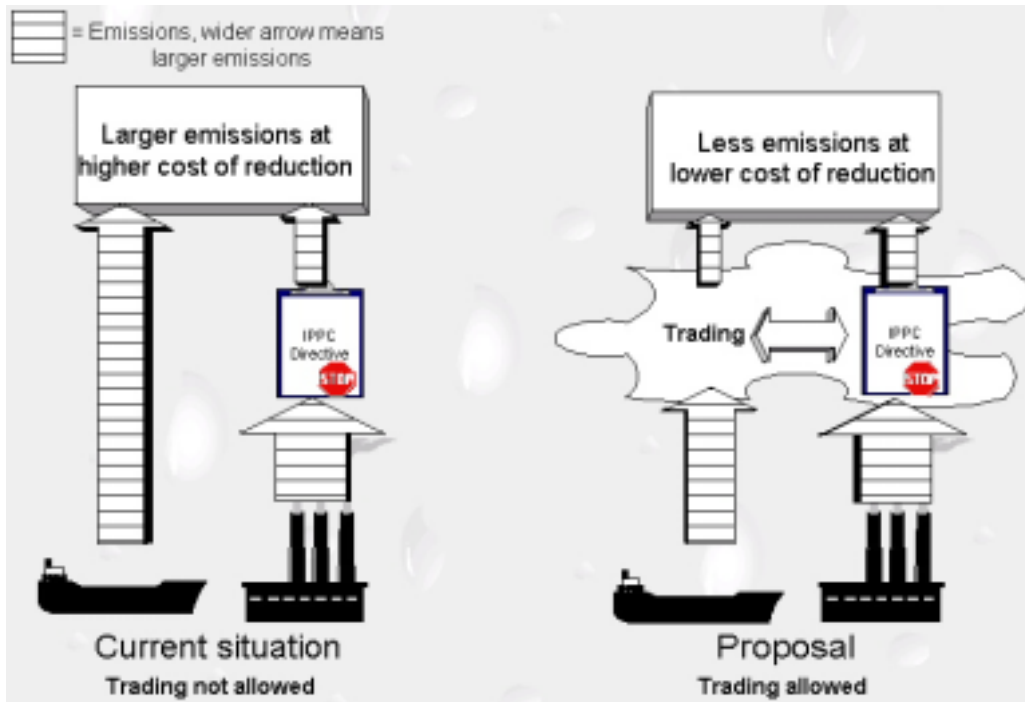
Thirdly, the international Conventions of maritime law (UNCLOS) prevent the implementation of local or regional rules. Consequently, the trading scheme will function on a voluntary basis for the shipping industry.

Fourthly, levying taxes and charges on shipping might constrain the use of maritime transport within the EC region.

Finally, we know that shipping can achieve reductions at a much lower cost than land based emitters.

* Further descriptions in section “some further explanations”.

Figure 1 TRADING VERSUS NON TRADING. Land based sources covered by the IPPC directive will have more flexibility and emissions reductions will be performed more cost efficiently if shipping is allowed to trade emission reductions. Emissions trading would give incentives for shipping to further reduce emissions.



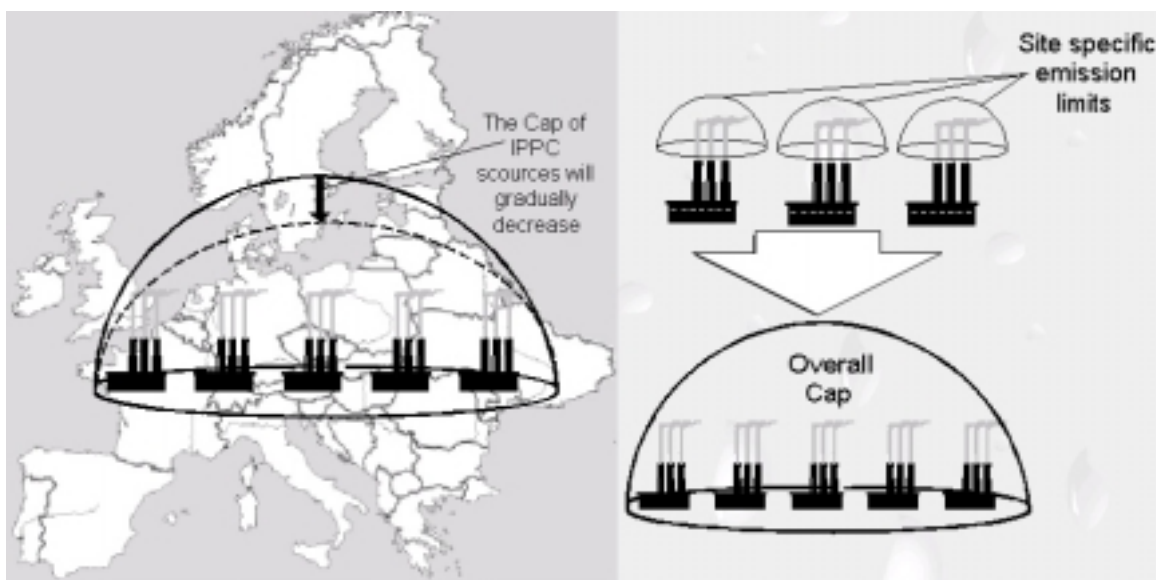
IPPC directive*, Council Directive of 24 September 1996 concerning Integrated Pollution Prevention and Control.

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HOW DOES THE EMISSIONS TRADING SCHEME FUNCTION?

The proposed coverage of the trading system is within the borders of the European Community. The cornerstones of the EC sulphur dioxide and nitrogen oxides emissions trading system, such as register systems, reporting standards etc, are set up by a Central Administration.

Figure 2 Left: The overall emission cap set on the IPPC sources will gradually be decreased.
 Right: The cap is created by modifying some site-specific emission limits to an overall cap.



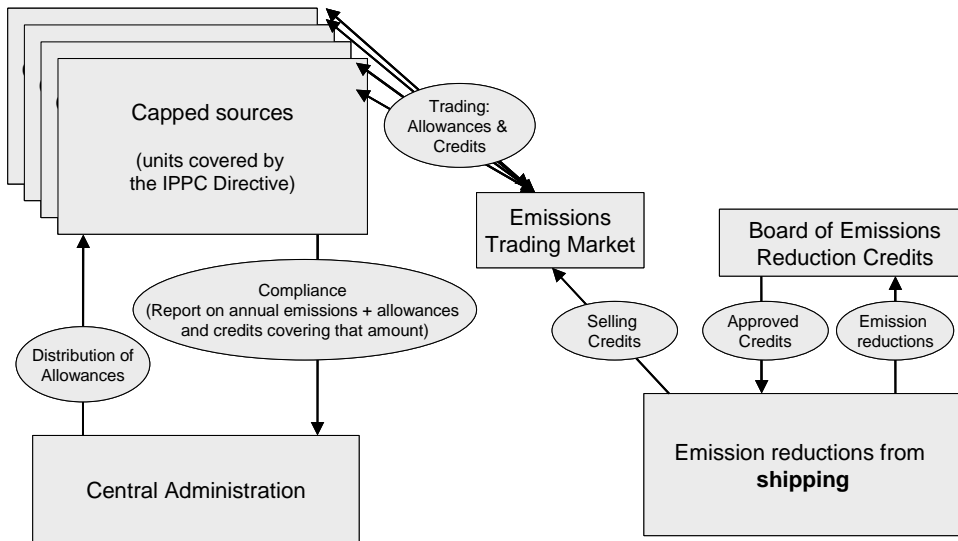
In order to create an emissions trading market, an overall emissions cap (see Figure 2) is put on the major land-based emitters (sources covered by the IPPC Directive). The overall cap is set for several years in advance and is gradually lowered over the period. Thus the sum of the emissions from the capped sources will decrease over time.

The capped sources receive emission allowances from the Central Administration that permit them to emit a certain amount of emissions annually. The amount of allowances that is distributed each year corresponds with the overall annual cap. The allowances are fully marketable. Consequently a capped source can:

- Purchase additional allowances if the allowances held fall short of the actual emissions of the source.
- Sell surplus allowances if the actual emissions are lower than the amount of allowances held.

The allowances can also be banked for future use. Non-capped sources such as financial institutions and brokers could also be allowed to trade.

Figure 3: General model of proposed trading scheme (simplified version)



If the system is to be credible, a system for checking the compliance is crucial. The Central Administration will handle the compliance of the capped units. Compliance is achieved if the annual emissions do not exceed the number of allowances (and credits) hold by the unit at the end of the year. Non-compliance will result in penalties.

Emission reductions are accomplished at sea by ships on a voluntary basis. In order to obtain a marketable credit of the reduction, it should be verified* and after that approved by an EU board of Emission Reduction Credits (see Figure 3). The credits are sold on the market to the capped land-based emitters. The credits have the same function and value as the emission allowances. Consequently the capped sources can use the credits for compliance in the same way as allowances.

A trading system on voluntary basis gives the opportunity to all ships in the EC region, including transit traffic, to sell the emission reduction credits they have created.

* Further descriptions in section “some further explanations”.

AN EMISSIONS TRADING SCHEME FOR WHOM?

“The aim of the trading system proposal is to create equal, or even larger, emission reductions than those proposed in current policies and regulations, at a lower economic cost”.

Society as a whole:

- will achieve reductions of emissions at a lower cost, since shipping can achieve reductions at a lower cost in comparison with the land based emitters;
- will gain from the fact that shipping probably adapts to environmental demands fairly quickly, due to economic stimulus that will be created when shipping is able to sell credits from their reductions;
- is ensured that local environmental demands of low environmental impact are guaranteed by the EC IPPC Directive, since local environmental quality standards (resulting from the Directive) will limit the emissions from sites in sensitive regions;
- will achieve higher reductions by including transit traffic which represents a substantial part of the traffic at sea and consequently the emissions.

Shipping:

- will not be subject to taxes and charges when necessary reductions can be obtained by the trading system;
- will be able to sell emissions reduction credits to land based emitters;
- will be encouraged to make investments to create reductions, since the selling of emission reduction credits will generate an additional payback;
- will be ensured a fair competition world wide by avoiding regional regulations, as involvement in the trading scheme is voluntary for shipping;
- will be adapted to environmental demands fairly quickly, due to economic incentives.

Land-based emitters

- will be able to create more flexible solutions for emission reductions, as they can achieve reductions by combining investments in new low emitting techniques with purchase of emission reduction credits and additional emission allowances;
- will have the possibility to sell surplus emission allowances, if they reduce their emissions significantly by investing in new low emitting techniques;
- will obtain lower cost of compliance because of more flexibility in choosing solutions;
- will have better planning possibilities, since the overall cap will be set several years in advance. As a result the emission allowances distributed to each source will also be known several years in advance instead of having source specific emission limits currently updated.

WHAT ARE THE NEEDS OF MONITORING AND VERIFYING?

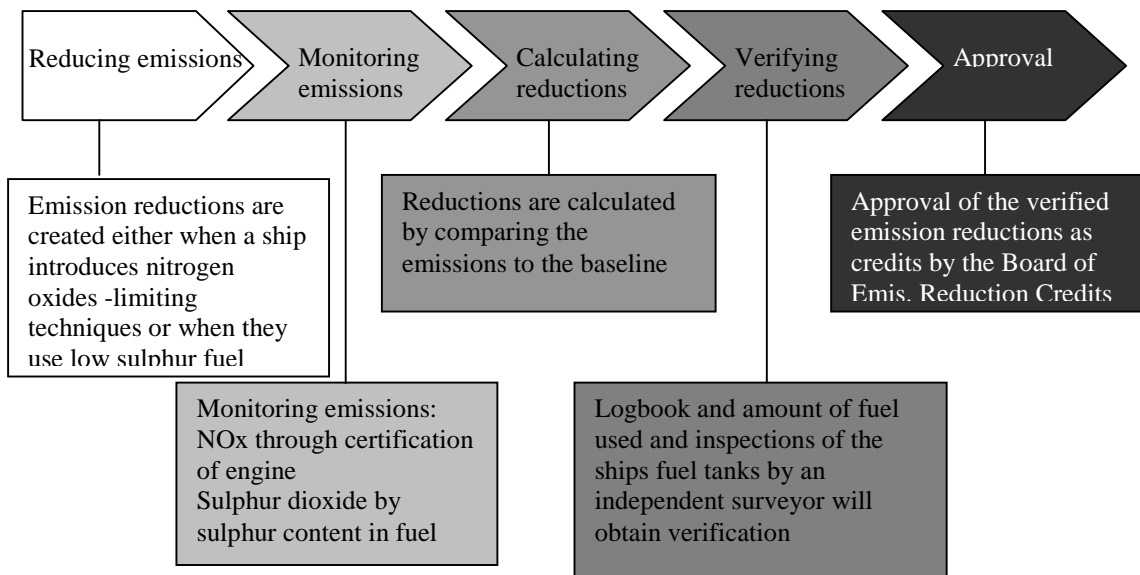
The Swedish experiences from monitoring and verifying when issuing differentiated port and fairway dues are important. The results from these methods have turned out to be satisfactory.

Our studies show that monitoring and verifying is feasible and consequently we propose the following:

- SO₂ -Monitoring of sulphur dioxide by verifying the sulphur content by the fuel purchasing receipts and follow-up by random inspections of the ships fuel tanks by an independent surveyor.
- NO_x – Certificates on engine installation and monitoring of emissions levels by accredited measuring company and reductions verified through logbook and amount of fuel used.

Baselines* are needed in order to calculate reductions. We propose that they will be adopted from MARPOL convention.

Figure 4 The process of creating marketable credits involves several different steps

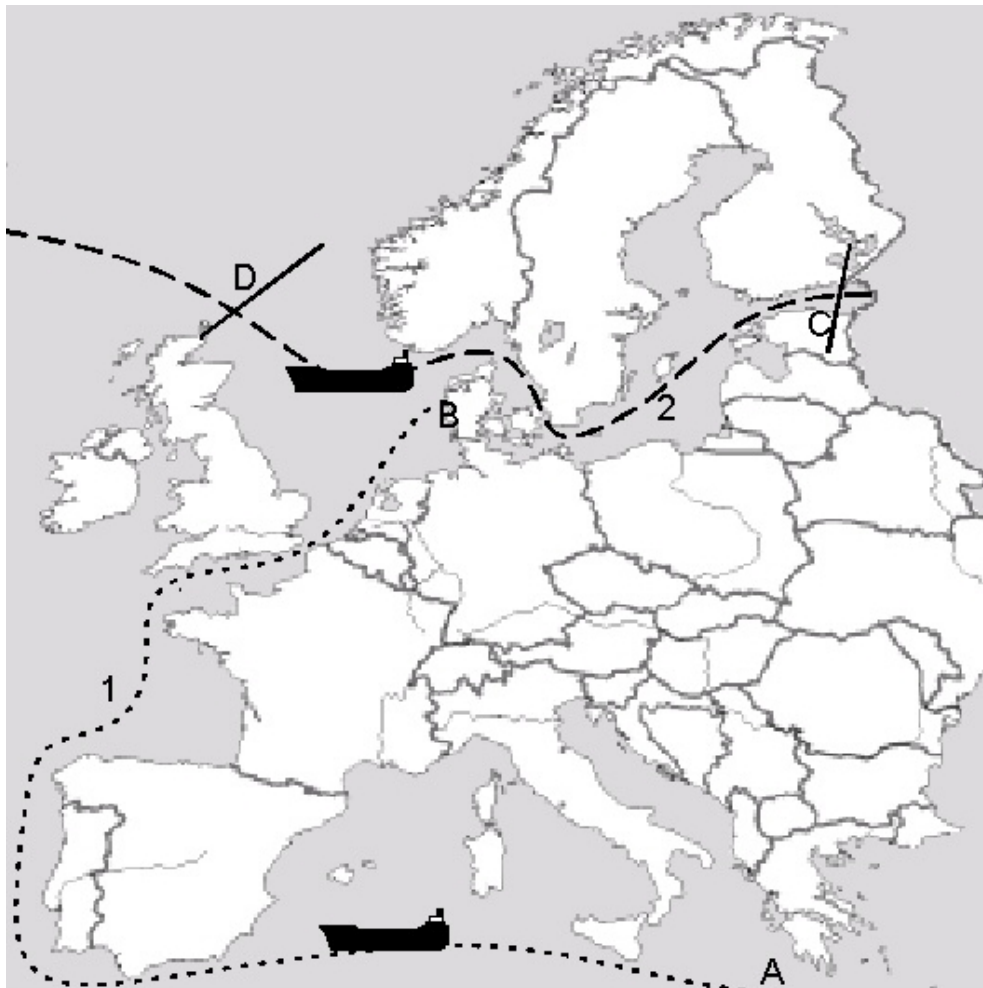


The process of creating marketable credits involves different steps from achieving the reduction to approval of the verified emission reduction (see Figure 4). When the

* Further descriptions in section “some further explanations”

reductions are approved, they are converted into credits, which can enter the emission trading market. One way to simplify the calculation of reductions could be through using standardised distances (see Figure 5) of port-to-port and the passing-through routes.

Figure 5: An example of standardised distances would be route 1 and 2 below. Route 1 will be applied to ships coming from the Suez channel to seek a specific harbour in Denmark, the distance will be calculated in advance. Route 2 is an example of a standardised distance for transit traffic, at C the ship enters EC borders and at D it crosses the EC border for calculating reductions.



SOME FURTHER EXPLANATIONS

Acidification:

Acidification is the environmental problem of acid rain, components like sulphur dioxide makes land and lakes more acid and this creates further problems, statues falls to pieces, metals that are bound to soils are easily transferred into water phase and causing poisoning of fish.

Eutrophication:

Eutrophication refers to an increase in the rate of supply of organic matter to an ecosystem, which most commonly is related to nutrient enrichment enhancing the primary production in the system (Nixon, 1995). Eutrophication levels vary due to natural causes from area to area.

Overloading with nitrogen (N) and phosphorus (P) can result in a series of undesirable effects. Excessive growth of plankton algae increases the amount of organic matter settling to the bottom. This may be enhanced by changes in the species composition and functioning of the pelagic food web by stimulating the growth of small flagellates rather than larger diatoms, which leads to lower grazing by copepods and increased sedimentation.

Smog:

Ground level ozone (O₃) is formed by a chemical reaction between nitrogen oxides (NO_x) and volatile organic compounds (VOC) in the presence of heat and sunlight. Ground-level ozone is a harmful pollutant and the main constituent of smog.

Ozone is a strong photochemical oxidant, which causes serious health problems and damage to ecosystems, agricultural crops and materials. Human exposure to elevated ozone concentrations can give rise to inflammatory responses and decreases in lung function.

IPPC directive:

Council Directive 96/61/EC of 24 September 1996 concerning integrated pollution prevention and control, Official Journal L 257, 10/10/1996 p. 0026 – 0040. This directive prevents sources that emit sulphur dioxide and nitrogen oxides and sets out the targets thereof.

Baseline:

The baseline represents the forecast emissions of a company, business unit or project, using a business as usual scenario, often referred to as the 'baseline scenario' i.e. expected emissions if the firm did not implement emission reduction activities. This forecast

incorporates the economic, financial, technological, regulatory and political circumstances within which a firm operates.

Cap:

A regulatory device that sets a ceiling on emissions that can be released into the atmosphere within a designated timeframe. Caps are effectively the same as 'Allowances' however caps more often refer to national emission limitations and allowances to individual emitters.

Verifying:

Verification provides independent assurance that actual or expected emission reductions have been/will be achieved from an emission reduction project during a specified period. Verification process contains adequacy of measuring and monitoring systems for emission reduction credits, reviewing the operations of the underlying emission reductions project etc.

Marpol:

The MARPOL Convention is the main international convention covering prevention of pollution of the marine environment by ships from operational or accidental causes. It is a combination of two treaties adopted in 1973 and 1978 respectively and updated by amendments through the years.

As the 1973 MARPOL Convention had not yet entered into force, the 1978 MARPOL Protocol absorbed the parent Convention. The combined instrument is referred to as the International Convention for the Prevention of Marine Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78), and it entered into force on 2 October 1983 (Annexes I and II).

The Convention includes regulations aimed at preventing and minimizing pollution from ships - both accidental pollution and that from routine operations - and currently includes six technical Annexes, but annex 6 has not yet been ratified.