Developing Green Taxation

Summary of a Government Assignment Report 5390
Developing Green Taxation
Introduction

The Swedish Environmental Protection Agency has been instructed by the Government in its appropriation document for budget year 2004 to analyse various alternative environmental taxes as a basis for Government green taxation proposals for the period 2005–2010 and submit proposed improvements to the effectiveness of green taxes. The current process of developing a new energy tax system and the interaction between various instruments is to be taken into account. The study focuses on producing proposals as to how green taxes can better serve the aims of environmental policy. Hence, our proposals below are justified for environmental reasons. Not all the proposed changes will yield large, stable increases in tax revenue, but they are essential to provide greater environmental effect in areas that are not moving in the right direction. Following discussions with the Ministry of the Environment, we have also chosen to widen the concept of green taxes to include a number of subsidies having a negative environmental impact. The sum total of our proposals should thus be seen as essential for environmental reasons and may be seen as a menu of measures that can be introduced to exert greater influence in areas of environmental concern where the desired progress is not being made. A key issue in green taxation is the use to which the increased green tax revenue is put. This aspect of green taxation falls outside the scope of this study and is largely a political consideration. We have made some calculations based on a general reduction in employers’ social security contributions to show the potential effects of using green tax revenues for this purpose. However, the evaluation made by the Ministry of Finance (Bill 2003/04:1) of green taxes introduced to date has shown that raising the personal income tax allowance (standard deduction) has largely neutralised the redistributive effects, regionally as well as between households.
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The Theory of Green Taxes

The term “green taxes” normally means that increased revenue from environmental taxes is used to reduce taxes on employment or other taxes that have a distorting effect in the economy. One basic idea of green taxes is that they should not only yield an environmental benefit; they should also improve efficiency by raising employment. In the literature this effect is called the “double dividend”. There has been a great deal of discussion in the literature about whether a double dividend is a likely result of green taxes. The conclusions are not unanimous, but many studies do question the existence of a dual benefit. The final report produced by the Green Tax Commission (SOU 1997:11) describes three kinds of double dividend:

“Weak” double dividend – welfare grows since green tax revenues are used to lower distorting taxes instead of repaying them as a lump sum to taxpayers.

“Fairly weak” double dividend – it is possible to find a distorting tax so that a shift in the tax burden between a green tax and that distorting tax results in improved welfare (aside from the environmental improvement).

“Strong” double dividend. A shift in the tax burden between a green tax and distorting taxes generally leads to an improvement in welfare, not including the environmental benefit.

The Green Tax Commission used a general equilibrium model to examine the effects of green taxes. The model did not reveal any indications of a strong double dividend. This is hardly surprising, however, since the model did not take account of the benefit of reduced environmental problems and the benefits of reduced unemployment, the two factors comprising the double dividend. However, the Commission did point out that the absence of a double dividend does not rule out a shift in the tax burden. Moreover, the Government stated in the Finance Bill (2003/04:1) that the main purpose of green taxes was to serve the interests of environmental policy.

A common argument against green taxes is that the tax base for environmental taxes is not stable and could therefore jeopardise state finances if the tax burden were to be radically redistributed. This is true of certain taxes, eg, the sulphur tax. But the base for the tax on carbon dioxide is fairly inelastic. For instance, in Bill 2000/2001:1, the Government considered that “For tax bases that are moderately price-sensitive, eg, a large proportion of energy consumption, it is likely, however, that green tax revenues will continue to rise also in the long term, due to higher tax rates. Moreover, any erosion of the tax base can be countered by extending the tax base in various ways.” However, in a future in which energy taxes are sharply higher, it is probable that the tax base for fossil fuels will contract and be largely re-
placed by biomass fuels. In that case, the tax base can be extended to cover biomass fuels, which are largely exempt from tax at present. But the tax rate on biomass fuels should be lower, so that they remain competitive. There are conservation reasons for suppressing demand for biomass fuels by fiscal means, which would be a way of neutralising any instability in the green tax base. It is also worth noting that the tax base on employment has not been stable over the past 13 years (see Table 1). That tax base shrank by around 11 per cent between 1990 and 1993.

Table 1. National payroll at fixed prices between 1990 and 2002 (SEK billions)

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<thead>
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</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>430</td>
<td>415</td>
<td>407</td>
<td>382</td>
<td>388</td>
<td>397</td>
<td>419</td>
<td>435</td>
<td>458</td>
<td>482</td>
<td>509</td>
<td>526</td>
<td>532</td>
</tr>
</tbody>
</table>

SOURCE: STATISTICS SWEDEN: STATISTICAL NOTICES: AM 31 SM 0401

Government Policy
The Government presented its green tax policy in Bill 2000/2001:1. The main features are:

- The scope for shifting the tax burden in favour of green taxes between 2001 and 2010 is estimated at SEK 30 billion.
- Further shifts in the tax burden should emanate from the Swedish environmental objectives.
- Reform of the energy tax system is crucial to reduce carbon dioxide emissions and achieve more efficient energy use.
- The main aim of green taxation is to link the tax system more closely to environmental concerns.
- The redistributive effects on households, regions and the private sector must be acceptable.

It is also stressed that more in-depth analysis of alternative economic instruments, such as trade in emission rights, is required. The risk of increased incineration of unsorted waste should be monitored, and efforts should be made to counter increased electricity consumption as a result of higher taxes on fossil fuels.

Green Taxes Introduced to Date
The Government included a survey of green taxes introduced to date in Bill 2003/04:1. The shift in the tax burden in favour of green taxes between 2001 and 2003 was just over SEK 8 billion, mainly owing to rises in the tax on carbon dioxide and energy tax on electricity. There have been further rises in the energy tax on electricity in 2004. The taxes on diesel and on carbon dioxide have also been raised. Manufacturing industry has so far been exempted from green tax shift. The analysis of redistributive effects set out in the bill
concludes that during the period 2001–2003 green taxation had relatively little effect on all the groups studied. It was also concluded that green taxes had had a positive effect on the pockets of all taxpayers, even though the shift in the tax burden was budget-neutral. The reason for this is that the benefit of tax reductions has been almost entirely confined to consumers, whereas tax rises have been borne both by consumers and by the service sector. The result of raising the personal allowance (standard deduction) and transferring a portion of the tax revenues from the service sector to consumers was that very minor, if any, redistributive and regional effects arose during the period 2001–2003 because of the shift towards green taxes. The regressive effect of energy taxes, ie, the fact that energy costs generally represent a larger proportion of the income of low-income households, which are therefore hit relatively harder by higher energy taxes than high-income households, has obviously been neutralised by raising the personal allowance.

Impact Assessments

The purpose of this study is to analyse the use of alternative taxes in the interests of environmental policy as a basis for Government proposals in the field of green taxation during the period 2005–2010 and to submit proposed improvements to the effectiveness of green taxes. Hence, the emphasis of the study is on assessing where further green tax-driven changes are needed for environmental reasons. In a number of instances we have found environmental reasons for increased use of green taxes without having sufficient data on which to base detailed proposals as to how this is to be achieved. Where possible, we have chosen to present draft proposals for more effective green taxation in those areas. This will require additional data, and hence also impact assessments, in several areas.

Shifting the tax burden is not just about adjusting taxes having an environmental impact. The other side of the equation, ie, returning the increased tax revenues to the taxpayers, is at least as important if the change in fiscal emphasis is to achieve a balance in budget and distributive terms. The aim of green taxation is not to raise the overall tax burden and alter the distribution of resources in the community; it is to increase the environmental effect and lower the tax levied on employment. Assessing the impact of a shift in the tax burden involves a well-defined proposal, not only on the environmental impact side, but also as regards transfer of the revenues. This part of shifting the tax burden is also complex. A general transfer in the form of lower social security contributions, for example, has differing effects on different industries, depending on how labour-intensive they are and what form of employment is used. (In the agricultural sector there are relatively few

1. The analysis is static and does not take account of changes in tax revenue occurring as consumers adapt their consumption to changes in relative prices.
2. Households are broken down into income category, type of household, region and type of housing.
full-time employees, which means that they gain very little from a transfer of this kind.) There are also problems as to the desired effects of a given instrument. For instance, the carbon dioxide tax on motor fuels also affects the use of work machines (such as those used in agriculture, forestry and the construction industry). It is true that machinery of this kind contributes just as much to the greenhouse effect, but their exhausts should arguably be classified as process-related emissions and thus receive more favourable tax treatment, as is the case in other industries. It is important to adopt an overall approach in an analysis of this kind, including not only environmental objectives other than those a tax is intended to further, but also other societal goals, so as not to arrive at a sub-optimal design for an instrument.

In this study we have outlined transfer proposals in several areas, but have not given recommendations as to how this is to be achieved, since this lies outside our terms of reference. The choice of method of transferring green tax revenues is largely a political matter.

For the above reasons, the impact assessments of the green tax proposals are, in most cases, incomplete. Our recommendation is that if one or more of the proposals are considered feasible, the proposals should be properly defined, also in terms of the method of transfer to be used, so that a more detailed impact assessments can then be performed.
Summary

This report contains some 20 proposed changes in existing taxes or new environmental taxes to be introduced. We also identify a number of areas in which further analysis is essential to obtain better data on which to base decisions to introduce possible green taxes. Our proposals are described on the basis of the three action strategies\(^3\) and we here summarise the most important proposals from an environmental viewpoint.

The action strategy for which we put forward most proposals is the strategy for “more efficient energy use and transport”. At present there are many economic instruments that can be related to this strategy. Energy taxes currently account for most of the green tax revenues in Sweden. It is important to influence the type of vehicles used in the transport sector. We propose a differential vehicle tax, based on carbon dioxide emissions, the reintroduction of a sales tax and amendment of the regulations governing company cars. All these instruments will serve to improve the fuel efficiency of road vehicles. The vehicle tax will also influence the length of time a car is owned. We do not think that the vehicle tax proposal alone will suffice to bring about a fuel-efficient Swedish vehicle fleet; a sales tax will also be needed. A sales tax will probably have a greater impact on the purchase of new vehicles than the vehicle tax, since people tend to “discount” the future. A “fee-bate” system, i.e., a charge for above-average emissions and a rebate for below-average emissions, is probably preferable. This system will not hinder vehicle replacement; in particular it will encourage the acquisition of more fuel-efficient vehicles. The income tax treatment of company cars has a great influence on the kind of vehicles on the roads. The present system should be changed so as to provide stronger environmental incentives. Relating the system to carbon dioxide emissions has yielded goods results in the United Kingdom, according to an interim evaluation. We propose a Swedish system along the lines of the UK model. In addition to the types of vehicle on the roads, it is important to inhibit vehicle use, i.e., to reduce distances travelled and increase efficiency by use of public transport instead of

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3. The Government has formulated three strategies to provide guidance in efforts made to achieve the environmental quality objectives:

- A strategy for more efficient energy use and transport – to reduce emissions from the energy and transport sectors.
- A strategy for non-toxic and resource-efficient cyclical systems, including an integrated product policy – to create energy-efficient and material-efficient cyclical systems and reduce diffuse emissions of organic pollutants.
- A strategy for conservation of land, water and the built environment – to meet the need for greater consideration for biological diversity, the cultural environment and human health, wise management of land and water, environmentally sound land-use planning and a sustainable built environment.

The rationale for these strategies is that “...a single measure may serve several environmental quality objectives, and that an instrument may provide an incentive for sectors of society to take many different measures to benefit the environment.”
Road freight should also be discouraged in favour of more efficient means of transport such as shipping and rail. This can be achieved by imposing a higher variable charge, for example, by way of fuel taxes and kilometre taxes. We propose raising motor fuel taxes, where we outline a number of approaches. It is proposed that the kilometre tax apply to heavy-duty vehicles and careful consideration should be given to the most effective combination of diesel tax and kilometre tax for heavy goods traffic. Income taxation of motor fuel as a benefit-in-kind should also be adjusted so that the recipient pays the full fuel cost. Studies suggest that stricter compliance with the regulations governing free or subsidised parking at work may have a great impact in Stockholm.

We describe a number of approaches to raising energy taxes. In contrast to previous shifts in the tax burden, we include industry in the proposed energy tax rises. The table below shows estimated tax revenues generated by the various scenarios in the short and long term.

We present fewer proposals for the “non-toxic and resource-efficient cyclical systems” action strategy. This is primarily because there is insufficient background data on which to base proposals for further economic instruments. The “Non-Toxic Environment” and “Zero Eutrophication” environmental objectives will be very difficult to achieve and it will be necessary to determine the extent to which economic instruments are effective in these areas. Economic instruments already exist in the waste sector. A preliminary assessment is that an incineration tax might be justified. This issue is currently under review. However, it is not enough to exert control at the end of the chain. There is a need for more instruments influencing the ways products are made etc. Here too, background data is scarce and in need of improvement.

The third strategy concerns “conservation of land, water and the built environment”. The “Sustainable Forests” environmental objective is one of those that will be difficult to achieve. In this study we have not seen how economic instruments could effectively help to achieve this environmental objective. Nor are there many other economic instruments under this strategy, and those that exist are fairly limited in scope. Nonetheless, economic instruments are capable of addressing important issues, such as the proposed tax on two-stroke oil for outboard engines. The scope for using economic instruments to serve the strategy for conservation of land, water and the built environment has not been properly examined, so further analysis may identify additional economic instruments that are justified on environmental grounds. One such instrument might be a tax on raw materials. However, the Swedish EPA holds the view that it would be more relevant to examine instruments that help to achieve a non-toxic environment, thus falling more properly under the strategy for non-toxic and resource-efficient cyclical systems, although there may be applications that are also effective for raw materials.
An Outline of All Proposals

Since most of the items presented are preliminary estimates of an incomplete tax proposal that should be further examined, Table 2 should be treated purely as an estimate of the potential extent of a shift in the tax burden.

### Table 2. Fiscal revenues generated by shifts in the tax burden (not including transfers)

<table>
<thead>
<tr>
<th>Measure</th>
<th>Tax revenues with no adjustments (SEK millions)</th>
<th>Estimated tax revenues with adjustments short term (SEK millions)</th>
<th>Estimated tax revenues with adjustments long term (SEK millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO2 and energy taxes: Scenario 1 (CO2 tax for industry from SEK 0.19 to SEK 0.38)</td>
<td>1,360</td>
<td>1,200</td>
<td>1,000</td>
</tr>
<tr>
<td>CO2 and energy taxes: Scenario 2 (as Scenario 1 but with exemption for the emissions trading sector)</td>
<td>750</td>
<td>670</td>
<td>560</td>
</tr>
<tr>
<td>CO2 and energy taxes: Scenario 3 (electricity tax for industry from SEK 0.005 to SEK 0.241)</td>
<td>4,500</td>
<td>3,900</td>
<td>2,000</td>
</tr>
<tr>
<td>CO2 and energy taxes: Scenario 4 (General CO2 tax of SEK 0.91 for everyone)</td>
<td>2,500</td>
<td>1,500</td>
<td>90</td>
</tr>
<tr>
<td>CO2 and energy taxes: Scenario 5 (upward adjustment of energy taxes on motor fuels)</td>
<td>7,500</td>
<td>6,700</td>
<td>5,800</td>
</tr>
<tr>
<td>CO2 and energy taxes: Scenario 6 (CO2 tax from SEK 0.91 to SEK 1.22)</td>
<td>15,000</td>
<td>13,000</td>
<td>10,500</td>
</tr>
<tr>
<td>CO2 and energy taxes: Scenario 7 (as Scenario 6 but with exemption for trading sector)</td>
<td>14,800</td>
<td>12,500</td>
<td>10,300</td>
</tr>
<tr>
<td>CO2 and energy taxes: Scenario 8 (CO2 tax from SEK 0.91 to SEK 1.61)</td>
<td>34,000</td>
<td>28,000</td>
<td>23,000</td>
</tr>
<tr>
<td>CO2 and energy taxes: Scenario 9 (as Scenario 8 but with exemption for the emissions trading sector)</td>
<td>33,400</td>
<td>27,700</td>
<td>22,000</td>
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<tr>
<td>Sulphur tax</td>
<td></td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>NOx charge</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Fluorinated greenhouse gases – HFCs, PFCs and SF6</td>
<td>No proposal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exemption of peat from carbon dioxide tax</td>
<td>1,150</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Regeneration of waste oils</td>
<td>Not estimated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measure</td>
<td>Tax revenues with no adjustments (SEK millions)</td>
<td>Estimated tax revenues with adjustments short term (SEK millions)</td>
<td>Estimated tax revenues with adjustments long term (SEK millions)</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>-----------------------------------------------</td>
<td>-------------------------------------------------------------------</td>
<td>------------------------------------------------------------------</td>
</tr>
<tr>
<td>Small-scale wood burning</td>
<td>No tax-related proposal</td>
<td></td>
<td></td>
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<tr>
<td>Motor fuel taxes</td>
<td>See scenario 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kilometre tax on heavy goods traffic</td>
<td>5,000</td>
<td>Not estimated</td>
<td>Not estimated</td>
</tr>
<tr>
<td>Vehicle tax on cars</td>
<td>700</td>
<td></td>
<td>400</td>
</tr>
<tr>
<td>Vehicle tax on heavy-duty vehicles</td>
<td>– 50</td>
<td>Not estimated</td>
<td>Not estimated</td>
</tr>
<tr>
<td>Vehicle tax reduction for cars in sparsely-populated areas</td>
<td>90</td>
<td>90</td>
<td>90</td>
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<tr>
<td>Sales and registration tax on cars</td>
<td>0</td>
<td></td>
<td></td>
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<tr>
<td>Taxation of company cars</td>
<td>0</td>
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<td></td>
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<tr>
<td>Car scrapping charge and premium</td>
<td>0</td>
<td></td>
<td></td>
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<tr>
<td>Travel allowance</td>
<td>0</td>
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<tr>
<td>Transport support</td>
<td>0</td>
<td></td>
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<tr>
<td>Free parking at work</td>
<td>0</td>
<td></td>
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<tr>
<td>Differential shipping lane dues</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Differential landing charges</td>
<td>No definite proposal</td>
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<td></td>
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<tr>
<td>Charge on eutrophying emissions</td>
<td>127</td>
<td></td>
<td></td>
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<tr>
<td>Tax on waste incineration</td>
<td>280</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Raised landfill tax on waste stored temporarily</td>
<td>Not estimated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tax on toxic substances</td>
<td>Study recommended</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tax on natural gravel</td>
<td>No change</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Differential taxation of two-stroke oil</td>
<td>Not estimated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capital gains taxation of real property when nature reserves are created</td>
<td>Not estimated</td>
<td></td>
<td></td>
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<tr>
<td>Radon grant and property tax</td>
<td>Not estimated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taxes on raw materials</td>
<td>No proposal</td>
<td></td>
<td></td>
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</tbody>
</table>

**Energy and Carbon Dioxide Taxes**

We have studied a number of alternative ways of increasing green taxation in the energy and climate area. Energy and carbon dioxide taxes can represent a large part of the continuing shift in the tax burden up to 2010 (we include proposals that individually exceed the planned SEK 23 billion shift in the tax burden; it is possible to implement several proposals in parallel). However, all proposals involve redistributive effects, even taking into account transfers, which are not always desirable. If the long-term climate objective is to be achieved, it is thought that Scenario 7, with an annual rise in
the carbon dioxide tax of 5 per cent for all sectors, will have a greater envi-
ronmental impact with relatively minor redistributive effects. The redistribu-
tive effects in individual industries and sectors should be studied in further
detail, however, as should methods of transferring the tax revenues.
Alternatives to a general lowering of employers’ social security contributions
may lessen certain undesirable redistributive effects.

Sulphur Tax
The Swedish EPA proposes that the sulphur tax be raised to SEK 37 to re-
store it to its original level in real terms. The tax should also be index-linked
to ensure that its value is not eroded by inflation.

NOx Charge
The Agency proposes that the charges system be extended to include recov-
ery boilers and sulphite liquor boilers in the pulp and paper industry, and
also combustion in industrial processes. (However, particular consideration
should be given to exemption for certain industrial processes – the Swedish
EPA considers, for example that cement industry kilns should be exempt
from the charge.) The charge should be raised to SEK 50.

Fluorinated Greenhouse Gases
– HFCs, FCs and SF6
Work has been in progress for several years in the EU to develop administra-
tive instruments governing use of fluorinated gases. There is a risk that the
forthcoming EU regulations will not be deemed sufficient from a Swedish
viewpoint. If this is so, it may become necessary to develop Swedish eco-
nomic instruments. The Swedish EPA has conducted some studies into the
potential forms these instruments could take.

Exemption of Peat from Carbon Dioxide Tax
The Swedish EPA considers that, to all intents and purposes, peat used for
energy can equated with fossil fuels. This applies particularly in terms of re-
newability and greenhouse gases. Accordingly, the Agency considers that
peat used for energy should be subject to carbon dioxide tax.

Regeneration of Waste Oils
The Swedish EPA considers it desirable that refunds only be available for the
portion of waste oils on which energy, carbon dioxide and sulphur tax have
actually been paid. The Agency also considers it important that as large a
proportion as possible of waste oils be collected. Increased regeneration
must not take place at the expense of reduced collection of oils, since the en-
environmental benefit will then quickly be eroded. The Agency estimates that an increase to approximately 25 per cent regeneration by 2006 and 50 per cent by 2010 is possible without reducing the percentage of oils collected.

**Small-scale Wood Burning**
The Swedish EPA is in favour of phasing out environmentally harmful boilers not fitted with an accumulator tank. However, this study does not contain a definite proposal as to how their use can be phased out. The Agency instead recommends further study into the consequences of a combination of emission standards, permit requirements and a grant system.

**Motor Fuel Taxes**
Carbon dioxide emissions from the transport sector rose constantly throughout 1990–2002, and this trend must be reversed if the long-term objective of a sharp reduction in carbon dioxide emissions is to be achieved. Taxes on motor fuels are extremely important instruments in this context. Green taxation allows scope for increasing taxes on motor fuels while alleviating the redistributive effects by channelling the increased tax revenues back to the sectors concerned. It is hard to say exactly what the optimum level of carbon dioxide tax is, but a sharp increase from the current level is needed. Other instruments in the transport sector are obviously of importance here, eg, kilometre tax, vehicle tax, taxation of benefits-in-kind, sales tax, exhaust emission regulations etc. A step-by-step rise in the carbon dioxide tax has the advantage of allowing those affected more time to adjust.

**Kilometre Tax for Heavy Goods Traffic**
Introduction of a kilometre-based tax system will require a longer planning and implementation period. Technical implementation like that in progress in Germany and the United Kingdom must be completed and tested so that the position of trucks can be monitored and a tax that differentiates between urban areas and trunk roads can be levied. It is planned that this should be completed in good time before 2008, which is the date of introduction proposed by the Road Traffic Tax Commission. Differentiation between urban areas and trunk roads should not therefore be an obstacle, technically speaking. This differentiation, which will play a major part in internalising the external impact of trucks, should therefore be part of the system right from the outset. In addition, the kilometre tax should be more consistent with the marginal cost estimates for trucks under 16 tonnes as well as those over 16 tonnes, as produced by the Swedish Institute for Transport and Communications Analysis. The Swedish EPA thus proposes the following tax levels in Swedish kronor (SEK) per kilometre (urban areas/rural areas): 12-tonne vehicles Euro 0 (1.92/0.84), 40-tonne vehicles Euro 0 (5.7/2.1), 12-tonne vehicles Euro 2 (1.65/0.75), 40-tonne vehicles Euro 2 (4.8/1.8).
Vehicle Tax on Cars
Impact analyses have shown that the most effective way to reduce carbon dioxide emissions is to relate taxes directly to carbon dioxide emissions without any additional components. We therefore recommend that the annual vehicle tax system be adjusted as proposed by the Road Tax Commission (RTC), but that the tax be more closely linked to carbon dioxide emissions. We consider it reasonable that the first step should be the introduction of a system under which the total tax take is not greater than that proposed by RTC. However, it is essential that the effects on vehicle purchases be monitored continuously so that the incentives under the system can be increased if necessary. The tax changes involve a reduction of up to SEK 800 for the most popular cars with low fuel consumption and an increase of up to SEK 1,200 for new cars with the highest fuel consumption. For the 20 most-sold cars in Sweden the proposal will raise the tax by an average of SEK 100 per car.

Vehicle Tax on Heavy-Duty Vehicles
The Agency supports the main features of the Road Traffic Tax Commission’s proposals and agrees that it is important to rapidly increase the environmental incentive. However, the Agency does not support the proposal that the lower rate of vehicle tax should include vehicles qualifying under environmental class 2000. A key principle for increasing environmental incentives is to encourage the early introduction of vehicles with lower emissions than those required by current exhaust regulations. So a better alternative in terms of the environmental incentive is to reduce the vehicle tax on vehicles meeting the standards for environmental class 2005 or better.

Vehicle Tax Reduction for Cars in Sparsely-Populated Areas
The Agency agrees with the Road Traffic Tax Commission, which considers that the vehicle tax reduction should be abolished. The main reason for this is that it reduces the overall environmental incentive in the vehicle tax system. The Commission also points out that the reduction cannot be justified on the grounds that cars in the north of Sweden are used over greater distances than cars elsewhere in the country. Any need for regional compensation is a political consideration, although it should be designed to be neutral from an environmental point of view.

Sales and Registration Tax on Cars
The vehicle tax proposal presented in this study will probably not provide a sufficient incentive in favour of fuel-efficient vehicles. The recent trend favouring larger vehicles with higher fuel consumption (eg, sports utility vehicles) is alarming and will not be reversed by the carbon-dioxide related vehicle tax. The Swedish EPA considers that the vehicle tax needs to be sup-
implemented with a sales tax to provide a sufficient incentive favouring fuel-efficient cars at the expense of larger vehicles with high fuel consumption. The Swedish EPA consider that a “fee-bate” system would be preferable. A system of this kind would not hinder renewal of the Swedish car fleet; it would primarily provide an incentive for running more fuel-efficient cars. The exact form of the sales tax must be examined in further detail before a detailed proposal can be presented.

**Taxation of Company Cars**

The Agency proposes the introduction of a model based on the system used in the United Kingdom. Judging from results in the UK, our assessment is that five effects will probably occur in Sweden when a company car is to be replaced by a new company car: (i) a greater proportion of diesel-driven cars; (ii) a greater proportion of smaller cars; (iii) choice of cars with smaller engines; (iv) change of make; (v) employees decide not to have a company car. A further effect will probably be some early termination of leasing agreements. Moreover, the Agency considers that the cost of free fuel is too low under the current system. To remedy this, the benefit of free fuel would have to be taxed at a factor of twice the fuel price. This would represent a rise of 67 per cent for the recipient, which would bring about adjustments in the form of shorter journeys.

**Car Scrapping Charge and Premium**

The Agency does not propose raising the car scrapping premium; we consider that the proposed changes in vehicle tax provide a better means of renewing cars in Sweden.

**Travel Allowance**

The Agency recommends altering the travel allowance system to increase the incentive for using alternative modes of transport to the motor car for journey to and from work. Our preliminary appraisal is that the Public Transport Commission’s proposal meets this requirement. In our consultation response to the Commission’s report we agreed with its proposal that improved tax incentives for using public transport should be examined. Alongside the travel allowance, relevant issues include free parking at work.

**Transport Support**

As things stand, the Agency does not propose any change in transport support, but considers that it should be ascertained whether it is possible to design transport support so that a larger proportion of transport is by rail and sea.
Free Parking at Work
What is primarily needed in this area is not more stringent regulations, but better compliance with existing ones. It is likely that benefits-in-kind in the form of parking at work are very rarely reported to the tax authorities at present, and a parking space is in practice an entirely free fringe benefit. There are highly compelling reasons for remediying this situation; the potential impact in the Stockholm region would be very great.

Differential Shipping Lane Dues
The Agency recommends a change in shipping lane dues in line with the proposals contained in Departmental Memorandum 2002:41, but only after account has been taken of the environmental modifications and improvements suggested in the consultation response. For example, calculation of the marginal cost should be based on the Swedish economic zone, so that the specific external effects are better reflected by the dues charged.

Differential Landing Charges
As long as it is not feasible to tax aviation fuel itself, which, to be effective, would have to be implemented worldwide, it should be determined whether it is feasible to introduce carbon dioxide as a parameter in the differentiation of landing charges.

Charge on Eutrophying Emissions
There is a need for further control of nitrogen and phosphorus emissions in Sweden. Economic instruments are considered to be an appropriate component of this increased control. The Swedish EPA proposes that the issue be further examined in terms of charge levied, who should be subject to the charge, charge level, differentiation of charges, and transfer of charge revenues. The Agency proposes that conditions should be created for a charges system directly related to the estimated leaching of nitrogen from agricultural land, which is by far the main source of eutrophication. The tax on artificial fertiliser should remain in place until then.

Tax on Waste Incineration
It is considered appropriate to await the findings in the report on tax on waste incineration (the “BRAS” Commission report) before introducing a tax on waste incineration. Pending those findings, a preliminary appraisal is that waste incineration tax should be introduced to make recycling more competitive. This tax can be set at a fairly low level to start with, eg, SEK 100/tonne waste, to be progressively raised by SEK 50–100/tonne waste per year until the desired impact is achieved. This will allow the recycling industry to gradually adapt. Ultimately, a waste incineration tax of SEK 300–400/tonne may be said to reflect the emission cost of incineration.
However, there are a number of candidates for exemption from this tax; for example, electricity production that is otherwise exempt from carbon dioxide tax. Any exemptions of this kind should be examined in further detail, as the “BRAS” Commission is doing.

Raised Landfill Tax on Waste Stored Temporarily
It is considered appropriate to await the findings of the “BRAS” Commission report before raising the landfill tax on waste stored temporarily. Pending the BRAS findings, a preliminary appraisal is that raising the landfill tax on waste stored temporarily would be a suitable complement to the ban on landfilling burnable and organic waste and should be introduced fairly soon.

Tax on Toxic Substances
Unfortunately, there is insufficient data on which to base proposals for a functioning system of economic instruments to control toxic substances. Bearing in mind the positive experience of the tax on cadmium in artificial fertilisers, and the effect of economic instruments on the use of toxic substances in other countries (eg, trichloroethylene in Norway), there appear to be good reasons for assuming that taxes will also work well for other toxic substances, even in extreme cases where they are to be phased out. As a first step, the Agency therefore proposes that the scope for imposing a general tax on the use of cadmium, mercury and lead as a complement to the phase-out decision be further examined. We further propose that the scope for using classifications of categories of substances, eg, the CMR⁴ and PB⁵ classifications, as a basis for taxing toxic substances be examined.

Tax on Natural Gravel
It is difficult to find any environmental reasons for proposing an additional raise at this point. The Swedish EPA therefore considers that the tax rise already imposed be allowed to take effect and that an evaluation of its impact then be carried out. Only then, if it is found necessary, should proposals for further tax rises be formulated. However, as with the sulphur tax, the tax on natural gravel should be index-linked to that its environmental impact is not eroded over time.

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4. Carcinogenic, Mutagenic, toxic to Reproduction
5. Persistent, Bioaccumulative
Differential Tax on Two-Stroke Oil
The Agency proposes a green tax to eliminate the price difference between normal and “green” two-stroke oil. In the initial phase a tax of SEK 20 per litre will generate annual tax revenue of around SEK 50 million including VAT, which will probably diminish rapidly with a changeover to the use of environmentally compatible two-stroke oil.

Capital Gains Taxation of Real Property when Nature Reserves are Created
Reduced or abolished capital gains tax when land is sold for inclusion in areas protected under the Environmental Code would serve the interests of swift and efficient implementation of increased forest protection. The Agency considers that the advantages of this move in the form of lower costs for protected areas and a more rapid process, combined with the positive reactions that may be expected from landowners, outweigh the loss of tax revenue resulting from the proposal.

Radon Grant and Property Tax
A lower radon count in a house may result in higher property tax, which counteracts the incentive for reducing the radon level. The Swedish EPA wishes to point out that these two measures (grants for radon removal and the tax reduction for not reducing radon) give contradictory signals.

Taxes on Raw Materials
The raw materials tax may be extended to include one or two more commodities, but it is arguably inappropriate to tax raw materials in Sweden to any great extent unless the rest of the world introduces similar systems. Phosphate is one of the substances that threatens to become scarce in a hundred years or so and is therefore a good candidate for a tax charge. Sweden should press for a review of the issue of taxes on raw materials in the EU.
The term “Green Taxes” normally means that increased revenue from environmental taxes is used to reduce taxes on employment or other taxes that have a distorting effect in the economy. One basic idea of green taxes is that they should not only yield an environmental benefit; they should also improve efficiency by raising employment.

The Swedish Environmental Protection Agency was instructed by the Government to analyse various alternative environmental taxes as a basis for Government green taxation proposals for the period 2005–2010 and submit proposed improvements to the effectiveness of green taxes.

This publication is a special edition with the English summary of the Swedish EPA’s report to the Swedish Government in June 2004. The report contains some 20 proposed changes in existing taxes or new environmental taxes to be introduced. The total value of the proposals exceeds SEK 30 billion. Some examples of the proposals are energy and carbon dioxide taxes; motor fuel taxes; kilometre tax for heavy goods traffic; vehicle tax on heavy-duty vehicles.