

Economic Instruments to Reduce the Environmental Impact of International Transport



Proceedings of the AGM-Workshop

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Economic Instruments to Reduce the Environmental Impact of International Transport
T&E 04/01

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T&E is Europe's primary NGO campaigning specifically on transport and environment issues. It has some 40 members in 20 countries. T&E works at European level to secure an environmentally responsible, socially just and economically sound approach to transport.

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Introduction

by Malcolm Fergusson

T&E UK Board Member

Institute for European Environmental Policy, London

European policy makers and citizens are increasingly recognising transport-related environmental problems. Technologies or operational practices to reduce greenhouse gas emissions, air pollution or noise are available. The questions are: Why is there such a gap between the emission reduction potential and the policy framework to utilise them? How to bridge the gap?

Economic instruments provide a feasible way forward. Too many transport users do not reflect their knowledge about the scarcity of environmental resources in their behaviour. Green alternatives are ignored in decisions on long-term investments as well as in the day-to-day mobility choice. Incentives to change the trend could be introduced by price-based or right-based measures. Price-based measures use charges, taxes and subsidies to persuade polluters to reduce their discharges. Rights-based measures 'create rights to use environmental resources, or to pollute the environment, up to a pre-determined limit, and allows these rights to be traded.'

"Getting the prices right" was one of the first and most influential campaigns from T&E. It shaped the discussion on infrastructure pricing within the European Union for the last decade. But the practical results over the last few years have been very disappointing. The European Commission and the Directorate-General for Transport and Energy in particular, have not used their monopoly to initiate effective legislation. For instance, the proposal for Eurovignette missed the Commission's own objectives for internalisation and modal shift which they had drawn up earlier. Elsewhere, even when the Commission has brought forward proposals (as on the taxation of energy products) the Member States have been reluctant to accept tax-based measures.

Now, a new European Commission and a new European Parliament will open a window of opportunity to develop a coherent set of instruments that increase the sustainability of all transport modes and promote a demand shift towards newer forms of transportation which in turn pollute less. Economic instruments will play a core role in such a strategy.

During the seminar at the 2004 Annual General Meeting in April the member organisations of the European Federation for Transport and Environment focussed on the opportunities to promote green international transport through economic instruments. The first presentation by Karsten Krause from the T&E Secretariat provided an introduction to the concepts behind economic instruments that could promote a greener international transportation. Christer Ågren from the Swedish NGO Secretariat for Acid Rain presented details on the European Commission's plans to introduce economic instruments for reducing air pollutant emissions from shipping. Markus Liechti from the T&E Secretariat focused on road transport. He linked the current discussion on the Eurovignette with an outlook on future pricing and permit trading systems for heavy goods vehicles. The final presentation was by Tim Johnson from the Aviation Environment Federation. He reported about the need to co-ordinate between national, European and international levels to introduce policies to reduce the impact of aviation emissions through economic instruments.

In this publication you will find a short introductory text on economic instruments, the four presentations, and a summary of the round table discussion. The objective of this seminar was not to inform about a "pack and go" solution but to provide the background of the upcoming discussion in Europe.

Any comments on these proceedings are more than welcome.

Sustainable Transport and Economic Incentives – An Overview

by Karsten Krause, T&E Secretariat

introduction

Globalisation is transportation. The demand of transport services for private living and production processes is constantly growing. Companies distribute their production activities across Europe or even between the continents. A “made in Germany” BMW consists, for instance, of parts from 18 different countries. Pollution and environmental damage are negative side effects for the mass mobilisation.

The idea of sustainable transportation provides a framework to balance the ecological, social and economic challenges. According to the Canadian Center for Sustainable Transportation (<http://www.cstctd.org>) such a system is one that:

- allows the basic access needs of individuals and societies to be met safely and in a manner consistent with human and ecosystem health, and with equity within and between generations.
- is affordable, operates efficiently, offers choice of transport mode, and supports a vibrant economy.
- limits emissions and waste within the planet’s ability to absorb them, minimizes consumption of non-renewable resources, limits consumption of renewable resources to the sustainable yield level, reuses and recycles its components, and minimizes the use of land and the production of noise.

Economic instruments can play a crucial role in achieving economic, social and ecological goals simultaneously. Taxes, fees and charges, tradable permits systems, deposit-refund systems are economic instruments. Some forms are used for decades, while others are on their way to become a vital element in environmental policy. Such instruments can give firms and households economic incentives to change their behaviour in a more environmentally friendly manner, and to develop new, cleaner technologies. However, to understand the rationale behind the concepts is often complex and the devil lies in the details.

Taxes and charges are for example levied on fuels, motor vehicles, packaging, waste, etc. Tradable permits systems can set a cap on total emissions, while permitting polluters to trade emission quotas between themselves. Both types of instrument will stimulate abatement efforts to be made where they are cheapest, thus causing environmental targets to be reached at lowest possible costs.

advantages of economic instruments

Economic Instruments are characterised by their use of market forces, i.e. the price mechanism, to achieve policy objectives. There are two groups of Economic Instruments: price instruments (such as taxes, charges and subsidies) and quantity instruments (such as permits or certificates). The use of market forces to influence transport demand and supply is what makes economic instruments advantageous in the pursuit of a sustainable transport policy:

- **Revenue generation.** Price instruments usually generate additional revenues. In many countries fuel and vehicle taxes play a major role for state funding and financing of transport policy programmes.
- **Market-economy compatibility.** By using the price mechanism as a vehicle for cost internalisation, market allocation processes are not distorted.
- **Enforcing the user-pays-principle.** By charging for the use of infrastructure and vehicles, only transport users pay for the costs of their mobility. These costs include infrastructure set-up, maintenance, environmental damage, etc.
- **Incentive-based policy approach.** Economic Instruments can contribute towards reducing transport demand, change the modal split by inducing substitution and change transport be-

- haviour. On the supply side, economic instruments can enable fair competition among the transport modes and induce incentives for technical change and higher efficiency of vehicles.
- **High effectiveness.** By using price information, the "user pays principle" can be reached efficiently. Economic Instruments leave room for individual optimisation, and thus allow for cost-minimising transportation.
 - **Dynamic incentives.** Economic Instruments can set dynamic incentives for substitution, technical change and the research and development of pollution abatement technologies.
 - **Greater flexibility.** In general, Economic Instruments offer more flexibility than Regulatory Instruments as individuals and firms can more flexibly adapt to economic incentives than to administratively set restrictions.

limits of economic instruments?

Despite the advantages given above, there are several drawbacks that possibly reduce the degree of implementation of economic Instruments:

- **Uncertainty about the right level of levies.** It is a philosophical question to find the correct price. Due to valuation problems the information on internal and external costs could often not be adequately obtained, thus making it difficult to set levies at the "right" level. Often economic incentives should support policy objectives rather than to internalise external costs.
- **Uncertainty about the reaction lags.** Reaction times of market participants may be long. Increases in fuel prices, for instance, show only little reductions in fuel demand (so-called small elasticities) in the short run, but greater elasticities in the long run. Furthermore, market reactions cannot be predicted correctly, hence the use of economic instruments may require several readjustments in order to reach a certain policy objective.
- **Unpredictable and unstable revenues.** Despite their large potential to create revenue, economic instruments may sometimes be a shaky basis for revenue generation. This is particularly the case with environmentally motivated price increases, which trigger substitution, technical change and a reduction of environmental use. This successful decrease in environmental use will thus correspond to a decrease in revenue.
- **Competitive disadvantage.** The use and intensity of economic instruments differ nationally and internationally. This may result in competitive disadvantages for countries, regions and cities with strong transport levies. A level playing field is also important for the intermodal competition.

introduction of economic instruments

Economic Instruments should always be embedded in a broader policy strategy for sustainable transport. This strategy should include other types of instruments for short-run steering, the averting of risks and dangers, international transport policy cooperation, and revenue generation. The complex political process to introduce economic instruments could be summarised to an eight step approach:

1. Define a set of policy objective(s)!
2. Conceptualise a comprehensive transport strategy!
3. Evaluate feasibility of economic instruments!
4. Choose the appropriate economic instrument and its specifications!
5. Determine institutional requirements for implementation and control!
6. Determine funding, financing and revenue allocation!
7. Determine adjustment period and schedule for implementation ("action plan")!
8. Create and/or raise public awareness and acceptance!

Decision criteria is necessary to assess the potential effects of economic instruments and their impact in the context of the overall framework of a comprehensive sustainable transport strategy.

To assess the various approaches of economic instruments, four dimensions of criteria could be used: environmental, efficiency, distribution and institutional impacts.


two concepts of economic instruments

There are two main types of economic instruments used for pollution control:

- **Price-based measures** use charges, taxes and subsidies to persuade polluters to reduce their discharges.
- **Rights-based measures** create rights to use environmental resources, or to pollute the environment, up to a pre-determined limit, and allowing these rights to be traded

The most common form of price-based measure is a charge. A charge can be considered as a 'price' that the polluter pays for polluting the environment. There are various types of charges, including effluent charges, user charges and product charges. Effluent charges are used mainly in the area of water pollution control and are based on the content and quantity of a firm's waste stream. They are usually kept low because of political pressures from industries not wanting to pay higher charges, and concerns that higher charges might encourage illegal dumping and evasion of the charges. User charges are fees charged for using a resource or for being provided with a service. Product charges are charges added to the price of products: they are used to discourage disposal or encourage recycling. Charges raise revenue which may be used for environmental purposes but are often merely added to a government's general revenue. In opposition to charges, taxes generate revenue for the public budget.


Emissions trading involves the transfer in ownership of emission reductions. Instead of reducing emission directly, the offset could be purchased or additional offsets could be sold. Emissions trading introduces flexibility into environmental regulations and allows regulated entities to select, on the basis of costs, the most effective mix of controls to use in complying with environmental policy objectives. This flexibility will reduce the overall economic cost to achieve environmental targets. Open markets help to regulate between demand and supply of emission offsets. Compared to more traditional methods of regulation, trading systems reduce the cost of achieving an environmental target.



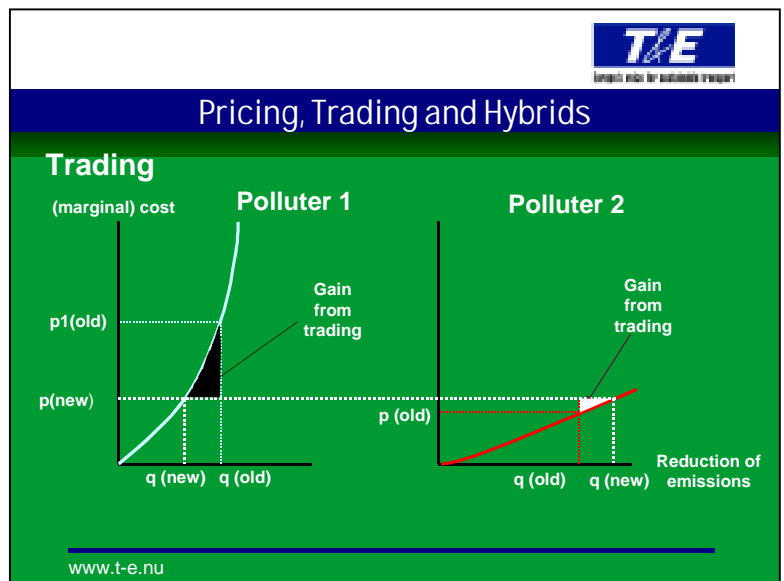
Economic Instruments

Evaluation Criteria

Environment	Overall Emission & Hotspots Environmental Tradeoffs
Efficiency	Cost Effectiveness Innovative Impetus
Distributional	Polluter-pays principle Competitive impact
Institutional	Legal feasible Political realisable



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Three types of emissions trading programmes have emerged: cap-and-trade, tradable credit and benchmarking.

Under a cap-and-trade programme, an aggregate cap on emissions is set that defines the total number of emissions “allowances,” each of which provides its holder with the right to emit a unit (typically a ton) of emissions. The allowances are initially auctioned or allocated among existing sources (grandfathering). Each source covered by the programme must hold allowances to cover its emissions, with option to buy and sell allowances from each other. Cap-and-trade programmes do not require pre-certification of allowances; the allowances are “certified” when they are distributed initially. Also, cap-and-trade programmes limit total emissions, a contrast to reduction credit and benchmarking programmes, which are not designed to cap emissions.

Credit Programmes provide tradable credits to facilities that reduce emissions more than required by some pre-existing regulation or other emissions baseline and allow those credits to be counted towards compliance by other facilities that would face high costs or other difficulties in meeting the regulatory requirements. Credits are created through an administrative process in which the credits must be pre-certified before they can be traded. Credit Programmes typically a voluntary “opt-in” supplement to existing regulations, either “command-and-control” standards or cap-and-trade programmes. This is the method that has been used by the Acid Rain Trading Programme in the U.S., which covers SO₂ emissions from power stations, to include sources not initially covered by the programme. It has also been used under the RECLAIM programme in the Los Angeles area, which covers NO_x and SO₂ emissions. The Clean Development Mechanism of the Kyoto Protocol’s flexible mechanism is another example

Benchmarking programmes assign a predetermined emissions rate to covered activities to ensure that the average emission rate achieved does not exceed this benchmark level. Like credit programmes, benchmarking programmes provide flexibility to individual sources by allowing higher-emitting sources to trade with lower-emitting sources. The primary difference between benchmarking and credit programmes is that credits are created (or “certified”) through an administrative process, whereas the certification is automatic in benchmarking programmes. The benchmarking approach has been used extensively in the US for mobile sources as a means of implementing emission standards for new sources, i. e. for chainsaws or snowmobiles These benchmarking standards use information on engine production characteristics (emission rates, power, lifetime, expected mileage or activity level) to serve as a proxy for the measurement of actual emissions. Benchmarking also allows the trading programme to apply to manufacturers, rather than to the actual emitters, which dramatically simplifies programme administration.

European Federation for Transport & Environment



Concepts to Create Economic Incentives for Green International Transport

by Karsten Krause

02 April 2004



Outline of the Presentation

Green International Transport

- Sustainable Transportation
- Greening Transport

Economic Instruments

- Flexibility vs. control
- Environment as a commodity

2 Concepts: Pricing & Trading

- How do they work?
- How could they be introduced?



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Green International Transport

Sustainable Transportation

- Balance the ecological, social and economic challenges
- Affordable and efficient
- Limited or no consumption of non-renewable resources



Green International Transport

Policy Options

1.) Traffic Prevention

- Regional production cycles
- Demand management

2.) Modal Shift

- Less aviation, less road transport
- More rail, more ships

3.) Modal Optimisation

- More efficient vehicles
- Operational changes



Green International Transport

Possible Policy Approaches

Command and Control

- Emission standards
- Speed limits

Economic Incentives

- Emission charges
- Emission trading

Voluntary Initiatives

- Self commitment
- Environmental labelling



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Economic Instruments

Environment – a free good

- Free access to environmental resources
- Pollution is an external effect, emission reduction not
- No price mechanism

Environment – a scarce good

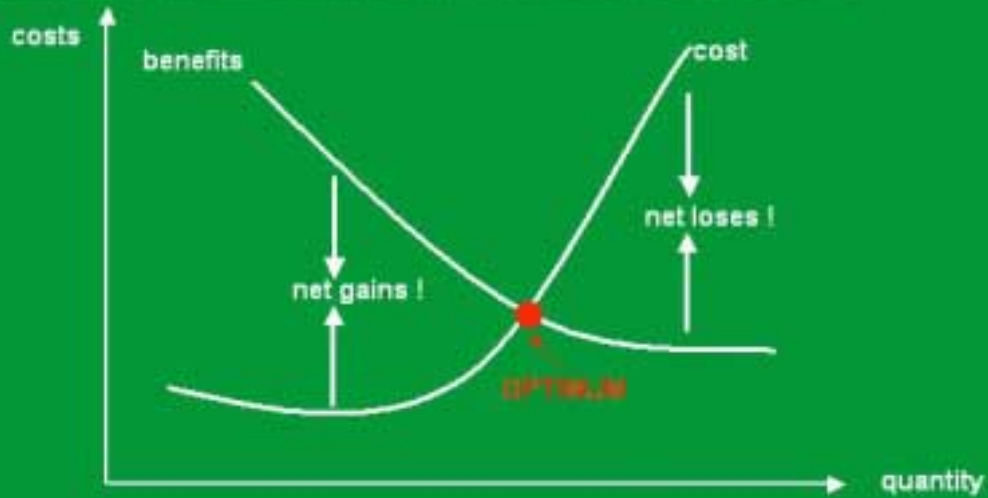
- Information
- Allocation of user rights
- Pricing the use



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Economic Instruments

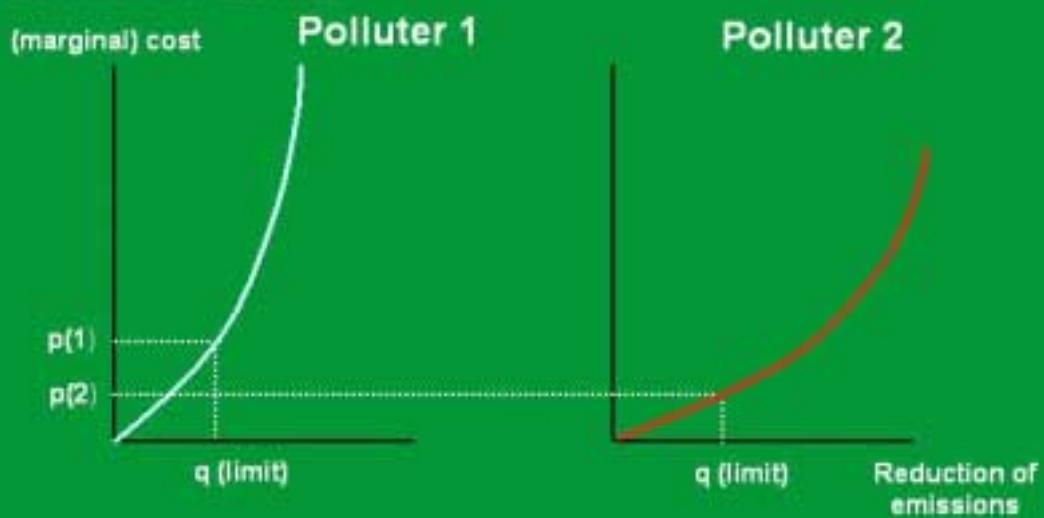
Optimal Environmental Protection Levels



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Economic Instruments

Emission Limits



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Economic Instruments

Advantages of Economic Instruments

- Greater flexibility
- Revenue generation
- Market-economy compatibility
- Enforcing the user-pays-principle
- Incentive-based policy approach
- High effectiveness
- Dynamic incentives



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Economic Instruments

Limits of Economic Instruments

- Uncertainty about the right level of levies
- Uncertainty about the reaction lags
- Unpredictable and unstable revenues
- Competitive disadvantage



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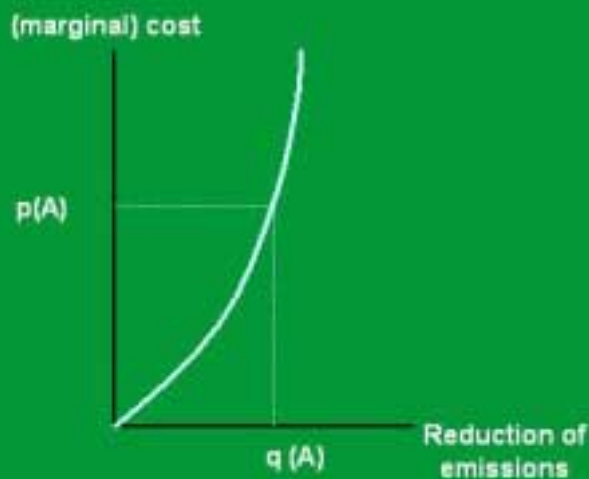
2 Concepts: Pricing & Trading

- **Price-based measures**
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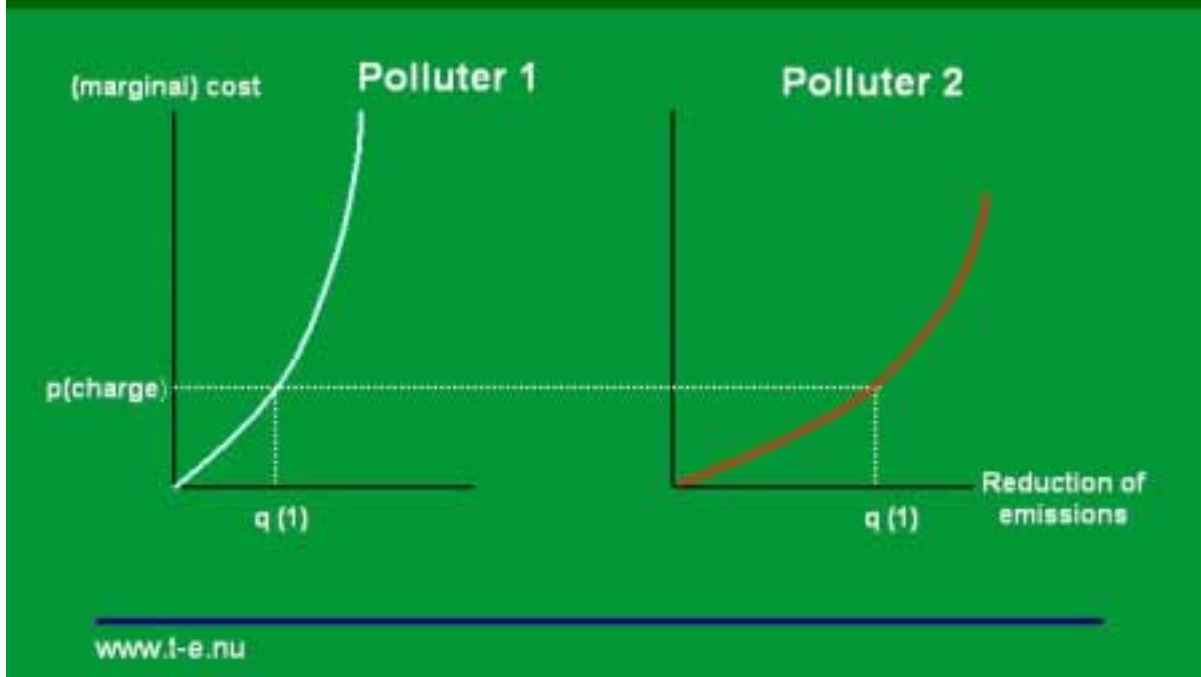
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2 Concepts: Pricing & Trading



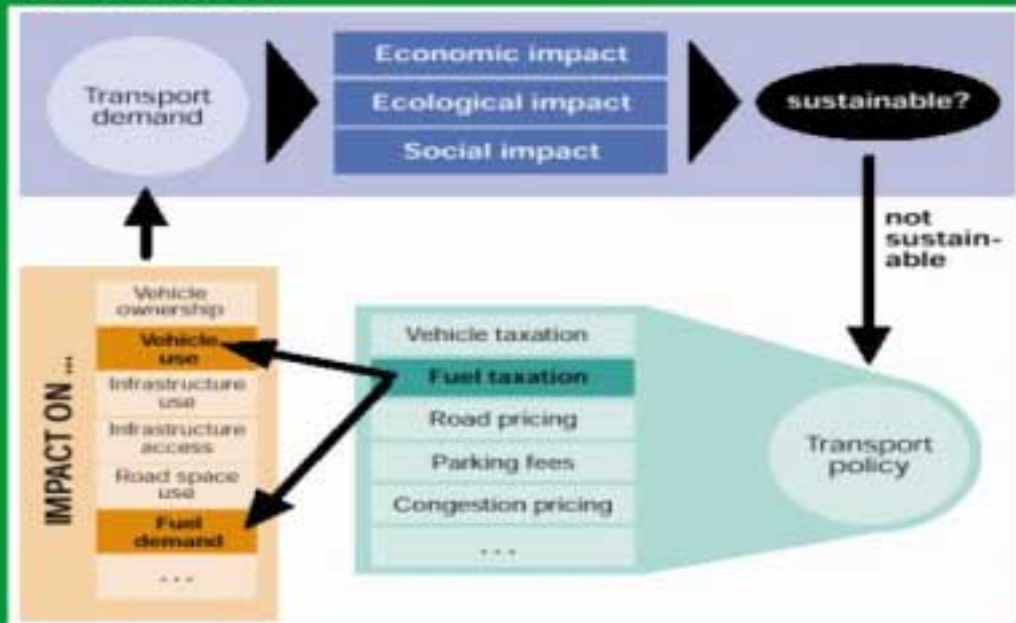
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Pricing



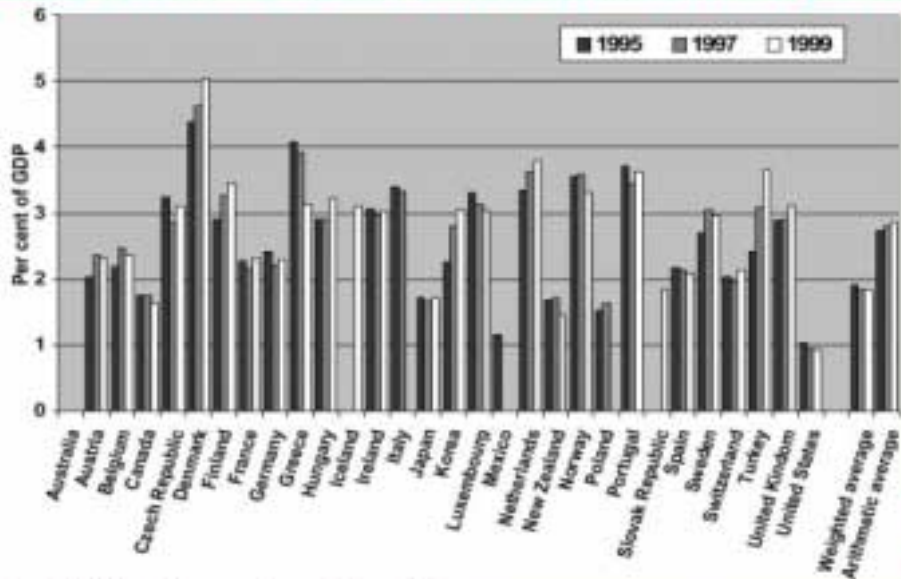
Pricing

Fuel Taxation



Pricing

Revenues from Environmentally Related Taxes



Source: OECD/EU database on environmentally related taxes

(% of GDP)

Trading

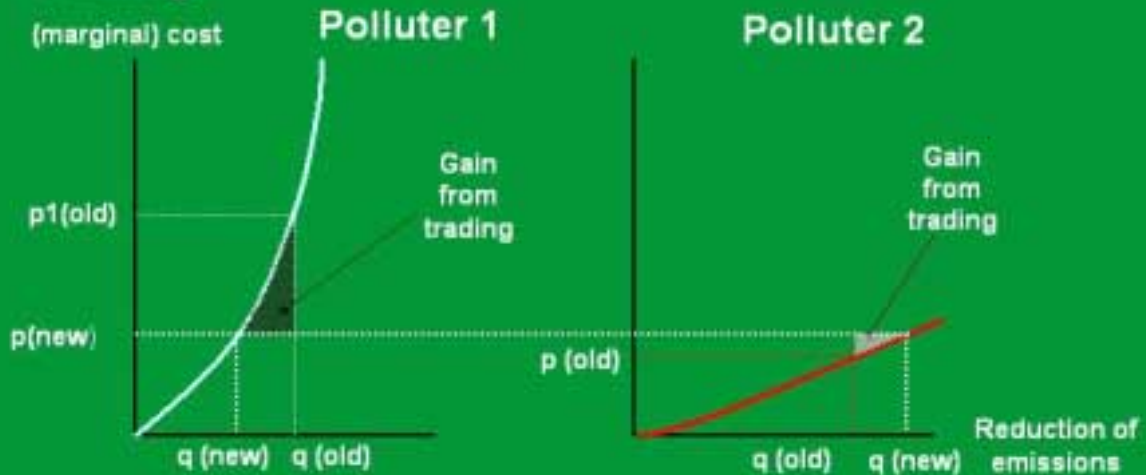
Trading

- Transfer of ownership of emission reductions
- Offset could be purchased or additional offsets could be sold
- Markets help to regulate between demand and supply



Trading

Trading



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Trading

Trading

- Cap and trade
- Credit-based trading
- Benchmark-based trading



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Trading

Cap and Trade

- Absolute cap on emissions defines the total number of emissions "allowances"
- Allowance = right to emit a unit of emissions
- Each source covered must hold allowances to cover its emissions, with option to buy and sell allowances from each other.
- Allowances are initially auctioned or allocated among existing sources (grandfathering)



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Trading

Credit-based trading

- Credit Programmes provide tradable credits to facilities that reduce emissions more than required
- Credits could be counted towards compliance by other facilities
- Credit Programmes typically a voluntary "opt-in" supplement to other policy instruments



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Trading

Benchmark-based trading

- Benchmarking programmes assign a predetermined emissions rate to ensure that the emission rate achieved does not exceed this benchmark level.
- They allow higher-emitting sources to trade with lower-emitting sources.



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Implementation

8 Steps to Implement Economic Instruments

1. Define a set of policy objective(s)!
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Implementation

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Distributional	Polluter-pays principle Competitive impact
Institutional	Legal feasible Political realisable



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Preliminary Conclusions

Economic Instruments an Alternative ?

Better not...

- ...to control dangerous substances
- ...to change existing legislation

Maybe...

- ...to foster innovation
- ...to reduce compliance costs

Better than...

- ...weak standards
- ...nothing



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Preliminary Conclusions

But in the end:
the devil is in the detail !



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T&E is Europe's primary NGO campaigning on a Europe wide level for an environmentally responsible approach to transport. info@t-e.nu

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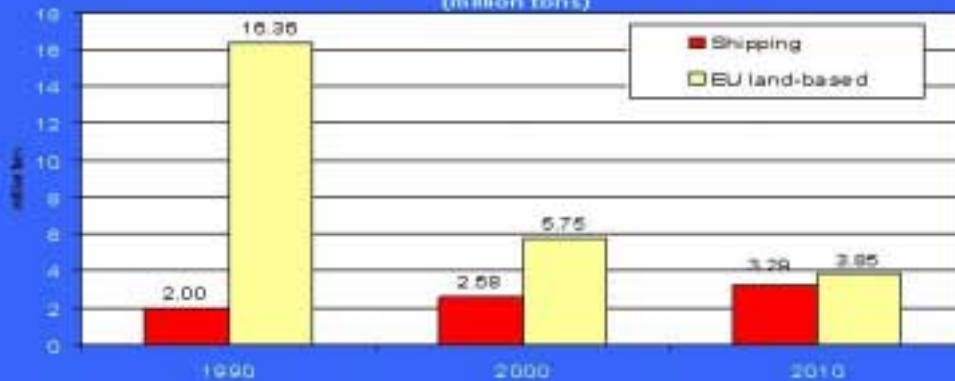


Economic instruments for shipping

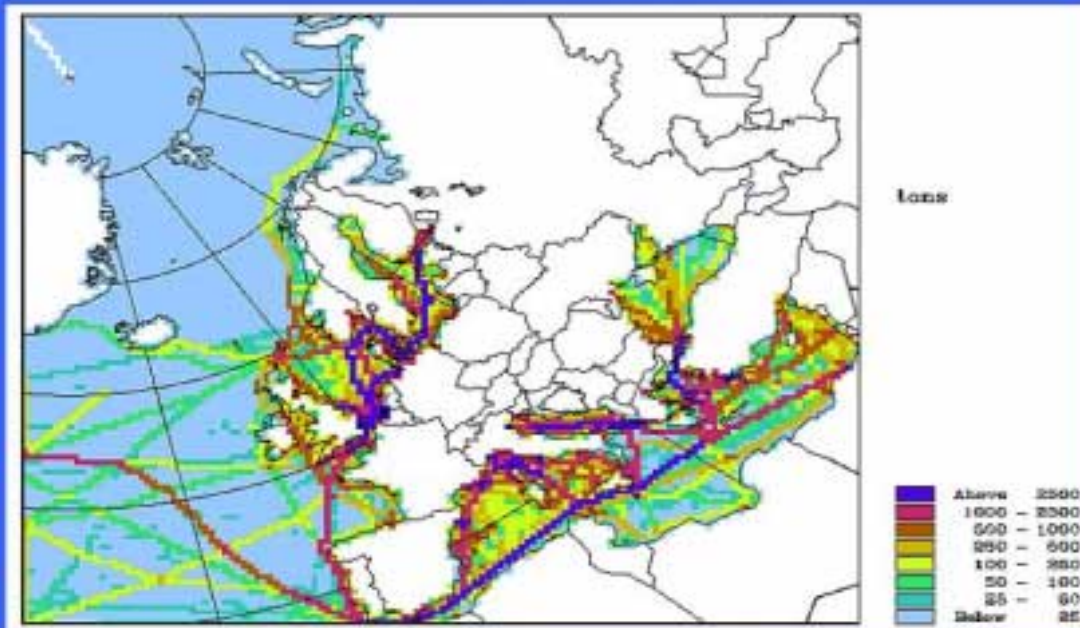
Christer Ågren
The Swedish NGO Secretariat on Acid Rain



Sulphur dioxide emissions
(million tons)



Entec study to quantify and map EU ship emissions



Economic instruments for shipping



NERA differentiates two types of instrument:

1. Emission-trading programs:

- Credit-based trading
- Benchmark trading
- Cap-and-trade

2. Emission-charging programs:

- Taxation
- En-route charging
- Differentiated dues

Economic instruments for shipping



1. Credit-based trading (1/2)

Credits provided to ships that voluntarily reduce emissions below business-as-usual levels. Such emission-reduction credits could then be sold to land-based sources, assumed to be subject to a cap-and-trade program.

- "Simple" credit program would provide no net decrease in overall emissions – would only move emission reductions from land to sea.
- "Stringent" credit program would require more than 1:1 trading ratio, thus a net reduction in overall emissions.

Economic instruments for shipping



1. Credit-based trading (2/2)

- Uncertain outcome - voluntary participation.
- Great legal/political/timing problems (EU must first agree trading program for land-based sources).
- Political "fairness" problems, since land-based sources would in fact pay for ships' emission reductions.
- Contrary to the principle aim of internalising external costs.

Economic instruments for shipping



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Economic instruments for shipping



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-

Economic instruments for shipping



2. Benchmark trading (1/2)

Identify specific emissions rate to apply. Require average emission rate not to exceed benchmark level. Allow shipowners or operators to buy and sell credits between themselves, individually or in consortia.

- Very much dependent on the level of ambition of the benchmark level.
 - Likely to allow vessels involved not to conform to emissions-related legislation (provided that that others "over-comply").
-

Economic instruments for shipping



2. Benchmark trading (2/2)

- Would consequently require changes in MARPOL Annex VI and EU legislation (the S-in-fuels directive).
 - If voluntary participation (trading consortia): uncertain outcome.
-

Economic instruments for shipping



3. Cap-and-trade (1/2)

An aggregate cap is set for a given year and a given sea area, thus creating a total number of emission allowances, each of which provides its owner with the right to emit a unit of emissions. Allowances are given (or sold) to individual ships, which are allowed to trade them amongst each other.

- The cap means a limit on total emissions (not only on emission rates), thus a more certain outcome.
 - Initial allocation of allowances difficult, plus may need regular updating (as ships may move).
-

Economic instruments for shipping



3. Cap-and-trade (2/2)

- An aggregate cap is set for a given year and a given sea area.
 - If designed to provide for a high level of flexibility, this approach would require changes in MARPOL Annex VI and EU legislation (the S-in-fuels directive).
 - Will shipping industry accept a cap on total emissions, and who has authority to set caps?
-

Economic instruments for shipping



4. Taxation (1/2)

Intention to reduce ships' emissions, not to raise revenue. A fuel sales tax could be aimed at reducing the sulphur content of fuel. Or a fuel-use tax could tax the sulphur in the fuel used by each ship. Alternatively, an emissions tax would tax the emissions of air pollutants from ships.

- Fuel taxes would impact only on fuel-specific emissions, such as sulphur and carbon dioxide.
- Fuel sales tax would reduce emissions from ferries and small ships, but large ships could buy fuel outside EU.

Economic instruments for shipping



4. Taxation (2/2)

- Politically difficult, since any taxation require unanimous agreement by the Council.
- Potential problem with UNCLOS Art. 26, which guarantees innocent right of passage for foreign-flagged vessels without being subject to charges except for services received.

Economic instruments for shipping



5. En-route charging

(1/2)

Charges based on the distance travelled, and thus on the level of emissions from each ship. In principle, authorities could collect charges from all vessels using European waters.

- A simple, but less accurate, approach would be trip-based charges.
 - Better accuracy by charges related to actual distances travelled.
-

Economic instruments for shipping



5. En-route charging

(2/2)

- A more advanced, and more accurate, approach would be charges directly related to amounts of pollutants emitted.
 - Potential problem with UNCLOS Art. 26, which guarantees innocent right of passage for foreign-flagged vessels without being subject to charges except for services received.
-

Economic instruments for shipping



5. Differentiated port/fairway dues (1/1)

Dues could be differentiated according to a ship's emissions of various pollutants. Programs could be designed to be either voluntary or mandatory. (Experience exists from Sweden, where a revenue-neutral such system is in place since 1998.)

- If voluntary, very difficult to foresee outcome.
- Difficult to agree on a mandatory port due system?
- Lack of transparency of port dues.
- Very few EU countries currently have fairway dues.

Some more or less common features:



Emissions monitoring and control

- For SO_2 , each ship must be able either to guarantee the sulphur content of the fuel used, or use techniques for (continuous) emissions monitoring. The potential future use of exhaust treatment systems must also be accounted for.
- For NO_x , each ship must have either certification of specific emissions, or use techniques for (continuous) emissions monitoring.
- In any case, a common EU-wide ships register, with details about the ships environmental performance would be useful, or perhaps even necessary.

Compliance

- There is a need to specify precisely how compliance would be determined, and how violations would be treated.

Economic instruments for shipping



NERA's tentative recommendations:

"Given the relative novelty of market-based techniques for the marine sector, it seems best to start with more modest programs. Although none is perfect, three approaches seem promising means of beginning..."

1. Stringent credit-based approach (voluntary)
2. Consortia benchmarking approach (voluntary)
3. Voluntary port dues differentiation

Note that all three approaches are voluntary, and that all appear to be very modest in terms of their potential for overall emission reductions.

Economic instruments for shipping



NGO comments (1/3)

We favour economic instruments for shipping that:

- Are designed to function primarily as a complement – rather than an alternative – to regulation, i.e. to speed up emission abatement measures, and for attaining emission reductions going beyond agreed and foreseen regulation;
- Have the best potential for significant additional emission reductions, and for improving the protection of health and environment;

Economic instruments for shipping



NGO comments (2/3)

We favour economic instruments for shipping that:

- Provide the best means of targeting emission reductions in particular geographic areas;
- Can be made practically applicable quickly;
- Are reasonably compatible with existing legislation and policies;
- Promote innovation and practical application of environmentally sound techniques and operational practise.

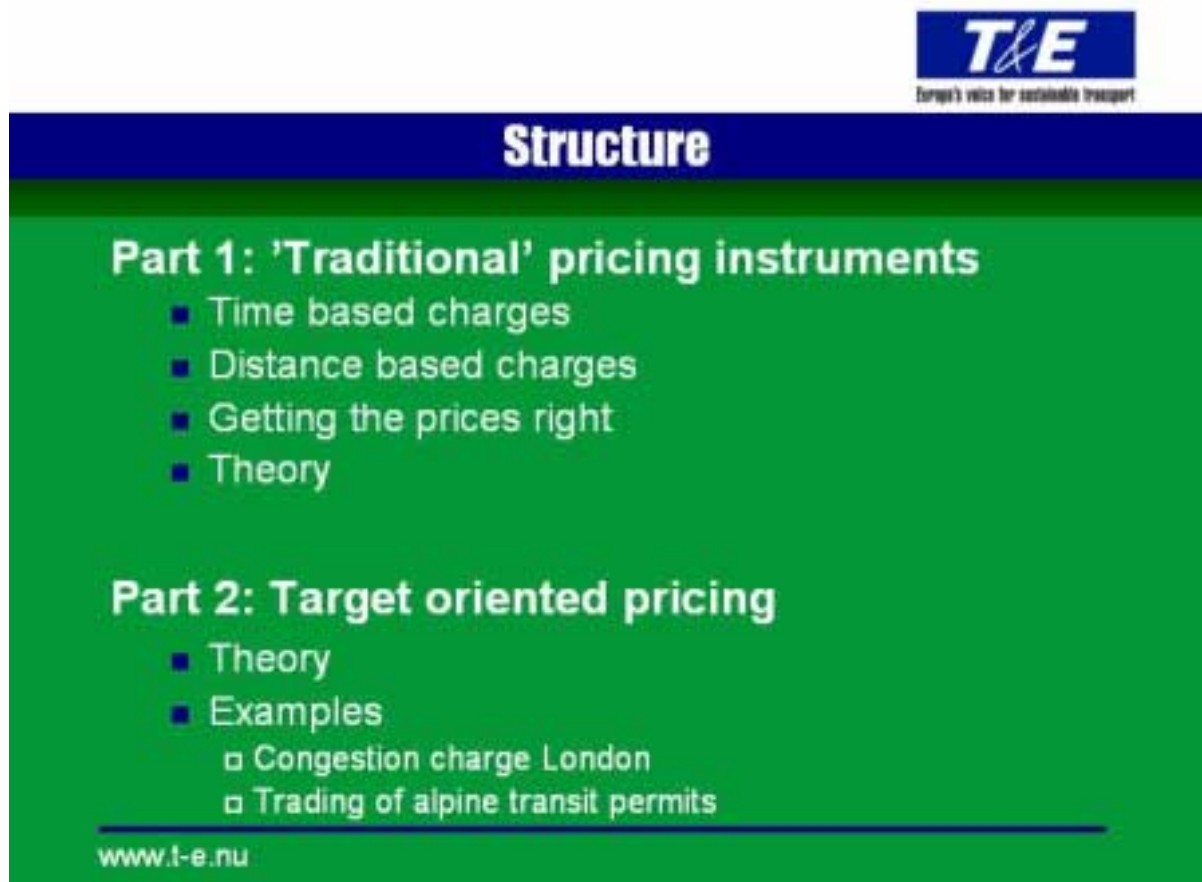
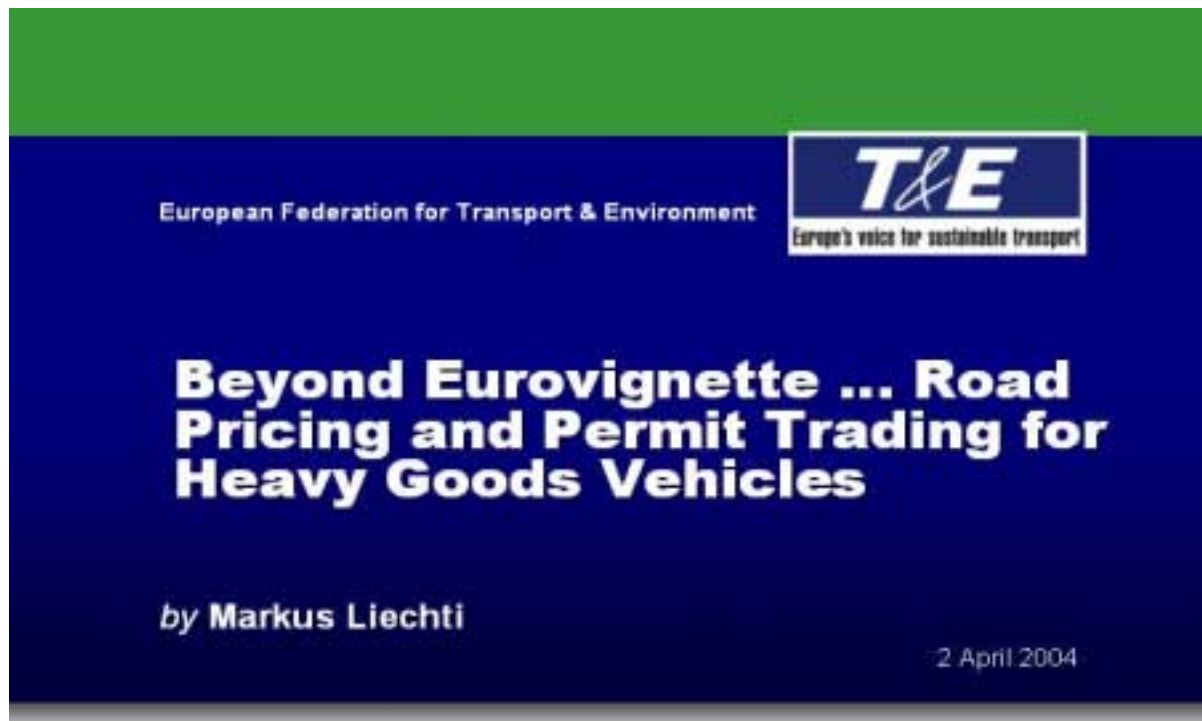
Economic instruments for shipping



NGO comments (3/3)

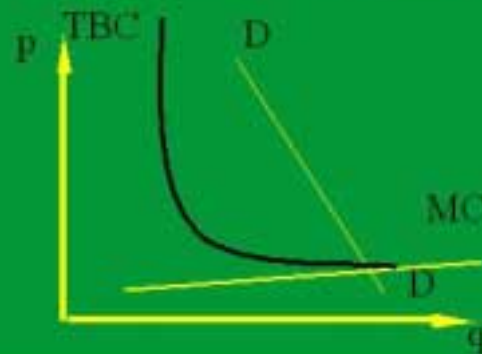
Most promising options:

- En-route/emission charges
 - Mandatory port/fairway dues
 - Cap-and-trade (?)
-



Time based road charges

- 'Traditional' Eurovignette (user charge) for trucks
- Pickerl Austria and
- Swiss Autobahnvignette for cars
- No incentives to the users
- Objective: Raising revenues



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Distance based charges

- Eurovignette Directive 1999/62 for trucks above 12 tons:
 - Allows for distance related tolls including construction, maintenance and renewal of infrastructure
 - Only motorways
- Proposal for amending directive 1999/62 (July 2003)
 - In addition accident costs
 - Differentiation of charges possible
 - Mark-ups for sensitive areas possible
 - Trucks above 3.5 tons

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Critics on Eurovignette Revision

- No preference of distance based tolls over time based user charges
- Not all costs included
- Member states should be free to apply charges on all roads
- Member states should be free to use revenues

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Swiss HVF: Costs to be covered



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Swiss HVF: user and polluter pays principle

Trucks above 3.5 tons driving on all roads within Switzerland

3 Factors: Distance
Weight
Emissions

Rate / Emission class 2	X	Distance travelled in Switzerland	X	Weight of vehicle and trailer	=	
0.01 Euro	X	300 Km	X	30 tons	=	90 Euro

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T&E: Getting the prices right!

**Social Marginal
Cost Pricing**



Air Pollution



Accidents



Noise



Congestion

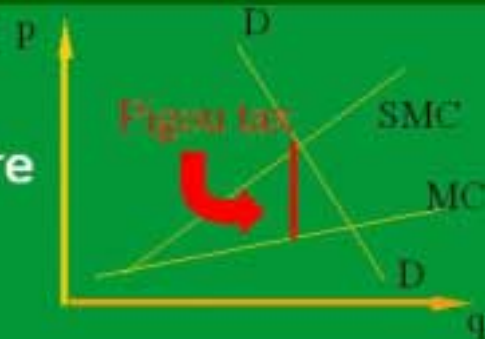


Wear and tear

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Social Marginal Cost Pricing

- Efficient use of transport infrastructure thanks Pigou tax



Conclusion:
SMCP = fair and efficient

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BUT:

- 'Perfect' SMCP needs high differentiation
- Academic dispute on 'right' level and method
- Perfect in theory: needs perfect market conditions: not given
- Efficient may be not enough
- SMCP is politically a non-seller
- Discussion on 'right' price is enemy of better price

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We know enough, therefore:

It's better to be almost right than perfectly wrong

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Target oriented pricing

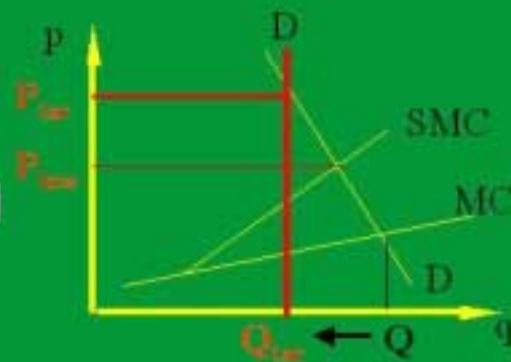
Fix targets (Q_{tar})

Fix price to achieve this target (P_{tar})

Starting on low level (political reasons)

Trial and error

Mix of instruments



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Tradable alpine transport permits

- Fix targets:**
Amount of HGV per year over the Alps
- Non-discriminating allocation of permits**
- Right to trade permits**



Mix of instruments: Pricing, promotion of alternatives

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Swiss freight transport policy

Fix targets:
Reduce alpine freight transport

Mix of instruments

- Swiss HVF
- Promotion of combined transport
- New Alpine rail links
- ??? Tradable alpine transport permit



1'400'000

650'000

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**Economic Instruments to Reduce the Environmental
Impact of International Transport**

T&E AGM Workshop, 2 April 2004, Brussels

***Reducing the Impact of
Aviation Emissions through
Economic Instruments***

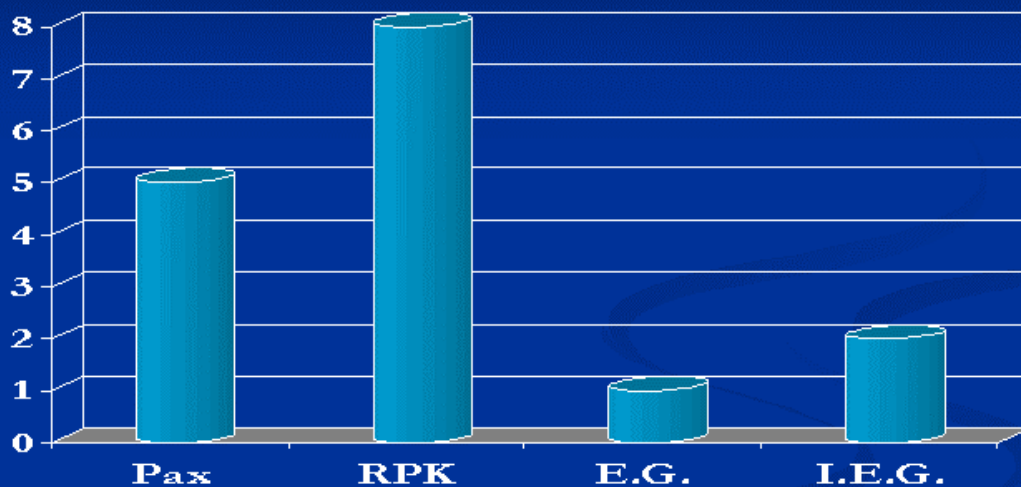
Tim Johnson

Director, Aviation Environment Federation



Sustainable growth?

Annual % growth/improvement in ...



Forecast Growth in UK aviation emissions ...

Estimated total UK aviation CO₂ emissions, including domestic, in:

1990	15.4 mt
2000	33.4 mt
2030	66.99 – 75.5 mt

Source: Department for Transport, UK, 2003



Forecast Growth in UK aviation emissions ...

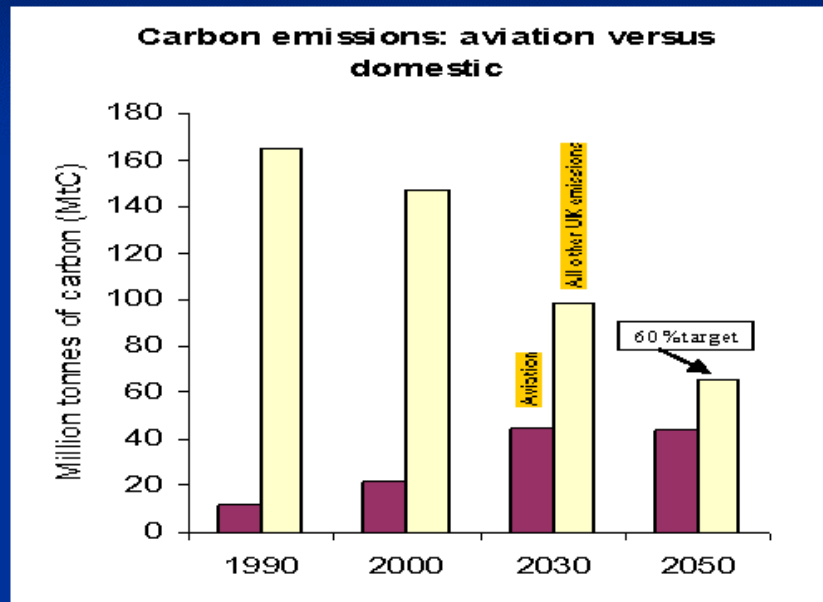
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2030	66.99 – 75.5 mt

Source: Department for Transport, UK, 2003



Forecast Growth in UK aviation emissions ...



Why use economic instruments?

- Prices do not reflect social and environmental costs; claims that sector is under-taxed;
- Technology impact limited - market focus on efficiency but no regulatory standard;
- Limits on air travel are currently considered to be politically unacceptable (although local pressure points developing related to airport capacity);
- Voluntary agreements by industry unlikely to go beyond "business as usual" scenario.



Types of instrument ...

- VAT
- Other taxes – e.g. UK Air Passenger Duty
- Fuel/carbon taxation
- Emissions charges
- Emissions trading



VAT on air travel in Europe ...

VAT Rates on air travel as at 1 May 2002
(source: European Commission)

	B	DK	D	EL	E	F	IRL	I	L	NL	A	PT	FIN	S	UK
Domestic	6	Ex	16	8	7	5.5	Ex	10	3	19	10	5	8	6	0
International	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Notes: 0 = zero rated Ex = exemption



Types of instrument ...

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Types of instrument ...

- VAT
- Other taxes – e.g. UK Air Passenger Duty
- Fuel/carbon taxation
- Emissions charges
- Emissions trading



Fuel/carbon taxation ...

- Chicago Convention – article 24 does not include fuel uplifted, but:
- Bilateral Air Service Agreements
- Energy Products Directive
- Examples of fuel/carbon taxes for domestic aviation:

Norway – National Aviation Green Tax of NKr 108 per tonne of CO₂ (NKr 0.28 per litre of fuel)

US – domestic fuel tax \$0.043 per gallon



Types of instrument ...

- VAT
- Other taxes – e.g. UK Air Passenger Duty
- Fuel/carbon taxation
- Emissions charges
- Emissions trading



Regulatory response to date ...

- UNFCCC – Kyoto Article 2.2
- European Commission Communication on Air Transport and the Environment, Nov. 1999:
 - Recognised problem;
 - Pledge to develop proposal for a European Aviation Emissions Charge by 2001;
 - Concept of emissions trading;
 - Work through ICAO initially.



International Civil Aviation Organisation (ICAO)

CAEP 5 Work Programme 1998 – 2001

- Focus on CO2 emissions only
- Preferred option: aviation's participation in an open trading scheme; potential role for charges in short-term; closed trading and taxes not supported.
- No discussion on targets

CAEP 6 Work programme 2001 – 2004

- Further work on open trading and guidance on charges



International Civil Aviation Organisation (ICAO)

CAEP 6 outcome, February 2004

- No agreement on further guidance for states who wish to implement a charge;
- Agreement on need for further work on trading relating to schemes to implement UNFCCC commitments and voluntary schemes only;
- No mandatory, global instruments currently being considered.



Regional action Europe

- CE Study “Economic incentives to mitigate greenhouse gas emissions from air transport in Europe”;
- Intra-European flights included in European emissions trading scheme from 2008 – supported by UK Government



Our policy ...

We recommend that en route emissions charge is introduced immediately. An emissions trading scheme will only be supported if it is proven to be environmentally effective. Key tests, either in the design of the trading scheme or in a supporting climate strategy:

1. The system adopts a stringent cap consistent with UNFCCC commitments;
2. That a trading system (or wider policy) is based on the total radiative forcing potential;
3. That permits are auctioned/combined with charge.

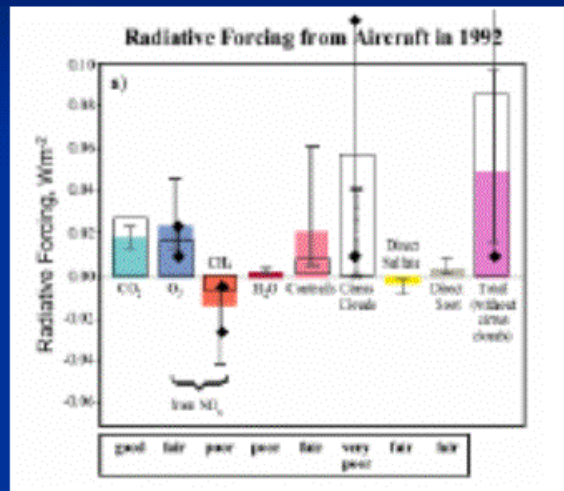


Issues ...

- Coverage – greenhouse gases
- Coverage – responsibility for emissions (allocation)
- Valuing external costs
- Legal issues



Coverage – greenhouse gases



Coverage – (allocation)

- COP 9/SBSTA 19 in December 2003 agreed that decision 2/CP.3, relating to allocation, would be pursued at SBSTA 22 scheduled for summer 2005.
- A written reply from the European Commission services to a questionnaire from the Danish Presidency, contains a preliminary analysis of the different allocation options showing, for international emissions from aviation, a preference for allocation according to fuel sales.
- Other options: no allocation; nationality of carrier; country of departure/destination of aircraft/passenger/cargo



Valuing external costs ...

- Average value 30 Euros per tonne of CO2 but wide variation
- Danger of relying solely on CO2 equivalents to take account of radiative forcing impacts



Legal issues ...

- Existing ICAO guidance on charges?
- Responsibility for emissions?
- How to treat carriers from developing countries without creating competitive distortions?



A way forward?

- ICAO unlikely to take action in short-term;
- Focus should be on European action – opportunity following elections in 2004 and new Commission appointments?
- Economic instruments must be part of a wider climate strategy for aviation.



Summary of the Round Table Discussion

by Malcolm Fergusson and Karsten Krause

A round table discussion on economic instruments followed the four presentations at the T&E AGM Seminar. A number of the seminar's participants had a broad experience with campaigns on economic instruments. The different contributions to the discussion focussed on the chances to implement economic instruments in Europe.

In the past, the public reaction to NGO campaigns on environmental pricing was often quite negative. There has never been any support for economic instruments that lead to higher costs for the use of a private car or additional charges for an airline ticket. The industry welcomes the idea of introducing more flexible approaches, but only if they could gain and not if they fear an additional burden. Their Pavlovian reflex is to threaten job losses and a relocation of business activities. The media easily picks up the extremes while ignoring the benefits. Stories on slight improvements do not sell.

During the discussion, the seminar participants developed four success factors, how economic instruments could be used to convince more policy makers, citizens and even companies. These issues should be already considered in NGO campaigns.

The Persuasiveness of Economic Facts

The use of cost data and econometric modelling gives an additional credibility to the political arguments of NGO campaigns. It is common knowledge that no statistic is absolutely neutral. However, numbers express environmental problems and feasible alternatives.

Promotion of Fairness

The distribution of the advantages and problems in the use of environmental resources are uneven and unfair. The worst polluter benefits most from a free use of environmental resources. Health costs and environmental damage are external effects. Clear price signals would reflect the existing scarcity. Applying the user-pays principle and setting fair prices protect the most vulnerable. To promote social justice the "price tag" on environmental resources needs to integrate the needs of marginalized groups in society.

Economic Incentives foster Transparency

It is easy to argue against higher costs for transport services. If the use of the generated revenue will support objectives that are "visible" and understandable (eg better public transport or even road repairs) , the support of economic instruments will increase.

Marketing of Realistic Incentives

Developing a good proposal to solve a transport-related problem is not sufficient, it has to be realistic. A convincing proposal should use economic instruments but not argue for a theoretical optimal instrument. It is complex and sometimes impossible to define the "true" price for the use of environmental resources. The objective should be the right price.

