



LA STRADA PER KYOTO XVII CONVEGNO TECNICO ACI

Lo Scenario Internazionale: ECMT CO₂ Review

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Transport ministers will discuss policies to reduce CO₂ emissions at the council meeting of the European Conference of Ministers of Transport, ECMT, in Dublin this May (17-18). This short paper provides a preview of the recommendations to be put to Ministers. Work is still in progress and so the nuances and details of the conclusions might change but consensus is emerging over the main lines of the argument – developed by an ECMT working group jointly with environment ministry representatives through the OECD.

The Review examines policies in 50 OECD and ECMT member countries and sets out to answer three questions:

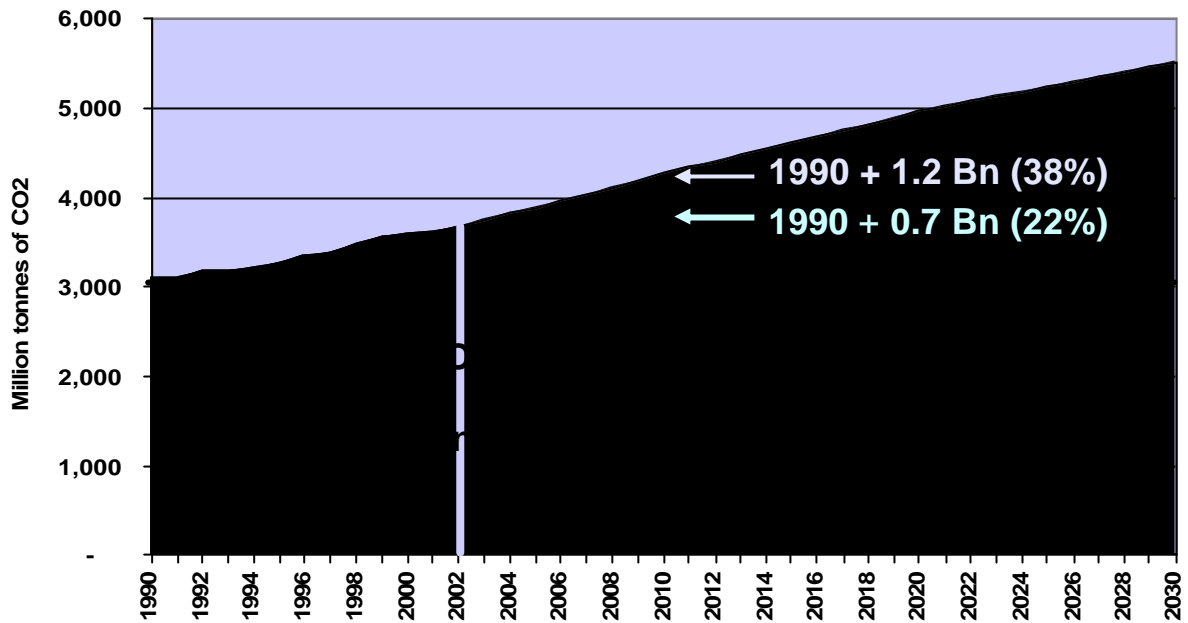
- What policies are being adopted;
- How much abatement of CO₂ emissions are they likely to achieve;
- What are likely to be the most effective policies for cutting CO₂ emissions?

Data

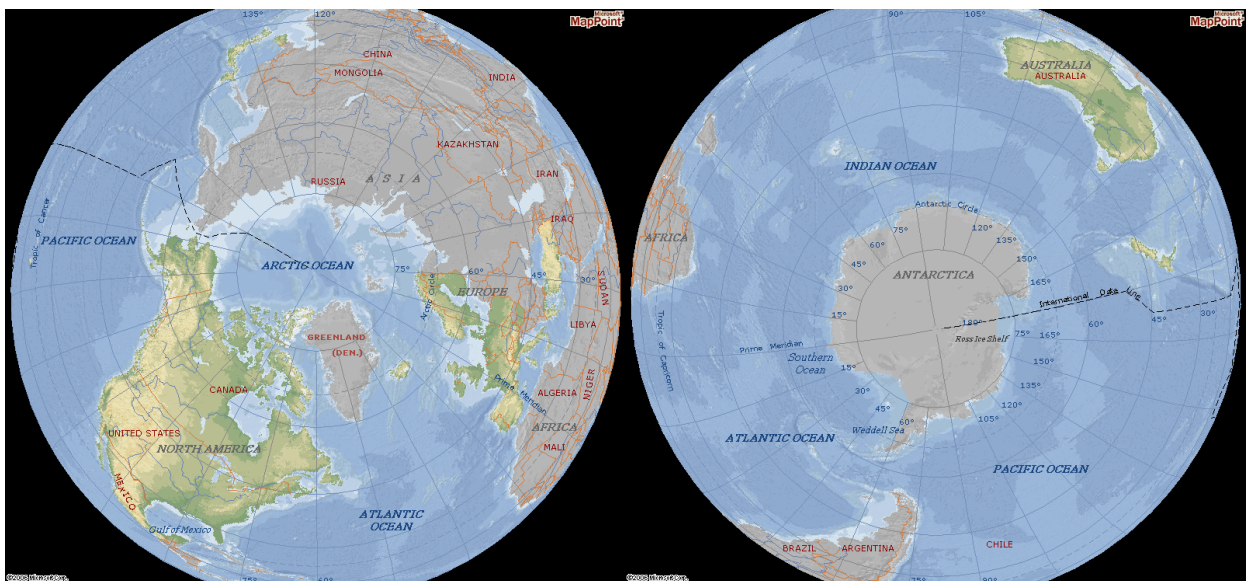
The work is based on official submissions to the Intergovernmental Panel on Climate Change under the UN Framework Convention on Climate Change (FCCC) and other official statements, to the European Commission for example, and to the OECD and ECMT itself. Over 350 measures have been identified and governments expect them to result in reducing CO₂ emissions by around 500 million tones a year, by the year 2010, which is the central reference year for the emissions reductions targets agreed in Kyoto under the UN FCCC.

For the OECD / ECMT region, transport CO₂ emissions are projected to increase nearly 40% between 1990 and 2010, following the International Energy Agency's business as usual scenario, as shown in Figure 1. Superimposed on the scenario is the impact of the CO₂ abatement policies reported. This is intended only to give a rough idea of the size of the emissions reductions involved, clearly there is likely to be some double counting as some of the abatement policies (though we think probably only a minor part) will have already been incorporated in the IEA scenario. This makes it difficult to conclude much about the all important slope of the trend line after 2010.

Figure 1. OECD / ECMT Region Transport CO₂ emissions



? ECMT and OECD Member Countries?



Analysis

The policies adopted nationally can be split into four approaches by type of impact – that is to say the way in which each influences CO₂ emissions. The four approaches are:

1. Demand management – to reduce the number of passenger/tonne kilometers of transport that need to be driven;
2. Fuel efficiency – to reduce the amount of fuel used per passenger or tonne kilometer driven – subdivided into:
 - a. the technical efficiency of engines and vehicle components, and
 - b. in-use efficiency on the road which is determined by driving style, the load factor of vehicles, avoiding congestion through route planning etc.¹;
3. Carbon intensity of fuels – covering alternative fuels which emit less CO₂ emissions than conventional petrol and diesel;
4. Modal split measures.

Examples of some of the measures covered by each of these approaches are given in Figure 2, which also indicates the percentage share for each type of the policies adopted by member governments. We did some filtering of the measures reported to eliminate policies that appear unlikely to be effective. Thus, if a modal shift policy is simply described as “subsidy to public transport” with no indication of how, in the particular circumstances of the services or operator receiving the subsidy, this is expected to produce CO₂ emissions savings, the measure was not included in further analysis.

Figure 2: **Transport Sector Abatement Measures by Type of Approach**

Demand	Urban planning to discourage sprawl; Road pricing; Logistics optimisation.	3%
Fuel efficiency	Tax differentiation to promote EFVs;	27%
- Technical	Vehicle efficiency regulations – CAFE, Top-Runner;	
-		
- On-road	Driver training; Car pooling; Logistics management, route planning / guidance.	18%
Carbon intensity	Biofuel targets and tax incentives; Hydrogen fuel cell R&D; Incentives for CNG buses.	20%
Modal split	Targeted subsidies for public transport.	32%

¹ Some of these measures like car pooling and route guidance are often described as demand management measures rather than operational efficiency measures.

A third of all of the measures retained are indeed designed to promote modal shift. When one looks at the effectiveness of policies, however, most (though not all) modal shift measures are rather weak. We looked at effectiveness by dividing the CO₂ emissions savings attributed to measures by the transport sector emissions for the country concerned and then finding the average across countries for each type of policy. This approach is not perfect as it does not question whether individual measures have been designed to be as effective as possible, or as effective as is economically optimal, but it does have the virtue of reflecting what is currently viewed as politically acceptable. Ranking measures by effectiveness produced 7 clear, front-running combinations of policy type and instrument, as shown in Figure 3.

Figure 3: **Most Effective Policies**

Top Policy Combinations	Ave % impact	No. of Countries	Coverage
1. Vehicle fuel efficiency voluntary agreement	4.9	EU + 3	30%
2. Vehicle efficiency tax incentives	4.4	16	73%
3. On-road eff. voluntary agreement	2.5	3	52%
4. Biofuels regulation / tax	2.3	20	73%
5. On road eff. education / training	2.3	8	14%
6. Road pricing	2.3	3	6%
7. Vehicle fuel efficiency regulations	1.9	2	55%

Figure 3 also shows the coverage of the policy types across the OECD / ECMT region – the final column shows what percentage of the region’s emissions are produced from countries where the measure has been implemented. This gives an indication of how much additional potential the measure offers for reducing CO₂ emissions simply by adopting similar policies throughout the region (i.e. even before considering ways to improve the implementation of that type of measure).

One should note that the first and last combinations – the EU voluntary agreements with vehicle manufacturers and the US CAFÉ and Japanese Top-Runner standards – are essentially substitutes for each other. Together they have been adopted in countries accounting for 85% of the region’s emissions. The EU agreements rank higher than the regulatory standards because they set stricter targets than the CAFÉ standards (and the US accounts for more vehicle sales than Japan, where standards are similar to EU targets). Again it should be stressed that this analysis does not imply any of these

standards are optimally designed, simply that overall, more abatement is currently to be expected from the voluntary agreements.

Conclusions

From our analysis we conclude that:

- although integrated packages of measures are needed if transport sector CO₂ emissions are to be significantly reduced in the future – measures need to address vehicles, fuels, demand management and modal shift in a balanced way;
- and it is sensible to follow a co-benefits approach – favouring measures that also have benefits for managing congestion, improving access to transport services for the poor and for people with mobility handicaps, making cities more pleasant places to live, reducing air pollution and reducing dependence on imported oil and gas;
- it is clear that vehicle efficiency measures deliver most.

For CO₂ policy in the transport sector it is therefore time to switch attention to energy efficiency, away from modal shift which dominates current policy effort. What should this involve?

First and foremost it means **differentiation of vehicle taxes** (purchases taxes, registration charges and annual circulation taxes) according to rated CO₂ emissions. More countries need to differentiate their taxes in this way. The EC has proposed a directive that will require Member States to do this, but there is no reason to wait for the long process of getting Parliament and Council to agree to the proposals.

International guidance on the design of incentives would be desirable, with linear incentives employed to avoid creating steps between tax bands that risk fragmenting of markets, both within and between countries. But this kind of guidance is not included in the draft directive.

Where countries have already differentiated taxes the incentives created have generally been timid. Only the UK's reform of company car tax allowances created strong incentives to switch to the better performing vehicles (even in the UK the incentives created by differentiation of the general annual car circulation tax are rather weak). Larger incentives seem appropriate with a wider range of vehicles included, not just ultra-low emission vehicles, if the market for new vehicles is to be transformed.

Second, the focus on efficiency needs to encompass off-test **vehicle components** such as tyres, lights and air conditioners. There are currently no incentives to improve these aspects of vehicle design as these components are not tested as part of vehicle type approval procedures. The efficiency of components already on the market varies tremendously from model to model, even among products from the same supplier. Even without forcing technology, standards, labeling and tax incentives could be used at low cost to steer the market towards the better performing products.

Also under this heading, measures to improve **on-road vehicle efficiency** could be much more widely adopted to achieve relatively low cost emissions reductions. This includes incentives to improve the logistic organization of large freight distributors, where the US and Canada have voluntary agreements and in Europe a number of private companies have taken the initiative themselves. And it includes driver training and the on-board instrumentation to provide the necessary feedback to drivers to keep fuel consumption and emissions down. The Dutch government provided for a time highly effective tax incentives for car manufacturers and distributors to equip vehicles with such instruments.

All of these measures are much more **cost effective** than tightening the targets under the EU-ACEA voluntary agreement, and far less costly than providing subsidies for conventional biofuels, per ton of CO₂ saved. Whilst some people do argue for measures to reduce CO₂ emissions in transport that cost ten times or more than measures available in the power and heat sector, does it make sense to pursue the more expensive measures within the transport sector, such as providing more support for conventional biofuels, when much cheaper measures are already available within the sector?

One final area that merits more focus is **demand management**. Measures under this heading account for just 3% of reported measures but road pricing is counted among the top measures in Figure 3. The three measures reported under this heading are the electronic truck-km charges introduced in Switzerland, Germany and Austria. The London Congestion Charge is also estimated to result in considerable CO₂ savings (20% reduction within the charging zone according to the local transport authority, Transport for London) but is not included in the UK government's submissions on CO₂ policies. This reveals a weakness in current practice in reporting of policies, and by extension in the way policies are developed. Whereas integrated spatial planning and transport policy is one of the fundamental approaches to managing CO₂ emissions from transport, the two are too often not integrated, largely because spatial planning falls to local government whilst transport policy is the responsibility of central government. National governments take little account of local government policies and often do little to assist local governments deliver CO₂ emissions savings.

Co-ordination of government policies is also an issue for the central conclusion of our work – transforming the market for low emission vehicles. The ECMT Council of Ministers invited car industry leaders to discuss environmental policies with them in 1995. On that occasion ministers signed a Joint Declaration on reducing CO₂ emissions from new passenger cars with the presidents of OICA and ACEA. This committed industry to making significant and sustained reductions in the emissions of new vehicles. By and large industry has delivered on this pledge, subsequently made somewhat more binding by the EU voluntary agreements, although there has probably been too much reliance on a shift to diesel cars. Ministers pledged to provide tax incentives for consumers to stimulate the market for low emission vehicles but quite a lot more could be done to deliver this transformation of market conditions.

It is not entirely in the gift of transport ministers to deliver this transformation – the real power lies with finance ministers. But we live in an age of “joined-up government” – governments that aspire to ensure that sectoral policies work together to achieve the headline goals on which they are elected – and at least in Europe, all governments include responding to climate change in their pledges. We shall be taking the recommendation for stronger linkages between vehicle taxes and CO₂ emissions to our Ministers again in Dublin, recommending that they propose larger incentives to their finance colleagues.

We seek support for this, and the broader message of pursuing the more cost-effective policies available within the sector, from the car manufacturing industry and the broader interests represented by ACI. We know car manufacturers have mixed feelings about differentiating car taxes because larger and more powerful cars currently tend to provide larger profits but at the same time tend to emit more CO₂. Nevertheless, stronger and more widespread vehicle tax differentiation will greatly facilitate meeting the industry’s EU targets and continue the trend towards lower emissions. Some car industry voices now seek to switch the focus for meeting transport CO₂ emission goals from their own industry to the oil industry, by increasing mandatory targets for biofuel blending. However, expanding expensive biofuel subsidies does not seem a very rational way of “balancing” policies. It would be far more efficient to pursue relatively low cost measures to promote the uptake of more efficient vehicle components and promote better on-road performance from drivers and freight logistics providers as outlined above. This ought to provide fertile common ground for industry, government and automobile clubs to work together.