

THE USE OF ECONOMIC INSTRUMENTS AND GREEN TAXES TO COMPLEMENT AN ENVIRONMENTAL REGULATORY REGIME

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Abstract. In 1999, some countries are developing and effectively applying economic instruments for environmental protection and natural resource management, whilst others are relying on command and control regulatory procedures under-enforced by sometimes inadequately trained and motivated enforcement officers. This paper considers the current and future role of economic instruments as policy instruments for use by governments. In many developed countries, past over-regulation allied to a serious shortfall of experienced environmental enforcers required regulatory regimes to be supplemented by well targeted economic instruments and green taxes. Their application to countries which do not have developed environmental control systems is more questionable. The purported threats of the longer term effects of global warming, damage to the ozone layer and an apparent loss of biodiversity have led environmentalists to adopt the so-called precautionary principle. Sustainable development has added to the pressures for further national and transfrontier legislation. The challenge facing policymakers, therefore, is to design policies to enable market forces to operate in the environmental sphere, for example through a system of pollution charges, principally intended to promote greater environmental efficiency. These charging systems can be of many kinds but their main defining feature is their reliance on markets and the price mechanism to internalise environmental externalities, thereby attempting to make polluters pay through facing the full social costs of their activities. Some of the applications of these charging systems, financial and fiscal instruments and tradable emission systems are explained and illustrated.

Keywords: economic instruments complementary to command and control regimes, green taxes

1. Introduction

1.1. 1999 ENVIRONMENTAL TRUTHS EXAMINED

During the last decade, the environmentalists' movement has renewed its attack on the desirability of economic growth, and has re-doubled its call for drastic measures to ward off environmental catastrophe. A leading, if mistaken, environmentalist, Jonathan Porritt, at the beginning of this decade wrote that, "in the current state of the planet, the idea that economic growth is necessarily and automatically a good idea is no longer tenable" (Porritt, 1990).

Those who have been practising environmental law (Hawkins, 1998) in the field for the last quarter of a century can well remember in 1972 the Club of Rome publishing a highly influential, if specious, report entitled, "Limits to Growth." In it was stated that the total global oil reserves amounted to some 550 billion barrels, which were anticipated to be used up by 1990. By 1990, the



world had used 600 billion barrels of oil but, also by that year, unexploited reserves amounted to at least 900 billion barrels. The Club had used the word “reserves” with a rather restrictive interpretation. It also made similarly wrong predictions about aluminium, copper, lead, natural gas, silver, tin, uranium and zinc.

Environmentalist pressures eased off in the middle 1970s when the sudden rise in the oil price led to deflationary policies so that the public was more concerned with the lack of economic growth than with a fear that economic growth was harmful.

In 1980, Global 2000 was a report to the President of the United States by a committee of the great and the good which predicted that population would increase faster than world food production so that food prices would rise by between 35 and 115% by 2000. Yet, with six months to go, the World Food Commodity Index has fallen by 50%. No doubt there will be some form of explanation, some time.

In the early 1970s, there were assumptive statements that, whilst meteorologists disagreed about the cause and extent of the cooling trend (the new Ice Age), they were almost unanimous in the view that that trend would reduce agricultural productivity for the rest of the century. Contrast this with what Vice President Al Gore said in 1992, “Scientists conclude almost unanimously that global warming is real and the time to act is now.”

From the 1860s to the 1880s, Britain lived through a prolonged cold snap. It is this period which is taken as the base line to measure the global warming increase of 0.5°C to the present day. So, are we as certain about the effects of global warming as all the politicians seem to think? Can it be one of those mantras which should be subject to greater scrutiny than heretofore?

The unanimity of scientists has undergone a sea of change in the last 20 years, with greenhouse gases apparently accumulating like nemesis waiting to punish us for the fatal hubris of achieving real economic growth. Mr. Gore, incidentally, also said in 1992 that 20% of the Amazon had been deforested and that deforestation continued at the rate of 80 million hectares a year. The real figures are agreed to be 9% of deforestation in the Amazon Basin and are now falling to about 10 million hectares a year.

1.2.PRECAUTIONARY PRINCIPLE AND SUSTAINABLE DEVELOPMENT

The alleged threats of the longer-term effects of global warming, damage to the ozone layer and the apparent loss of biodiversity have led environmentalists to adopt the so-called precautionary principle. In addition, the old Club of Rome myth that supplies of so-called finite resources were indeed finite has given rise to the pursuit of only sustainable development.

These two new catch phrases are repeated parrot fashion by environmental policymakers, commissions and committees, national and international, set up to

supervise and report on the adoption of policies to promote sustainable development and to implement the precautionary principle.

Politicians, particularly in America, Germany and England, who fail to pay due lip service to this principle do so at their peril. Many politicians and public figures, particularly in the fields of academe, are eager to demonstrate their sense of social responsibility. The precautionary principle has, of course, been around since time immemorial. Plaques on the facades of houses in the City of London in the 17th century denoted that the occupier had subscribed to a particular local commercial fire brigade on whose extinguisher help he could rely at the time the first wisp of smoke appeared. Now there are lightning conductors, insurance policies, car deadlocks and smoke alarms.

Indeed, insurance itself is one of the best working examples of an economic instrument. It involves the quantification of environmental risk and an explicit financial discouragement to high risk activities. Pollution insurance can be seen as part of a broader universe of economic instruments which act as direct financial incentives away from polluting processes.

Sustainable development for its part cannot be interpreted, as it sometimes is, as implying that all other components of welfare are to be sacrificed in the interests of preserving the environment exactly in the form it happens to be in today. It is in fact no different from the accepted goal of maximising society's welfare.

It is misleading to introduce the concept that it constitutes some important new insight to guide environmental policy. This merely creates confusion, although it has a high feel good factor rating and is an excellent moveable step ladder in order to occupy the moral high ground.

There have been attempts to focus more closely on whether sustainable development has any helpful meaning in environmental management apart from the received truth that it depends on only development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

A strong form of sustainability in which the current generation leaves future generations with an unchanged stock of natural resources is not only unrealistic but is an unnecessarily restrictive requirement. A weaker requirement would be that future generations should receive at least as much total capital, aggregating natural resources and physical and intellectual capital as the present generation inherited (Markandya, 1989).

The challenge facing policymakers, therefore, is to design policies to enable market forces to operate in the environmental sphere, e.g., by a system of pollution charges where property rights cannot be applied. It is on this area that policymakers should concentrate their efforts rather than flying in expensive seats to vast international jamborees to discuss the latest apocalyptic predictions (Beckerman, 1995).

The worst environmental conditions are those found in lower income countries, e.g., a lack of acceptable sanitation and clean drinking water which,

when available, is often carried for over half a mile in an earthenware pot on a head. A billion people in developing countries have no access to safe drinking water, and at least two billion have no access to proper sanitation (UNDP, 1990). There is also the urban squalor of almost all of the main cities in developing countries with their intolerable air pollution as a result of dung fires. The worst threat to the environment arises largely from poverty in the Third World.

Governments should not be distracted from attempts to solve these problems by attention paid to spurious disaster scenarios. All too often, however, politicians are deluded by the environmentalist movements' predictions that we are on the verge of environmental catastrophe and that governments must be pushed into taking far more drastic action than they appear to be taking. Alarm bordering on hysteria is no guide to balanced policy.

In times of tightening science budgets, and in an age where scientists feel misunderstood and unloved, some of them are being seduced by money and popularity to encourage, or at least acquiesce in the latest well-funded, well-publicised "green" scares. Predicting catastrophe is a good way of obtaining money to continue your research and showing what a compassionate scientist you are (Kenny, 1994). People will more readily send a donation to an organisation that promises to save the planet from imminent catastrophe, than to one which merely wants to spend more money on drains for over-populated shanty towns outside Durban or Djakarta.

Edward Goldsmith, as if bent on balancing the commercial successes of his late brother, claims that what we must aim for is not growth but negative growth or economic and demographic contraction (Goldsmith, 1988). The present South African Government is unlikely to endorse that view.

1.3. OVER-REGULATION AND UNDER-ENFORCEMENT

So pressures to take drastic action to save the world from imminent environmental disaster will only push governments further in the direction of regulations and controls, like those used in the Soviet economies with the disastrous effects that are now well known. Command and control policies suit the bureaucratic instinct to regulate matters rather than help markets operate more efficiently within an appropriate, even-handedly, transparently enforced legal framework.

It is harmful to pile law upon law without regard to the cumulative effect of measures which individually may be laudable. Priorities become confused, resources misapplied, the public bewildered as to basic environmental truths and what standards to expect.

The result is that we become over-regulated and under-enforced, misleadingly educated and erratically resourced. Such over-regulation through its surfeit of laws devalues public respect for command and control regimes and, as important, their enforcers.

However, with this over-regulation, enforcement will become more difficult, the interpretation of those laws complex and there will be an inadequately trained cadre of well-motivated, experienced, reasonable enforcers with a natural discretion when to use the carrot or the stick. The UK Environment Agency in the last year had suffered not unexpected senior personnel losses for reasons not unrelated to that state of affairs.

1.4. COMPLEMENTARY AIDS TO A COMMAND AND CONTROL REGIME

Are there, therefore, other complementary systems which will make society not so dependent upon regulatory regimes? These regimes need trained enforcement officers who will probably not attain the necessary experience either to determine which offences are serious enough to be prosecutable or to command the respect of local and regional industry, without at least 5 years' experience.

Economic instruments as policy instruments are seen generally as an evolution in policy making from the conventional reliance on laws and regulations which polluters must adopt under penalty of fines or other sanctions. This command and control approach has been increasingly criticised by economists on grounds of inefficiency in that:

- It requires compliance with the same standards by all pollution sources, irrespective of marginal compliance costs;
- It provides little incentive to technical improvement once compliance has been achieved.

Economic instruments address both these issues directly, allowing polluters with relatively low abatement costs to treat their wastes, whilst allowing those with relatively high abatement costs to buy permits and thus avoid abatement costs.

Systems in which economic forces operate effectively are ones in which technological change occurs. Such change is significantly retarded where effective pricing signals are absent. Pollution control technologies have perhaps been slow to develop for this very reason. Other advantages to be gained through the use of economic instruments are:

- It is on the basis of prices and charges that society makes its decisions with respect to resource use. Market prices and charges are the most direct way to identify and quantify the many variables involved in making a decision. Command and control mechanisms can only approximate this information function and then only at much greater cost.
- Industries can react to pollution control in a wide variety of ways, including process change, technology development and product modification. This flexibility in response can be initiated through signals from the pricing system tending to produce least cost, that is efficient solutions.

- Likewise, actions oriented to direct impacts on the profit picture of a firm tend to initiate very rapid responses. The adoption of energy efficient programmes following the oil price shocks of the 1970s is an excellent example of market-based response speed.

Command and control will of course still be preferred if those cases where the consequences of non-compliance are especially serious. For instance, for minimising exposure to a highly toxic substance, regulatory control, including perhaps an outright ban on that substance, will always be preferred over a policy which would discourage use through a seemingly prohibitive product tax.

The use of economic instruments requires the existence of a strong institutional framework whereby the economic signals created can travel efficiently. For developing countries with weak and transforming institutions, the introduction of economic instruments generally should only follow a strengthening of these market structures. Likewise in Central and Eastern Europe, economic instruments will only be able to play a significant role after the systems for monitoring and enforcing existing environmental legislation are strengthened. This necessity for a strong institutional pollution law enforcement framework would preclude, for example, Italy from qualifying for the acceptance of economic instruments for environmental control.

2. Some Economic Instruments Illustrated

Fourteen Members of the Organisation for Economic Co-operation and Development (OECD) use between one and 21 economic instruments for environmental protection. Germany, Sweden and the Netherlands are the most progressive in their use. Half of the economic instruments were charges, one-third financial subsidies (UNEP Annual Report, 1996).

2.1. CHARGE SYSTEMS

Charge systems have been typically applied for the protection of resources from waste emissions and discharges. In Malaysia, for instance, effluent charges have been in operation for 20 years to protect water quality from effluents arising from the palm oil and rubber industries.

In Singapore, charging drivers for using roads in the city centre during peak hours resulted in a 73% reduction in traffic in the restricted zone and carbon monoxide levels.

At least 10 cities in the UK are set to sign up to a low emission vehicle programme designed to exclude all motor vehicles from town centres except those with low or near zero emissions. The idea is that random exhaust spot checks at the roadside will be conducted and that if offenders have entered the Low Emission Zone, they will be given a pollution charge, namely a fixed

financial penalty notice to be paid within 14 days, probably about \$50 or \$100 if paid after these 14 days.

Effective monitoring and enforcement remains a strong pre-condition on the application of charge systems which can lessen their comparative efficiency in relation to straight command and control.

Table I

Economic Instruments For Environmental Protection
And Natural Resources Management

CHARGE SYSTEMS	MARKET CREATION
Road Tolls Access Fees Pollution Charges User Charges Betterment Charges Impact Fees Administrative Charges	Tradable Emission Permits Tradable Catch Quotas Tradable Development Quotas Tradable Water Shares Tradable Resource Shares Tradable Land Permits Tradable Offsets/Credits
FINANCIAL INSTRUMENTS	BONDS AND DEPOSIT REFUND SYSTEMS
Eco Funds/Environmental Funds Financial Subsidies Soft Loans Grants Location/Relocation Incentives Subsidised Interest Hard Currency at below Equilibrium Exchange Rate Revolving Funds Sectoral Funds	Environmental Accident Bonds (e.g., Oil Spills) Environmental Performance Bonds (e.g., Forest Management) Land Reclamation Bonds (e.g., Mining) Waste Delivery Bonds Deposit Refund System Deposit Refund Shares
FISCAL INSTRUMENTS	LIABILITY SYSTEMS
Pollution Taxes (on Emissions or Effluents) Product Taxes Input Taxes Export Taxes Import Tariffs Tax Differentiation Royalties and Resource Taxes Land Use Taxes Investment Tax Credits Accelerated Depreciation Subsidies	Legal Liability *Non-Compliance Charges *Joint and Several Liabilities Natural Resource Damage Liability Liability Insurance Enforcement Incentives
	PROPERTY RIGHTS
	Ownership Rights (Land, Water, Mining) User Rights

Source: UNEP and Impax Ltd.

2.2. FINANCIAL INSTRUMENTS

These involve the direct use of subsidies or investments to accelerate the development of environmentally benign technologies. Sometimes they can be seen as negating the polluter pays principle.

2.3. FISCAL INSTRUMENTS

These relate specifically to a government tax or fiscal policy. Taxes on the landfilling of waste and the differential tax on leaded and unleaded fuel are obvious examples.

2.4. MARKET CREATION

These instruments involve the creation of a national or international market which is defined by the total permissible pollution or discharge allowed within that market. An artificial currency is created in the form of credits or permits which are traded amongst the players in the market, allowing those who are efficient in the control of emissions to transfer or sell the costs of overall compliance to those which are less efficient.

Economists are usually keen on markets and, with Tradable Emission Permits, they see possibilities in creating a market where none exists. There is a precedent in America, where a law allowing power companies to trade their right to emit sulphur dioxide has proved highly successful.

The Government determines what are the allowable emissions from each power plant. Those plants that can clean up cheaply, and thus emit less than the allowed amount, are then free to sell their unused rights to those for whom pollution control would be costly. Overall, this has cut sulphur emissions faster and more cheaply than anyone predicted (Economist, 1997).

Emissions trading can be transfrontier based. If a German coal fired power station finds that meeting its allocation of emissions is unexpectedly expensive, it might contract to buy the unused emissions of a Russian chemical plant working far below capacity.

This may well leave a difficult accounting computation. German emissions will rise, which might not please the Green Party, but those in Russia will fall. What matters is that global emissions are being limited in a cost effective way with the cuts being made where they are cheapest.

A variation is that of joint implementation in which one country introduces a practice that reduces carbon dioxide levels in another country. Two examples could be replanting a logged out forest or modernising a smoke belching smelter. Part of that reduction in the neighbouring country is applied against its own commitments.

Many such projects would possibly involve poorer countries because they have more opportunities for emissions reductions. Determining which activities

should get the credit would not be easy. Nor would an independent audit of integrity. Corruption and venality could well throw out of kilter the most carefully laid schemes.

But if the details can be worked out, and the standards performed to, enormous benefits will beckon. If poorer nations accept the principle of an international permit trading system, which would require overall limits on emissions, they could possibly receive more monies than they now do from aid programmes, although into which pockets those monies may proceed will always be, for some countries, a matter of international concern.

A strong objection is, however, that it could allow rich countries to avoid taking domestic action to curb greenhouse gases. Yet global emissions will still be reduced. Another concern is that emissions trading does nothing to address emissions from homes or vehicles. But those will have to be the subject of other measurement and monitoring systems.

After Kyoto, the European Union accepted the principle of variable emission targets for different countries and its inter-European institutions may make it easier to trade emissions rights among Members.

2.5. BONDS AND DEPOSIT REFUND SYSTEMS

These are both based on the principle of paying up front for the externality imposed and being able to recoup the cost, if certain conditions or measures are met. Such performance bonds are increasingly used in mineral extraction, forestry and waste management as a form of insurance against long term environmental damage.

2.6. LIABILITY SYSTEMS

These involve the assignment of whole or part liability of the requirement to cover liability through insurance. Pollution insurance can be seen as part of a broader universe of economic instruments which act as direct financial incentives away from polluting processes. The European Commission may well adopt a European Union wide system of strict liability for environmental damage. Whether this will result in a common system after a number of years' application through case law within different EU countries is another matter (EC, 1998).

2.7. PROPERTY RIGHTS

These are seen mostly in the developing world and are intended primarily to slow the rate of natural resource depletion. Privately held land is converted to communal ownership so allowing local communities to share in the economic benefits of maintaining the asset.

In Papua New Guinea, where more than 90% of the land remains communal, only 13% of the forest land has been converted to other uses. In India, private water rights provide incentives for the efficient management of an increasingly scarce resource (Burnett, 1997).

3. Principal Environmental Areas for Application of Economic Instruments with Some Examples

3.1. WASTE

Environmental issues concerning waste are largely concerned with the consequences of different methods of waste disposal. These are mainly the pollution and amenity costs of landfill disposal, incineration, licensed marine disposal, etc. Other forms of waste management may also involve pollution and amenity costs, materials reclamation, packaging re-use, glass recycling etc. All can impose amenity costs, for example noise from a bottle bank impacting on local residents.

One important opportunity for the imposition of a Green Tax has been avoided by politicians, certainly in the UK and Germany. It is unacceptable that arrangements for the collection and disposal of household waste currently provide households with little or no individual financial incentive to reduce the amount of waste requiring disposal, thus discouraging their purchase of superfluous packaging.

In Britain, household refuse collection and disposal is provided free of charge by local authorities although, since the economically sensible introduction of compulsory competitive tendering for this service, a high proportion of household refuse collection and disposal services is supplied by private sector firms under contract to the local authority to provide a defined standard of service. Whilst the cost of household waste disposal will affect the level of council tax to be levied, there is no direct link between waste disposal costs and the incentive for individual householders to reduce the amount of waste that requires disposal.

In Germany, however, rather than financing the service through general local taxation, explicit charges are levied for household waste collection and disposal but, in practice, they provide, so far at least, a very weak incentive to reduce the amount of household waste.

3.1.1. Packaging Taxes

Even with consumption related charging for waste collection and disposal services, it is unlikely that clear enough signals will be received by manufacturers and packagers to modify product design and packaging to reduce disposal costs. Packaging taxes, e.g., for beverage containers, will establish a

more direct incentive for substitution away from packaging which has high disposal costs.

Until there are sensible charges on individual household waste volumes, it is unlikely that environmental packaging taxes will change consumers' purchasing decisions. Thus the incentive for producers to modify their products or packaging would appear to be of no great account in the coming years. The city of Kassel, however, introduced a packaging tax on disposable plates, cutlery and packaging for take-away food and drink in 1992. This was subject to legal proceedings to challenge the power of the municipality to levy a tax in this form, but the Courts decided that packaging taxes may be levied at the municipal level, so long as similar taxes are not levied by the Federal Government (Smith, 1995).

3.1.2. Working Example of a Contemporary Green Tax: The Landfill Tax In England, Wales and Scotland

Since 1990, the UK Government has made clear that it intends to complement traditional forms of environmental control with economic instruments. Waste has proved a fruitful paradigm with the introduction of two economic instruments.

The first is the waste recycling credit scheme, which operates between waste collection authorities and waste disposal authorities so as to pass onto the former savings in waste disposal costs derived from waste collection authorities' own recycling initiatives. The UK's November 1994 Budget announced that the Government intended to introduce a new tax on waste disposed in landfill sites (UK Department of the Environment, 1990).

The additional tax burden that this would impose on business would be offset by a corresponding reduction in the level of employer National Insurance contributions to be made when the tax entered into force. Thus the burden of taxation on business would remain constant, but the base of the tax would switch away from labour costs to waste disposal costs.

The Landfill Tax came into operation in October 1996 (HM Customs, 1996) in England, Wales and Scotland with the UK Government's announced intention of:

- ensuring that the full cost of the environmental implications of disposal is taken into account in the price; and
- seeking to move the emphasis from disposal towards re-use, re-processing, reclamation and re-cycling.

In addition to the disposal gate fee which waste owners have to pay to the 1,400 registered landfill operators in order to deposit their waste (taxable disposals) at a particular licensed site, the tax now sets a charge of:

- £2 per tonne for inert or inactive wastes (which really ought to be hand sorted to conform to that description); and
- £10 per tonne for active wastes which, through degradation, could potentially release pollutants into the immediate environment.

The landfill operator is charged with collecting the tax for the waste owner and passing it on to the Treasury. As an incentive to environmental improvement, the landfill operator is allowed to pay up to 10% of the tax into a special Environmental Trust Fund and, in return, will receive a proportionate rebate on National Insurance contributions for employees. The Trusts are non-profit-making private sector bodies engaged in the restoration of landfill sites or research into waste management and are generally required to provide services of public value without direct benefit to their contributors.

Landfill operators can, therefore, choose whether to pay the landfill levy to Government or to an Environmental Trust, except that the rebate against the landfill levy allowed for contributions to the Environmental Trusts are limited to 90% of their value in order to ensure that the contributors have an incentive to ensure that resources provided to the Trusts are spent efficiently.

There are certain exemptions as follows:

- material produced by dredging in fresh or sea water;
- by-products of mining or quarrying; and
- pet cemeteries (being England).

Difficulties have been posed for the management and engineering of wastes. The waste industry has told a House of Commons Environment Committee (House of Commons, 1998) that much of the waste which has been diverted from landfill is construction waste such as soil and aggregate, which the industry uses for constructing landfill cells and restoring sites after use.

It is interesting to contemplate what could be the possible exemptions in Israel. Certain contaminated land reclamation excavations for building work as an incentive?

3.1.3. The Environment Agency and the Landfill Tax

The possibility that the Landfill Tax would encourage fly tipping was a major concern for environmental groups, local government, the public and the enforcing authorities. The evidence, however, is still mainly anecdotal. One example is that of the National Farmers' Union which gave evidence to the House of Commons Committee. The National Farmers' Union carried out its own survey of members which revealed a clear increase of fly tipping onto agricultural land since the introduction of the tax.

The Environment Agency's survey of fly tipping with the Tidy Britain Group stated that: "There may have been an apparent increase in incidents of fly tipping but it does not actually prove a link to the Landfill Tax."

3.2. WATER

Incentives through economic incentives can be used to discourage water pollution at the same time as a price mechanism can be used to charge for water abstraction and water consumption. In the UK, a water pollution charge is set to recover costs of operating the pollution monitoring and control system. The

system could form the basis for an evolution to a more comprehensive incentive charge for water pollution.

In the UK, a gradual rise in rates and a move to structure the charge to reflect pollution damage more closely could transform the existing administrative charges into an incentive system. The tax structure could be more directly related to the actual emissions performance which would strengthen their environmental impact.

In the UK, however, households which are a key category of water users, do not, in the main, face individual incentives for water conservation. Although the proportion of water consumers who are metered has risen in recent years, well over 90% of households still pay for water according to rateable value, or on some other basis unrelated to the amount of water consumed. This contrasts sharply with the situation in Germany, where volumetric charging of household consumers, based on water metering, is the rule.

3.3. ENERGY

Environmental taxes on energy should reflect the wide range of energy-related environmental problems. A carbon tax, such as the tax proposed by the European Commission, has considerable attractions as an environmental incentive mechanism. Indeed, the £5.2 billion windfall levy on the excess profits of the energy utilities brought in by the Blair Government has been used to fund Labour's "New Deal" for the young unemployed. A recent report into the merits of an industrial energy tax recommended the recycling of carbon tax revenues into environmental protection.

The European Commission proposal has, however, raised concerns about the impact of the tax on industrial competitiveness and of the energy intensive industry in particular, especially if countries outside the EU do not take similar measures. Britain has so far resisted the imposition of such a carbon tax on the general principle that it cannot accept further tax impositions from the EC – *a fortiori* after the 15 Commissioners' resignations in March 1999. Some would say not before time.

3.4. TRANSPORT

Road transport provides considerable opportunities for enhancing the environmental orientation of the UK tax system. Road transport is already heavily taxed, e.g., vehicle purchase, initial registration, annual charges on vehicle use, and taxes on motor fuels. There is thus scope for introducing environmental incentives by restructuring these existing taxes rather than establishing wholly new green taxes or charges.

Yet nothing is so simple. The range of social costs involved, the complex interactions between road transport and other transport modes, issues of spatial

development and the general countryside aesthetic, all demand an integrated transport policy not easy to deliver.

Congestion costs and accident costs, global and local air pollution, noise and aesthetic losses, and the uncharged costs of consumption of the publicly provided road infrastructure, all should arguably be reflected in the costs of road use faced by individual road users (Royal Commission, 1994).

Ministers have now confirmed that they are considering allowing fines on polluters to be used to fund environmental schemes. However, it is worth recall that in the early 20th century both the Road Fund and the National Insurance Fund started life as hypothecated (i.e., dedicated) taxes. Now they are firmly in the Treasury's grip. The National Lottery was the subject of solemn ministerial pledges at the outset that none of its receipts would be used for general public spending. But now £1.4 billion, 13% of the proceeds, is being diverted into health, environmental and education spending (Economist, 1999).

4. Conclusion

It may well be still too early to assess how effective economic instruments can be both as policy instruments and as supplements to command and control regulatory regimes. In both Britain and Germany, for example, actual policy measures to introduce environmental taxes have been slow in forthcoming. To date, the number of specific tax measures implemented with a primary rationale in terms of their environmental effects, is very limited in all EC countries.

In the UK, the only explicit environmentally motivated tax reforms have been to the excise duty differentials between leaded and unleaded petrol, and between petrol and diesel, and the landfill levy.

Does this very slow progress that has been made in the implementation of environmental taxes in the EC countries give any reason to question the feasibility or the merits of green taxation? What is certain is that all countries' constitutions and fiscal configurations are by no means the same. For example, in order to finance re-unification, the overall tax burden in Germany has had to rise sharply. In the UK, an integrated transport policy may well produce opportunities for the deployment of economic instruments through:

- higher road fuel and use duties;
- office parking tax;
- a transportation quarrying tax;
- higher waste disposal taxes.

Whilst political will always remains the key stumbling block, and there is a learning curve to be climbed in terms of proper planning and structuring of economic instruments, they should reinforce the drive to attaching considered value to the environment. That will be no mean achievement in itself.

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