FUEL TAXATION– INTERNATIONAL EXPERIENCE

Fuel taxation is applied in different ways and at different levels in countries around the world to meet governments' varying objectives. The objectives which governments pursue through fuel taxation include revenue collection for general and specific government spending, environmental goals, fuel security, and assistance to particular industries. This paper provides details of the taxes applied in selected countries. The examples are from countries which have sufficiently similar circumstances to Australia to provide relevant examples.

The use of fuel taxation to achieve a range of policy objectives is a relatively recent phenomenon. Prior to crude oil price increases in 1973 and 1979, it was assumed that the linkage between economic growth and energy use, particularly oil consumption, was unbreakable. The demand for fuel was thought to be highly inelastic; that is, consumption behaviour would not be influenced by changes in cost or taxation levels. Therefore, taxation of fuel, particularly petroleum products, was regarded as a stable source of revenue given the broad spread of consumption and the lack of demand response to imposition of taxation.

The oil price shocks induced a long-term reduction in energy consumption as prices of all forms of energy rose in conjunction with crude oil. The efficiency with which energy was used improved in developed economies, and less energy was required for given levels of output.

Some of these changes occurred because of government actions to reinforce improvements in energy efficiency. They went beyond what might have been achieved through price signals alone, but the experience showed that fuel consumption patterns could be changed, at least in the medium to long-term. This led policy makers to consider the use of economic instruments, including taxation, to shape behaviour in order to achieve policy goals such as reduced pollution.

Policy objectives for fuel taxation

Revenue raising

Fuel taxation, primarily on motor fuels, has historically been used to raise revenue. Taxes on motor fuels account for up to 10 per cent of the revenue base

of many OECD countries. Taxation of fuel is seen as providing a stable revenue base because the demand for fuel does not change significantly with short-term variations in price.

Revenue from taxation of fuel can be derived from broad based consumption taxes, sales taxes or specific excises on particular products. Because fuel is a vital input to economic activity, many countries rebate some taxes for some industrial uses. While this reduces the gross revenue from taxation of fuel, it may be consistent with other economic development objectives.

Fuel taxation is sometimes used to encourage changes in fuel use, eg. to less-polluting or domestically produced fuels. Such policies may reduce revenue to the extent that they cause switching to lower-taxed substitutes.

Fuel switching is only possible, however, if infrastructure is available to deliver alternative fuels and changes in fuel-using technology are economically feasible. Fuel-using equipment often has a relatively long life, such as power stations, boilers and heating systems. For transport equipment, the economic life of trains, aeroplanes and ships is measured in decades and the effective life of trucks, buses and cars is ten years or more.

Fuel taxes have also been used by governments to gain for society some of the benefit obtained from extracting natural resources used as fuels. These are described as economic rent taxes, an example of which is Australia's Petroleum Resource Rent Tax, applied to the production of crude oil and gas. This aspect of fuel taxation is excluded from the Inquiry's terms of reference.

Environmental protection

Many developed economies, which have similar environmental objectives to Australia, describe fuel taxation as an "environmentally related tax". Environmental objectives are part of the terms of reference for the Fuel Taxation Inquiry. The terms of reference require the Inquiry to report on "the effects [of fuel taxation] on …environmental outcomes, including in relation to transport;" and "the options available to the government to reduce or eliminate any adverse effects reported [on environmental outcomes]. (ToR 4 (a)) The Inquiry is also "to have regard to the impact of existing arrangements and proposed changes on…. Externalities associated with transport; the use of fuels that would deliver better air quality and contribute to greenhouse objectives…"(ToR 5 (d) and (e)).

Environmental taxes typically seek to incorporate the costs of environmental damage into prices of the goods, services or activities which cause the damage.

Taxes can also create incentives for producers or consumers to shift away from environmentally damaging behaviour, so reducing the damage.

Hypothecation – taxes for specific purposes

In some countries, the revenue from some fuel taxes is spent on specific purposes such as road construction. In the United States, **all** revenue from Federal fuel excise currently is spent on highway construction and many American states' fuel taxes are dedicated, at least in part, to road construction. Japan, also, devotes a large proportion of fuel taxation to road construction.

In some economies, a portion of taxes on fossil fuels is dedicated to subsidise renewable fuels or to support public transport.

Energy Security

A policy aimed at energy security should not seek only to maximise fuel self-sufficiency *per se* or minimise dependence on imported fuel, but rather to reduce the risks associated with such dependence. One of the means to enhance security is to diversify sources of supply by type of product or by geographical origin. Another is to reduce dependence on particular fuels through greater efficiency and use of alternatives.

Increased taxes on oil or petroleum products would, over time, have a fuel conservation effect and a fuel switching effect. The extent of conservation depends on the elasticity of overall energy demand and technical and economic possibilities for fuel switching.

Following the rise in oil prices in 1973, oil's share of energy supply for OECD countries fell from 53 per cent to 42 per cent in 1998, reflecting greater use of other fuels such as nuclear energy and coal for electricity generation and gas for residential and industrial heat [1].

The extent of fuel switching depends on the availability and cost of substitutes. For example, it is relatively easy to convert a power station from oil to gas, more difficult and costly to build a replacement nuclear or coal fired station, and very difficult to find a substitute for petroleum products for transportation.

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[1] International Energy Agency *Key World Energy Statistics from the IEA*, Paris, 2000

It is difficult to identify taxes applied to specifically enhance energy security. In Germany, for example, some fuel tax revenue is allocated to support emergency reserves. Some other countries use concessional taxes, such as the United States' exemption of corn ethanol blended with petrol, to encourage renewable energy sources.

Associated Taxes

In order to support the policy objectives of fuel taxes, complementary taxes and charges are sometimes levied on applications closely associated with the use of fuel. For example, in Japan, the United Kingdom and other European countries, vehicle registration fees and other charges are set at levels related to the engine size or other characteristics which influence the level of environmental impact from transport fuel consumption.

New Zealand has an elaborate Road User Charge system based on vehicle type, weight, and distance travelled for all diesel vehicles and larger petrol vehicles. Further details are provided below.

Singapore has a highly developed system of charging for road use in the central business district and arterial roads and expressways. Amounts, which vary with time of day, the type of vehicle and expected levels of traffic are electronically deducted from an in-vehicle cash card as they pass under overhead gantries. For example, private cars are charged A$0.56 per trip between 07.30 and 08.00 and A$2.83 from 08.00 to 09.00 on the Nicoll Highway. The charge falls to zero from 10.00 to 12.00, then rises in steps to a peak of A$2.26 from 18.00 to 18.30 before falling again.[2]

The Singapore government notes that this represents a shift in traffic management policy away from ownership restraints (high purchase and annual taxes and limited numbers of registrations), toward charging for use of vehicles.

In Australia, vehicle registration charges and road user charges are the responsibility of State and Territory governments.

[2] Singapore Government, http://traffic.smart.lta.gov.sg/erp_rates_for_cars.htm, 5 October 2001

International experience

Canada

Like Australia, Canada has a federal system of government. Like the states of the United States, but unlike Australia, Canadian provinces impose additional taxes on fuels to those imposed at the national level. In addition to the Canadian GST of seven per cent, Federal excise of 10 Canadian cents per litre (cpl) is levied on unleaded petrol and four cpl is levied on diesel. Excise rates are not indexed and have been increased from time to time to meet specific budgetary circumstances. The level of provincial fuel taxes is generally higher than Federal taxes; ranging from nine cpl for petrol and diesel in Alberta, to 15.2 cpl for petrol and 20.2 cpl for diesel in Quebec. In addition, the cost of fuel is affected by a range of provincial sales and consumption taxes, and some city taxes.

Canadian fuel taxes (in Australian cents per litre)

February 2001	Petrol	Diesel	Other fuels
Federal	12.3	5	Alcohol in fuel blends excise free
Alberta	11	11	8 LPG. Ethanol, natural gas and off-road diesel excise free
British Columbia	13.5 (18.4 in area covered by public transport)	14.1 (19 in area covered by public transport)	3.7 diesel off-road use
Ontario	18	17.5	5.3 propane in vehicles 5.8 diesel in public transport
Quebec	18.6 (20.5 in area covered by public transport)	20.2	LPG 18.6 in vehicles, propane and butane excise free for heating
Total	23.3-32.83	16-25.2	

A$1=C$0.815, Source: Department of Finance, Ottawa

The Canadian Federal government first introduced excise on petrol in 1975, and excise on diesel was introduced ten years later. The level of excise on petrol has increased through a number of discretionary changes from 2.2 cpl to ten cpl for unleaded petrol and aviation gasoline.

The Federal government provides a rebate of excise on the alcohol proportion of blended fuels, if the alcohol (ethanol or methanol) is produced from biomass or renewable feedstock.

The provinces apply a range of excise rates for alternative fuels, eg Ontario levies excise at 4.3 cpl for propane (LPG) used in cars compared with 14.7 cpl for unleaded petrol. Quebec on the other hand applies the same rate of tax (15.2 cpl) on petrol and LPG, but taxes propane (used for heating, cooking etc) at 8.2 cpl. Other provinces have a range of different tax rates for propane and butane when used in vehicles or for heating. Some provinces exempt all fuels used for heating, while others charge low rates of tax.

All the provinces provide refunds or partial refunds on taxes paid on fuels by farmers, commercial fishermen, trappers and loggers, often by use of coloured (marked) fuels. Many provide refunds on taxes on fuel used as a direct ingredient in a manufacturing process.

British Columbia and Quebec set different levels of fuel tax depending on presumed access to public transport systems, and British Columbia dedicates part of the higher level of tax in greater Vancouver to the regional transportation authority. The Northwest Territories set a higher level of tax for petrol purchased at a location on the highway system (10.7 cpl) compared to petrol purchased away from highways (6.4 cpl).

Municipal transport is exempt from GST. The provinces impose retail sales taxes, but these do not apply to fuels used for transport. The provinces also exempt energy (heating oil, coal, coke, gas, electricity etc) used for home heating.

Ontario sets differential taxes on new vehicles depending on their fuel consumption level, although it treats light trucks more leniently, possibly due to their widespread use in farming and business. For example, a passenger vehicle using 6.0 to 7.9 litres per 100 kms is taxed at C$75, but a light truck with the same consumption is not taxed. A passenger vehicle using 12.1 to 15 litres per 100 kms is taxed at C$2,400 and an equivalent light truck at C$800.

British Columbia provides a refund of C$500 one year after purchase of a vehicle using specific alternative fuels.

United States

Fuel taxation in the United States is largely used to raise revenue for a range of specific objectives, mostly road funding, at federal and state levels. No value added tax is payable, though *ad valorem* state sales taxes apply to about a third of national motor fuel sales[3]. Federal motor fuel taxes are 18.4 US cents per gallon (cpg)[4] for petrol and 24.4 cpg for diesel. The volume-weighted average of state taxes is 23.6 cpg for petrol and 23.8 cpg for diesel. Additional local taxes add about 2cpg. Rates vary widely. For example, total petrol taxes range from 32.4 cpg in Wyoming to 50.3 cpg in California.

US Fuel taxes (in Australian cents per litre)

February 2001	Petrol	Diesel	Other fuels
Federal	9.3	12.4	2.7 subsidy for ethanol
States (low)*	7.4	8.9	2.7 (LPG)
States (high)**	16.2	16.0	7.6 (LPG)
Total	16.7-25.5	21.3-28.4	

One US gallon = 3.785 litres, A$1 = US$0.52 * New Jersey, ** California/Michigan (LPG), Source: American Institute of Petroleum

In 1932, the federal government introduced taxation of petrol at one cpg and then two cpg as part of a package of revenue raising measures to help fund expenditure during the Depression. The close link to revenue raising purposes was evident when the rate was dropped when taxation of alcohol resumed with the abolition of Prohibition, and again when the rate was increased to help meet increased expenditure during the Second World War and Korean War.

In 1956, the rate was increased from two to three cpg in conjunction with the establishment of federal funding for interstate highways. All revenue from federal taxes on petrol were transferred to the *Highways Trust Fund*, as were a

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[3] American Petroleum Institute *Nationwide and State-by-state motor fuel taxes*, Washington, March 2001

[4] One US gallon is equivalent to 3.785 litres.

portion of the taxes from other road use related items, such as vehicle tyres and tubes.

From 1982 the excise tax was increased to nine cpg to complete and extend the interstate highway system, though revenue equivalent to one cpg was allocated for public transport purposes. In 1986 a fund was established to address the problem of leaking underground fuel storage tanks which received excise revenue equivalent to 0.1 cpg.

The role of fuel taxation as a source of general revenue was re-established in measures to reduce the federal deficit in 1990 and 1993. Initially the tax rate on highway and motorboat fuels was increased by five cpg to 14 cents, with 2.5 cents of the increase dedicated to deficit reduction, 2 cents to the *Highways Trust Fund* and 0.5 cents to public transport measures.

In 1993, the tax rate was increased by a further 4.3 cpg. This was dedicated to deficit reduction until October 1995, when all road fuel taxes were placed in the *Highways Trust Fund* to support long-term capital improvements in the national highway infrastructure.

The United States provides an excise exemption for fuel ethanol for a range of policy objectives; improved air quality, increased energy security by reducing dependence on imported fuels, and higher returns to farmers[5]. The exemption is currently 5.4 cpg for blended fuel containing 10 per cent ethanol. This represents an effective subsidy of 54 cpg for pure ethanol. The excise exemption was worth US$725 million in 1999.

Some states provide further subsidies for ethanol use, and ethanol consumption in 1999 was 1.2 per cent of US petrol consumption. This proportion is expected to rise to 1.5 per cent by 2005.

Excise concessions also are provided for liquefied petroleum gas (LPG) and compressed natural gas from domestic sources. The stated reasons for these concessions are intended to decrease the United States' dependence on imported fuel, increase energy security through the use of domestically produced alternative fuels, reduce the balance of payments deficit, and stimulate domestic employment.

The United States federal government and some state governments also seek to influence levels and forms of energy consumption through mandatory targets for use of low emission vehicles. Transition toward these targets is assisted by

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[5] IEA *The Road from Kyoto Current CO_2 and Transport Policies in the IEA,* Paris, 2000, p137

tax credits, deductions and exemptions for purchase of alternative fuel vehicles, alternative fuels and the cost of building and maintaining alternative fuelling facilities. Many states also charge different levels of vehicle registration fees which are related to vehicle mass, particularly for trucks.

European Union

Taxes on fuel are publicly described by European Union members as environmental taxes, though they also serve to raise general revenue. All members of the European Union apply value-added taxes to fuel, though a small number apply lower rates to gas and electricity. In addition to the full rate of VAT, transport fuels are taxed at rates which lead to taxation being over half and up to three-quarters of the final cost of petrol and diesel.

In 1997, total taxes on energy products provided 6.5 per cent of total tax revenue and social security contributions of the members of the European Union. Of this 1.3 per cent was derived from taxation of transport fuels, and 5.2 per cent of non-transport fuels, largely reflecting VAT collected on household gas and electricity. Within these averages there are wide variations; in Italy non-transport energy taxation provides 7.2 per cent of taxation revenue and transport energy taxation provides 1.1 per cent, while in Denmark non-transport energy taxation provides 4.5 per cent and transport energy taxation provides 4.4 per cent of total taxation revenue.[6]

Three types of tax are applied to energy in the EU;

- value added tax proportional to the selling price,
- excise duties proportional to the physical quantity of the product, and
- specific taxes and duties.

An EU Directive requires that all energy products, except natural gas, should be subject to a standard minimum VAT of 15 per cent. Lower rates for electricity and transitional rates complicate the picture, and applied rates for electricity vary from five per cent (UK, Portugal) to 25 per cent (Denmark, Finland and Sweden). Natural gas is usually taxed at the standard VAT rate, though it receives significant concessions in the UK, Greece and Luxembourg. Public transport receives concessional VAT rates in all members. [7]

A European Commission paper notes that a disparity in treatment of different energy forms leads to distortions. It notes that airlines, which pay no tax on

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[6] European Commission *Green Paper Towards a European strategy for the security of energy supply*, Luxembourg 2001 p51

[7] *Ibid* p 52

fuel, compete with high-speed trains which require electricity on which VAT, and in some cases, other duties are paid.[8]

As mentioned above, EU members have a wide range of excise arrangements. Several have different rates for fuels used in manufacturing industries, alternative fuels including LPG, natural gas and methane when used in vehicles, and fuels used for public transport and some regional development measures. Most countries maintain lower excise rates for diesel, at least partly to support their road transport industries.[9]

Excise and vehicle taxation differentials are used widely to encourage adoption of more environmentally favourable fuels. For example, the Netherlands will provide vehicle tax cuts from July 2001 of Eur325 to Eur720 for petrol and diesel vehicles which meet the 2005 emission standards. Germany has an excise differential for petrol and diesel with less than 50 ppm sulphur, and is planning a further differential to favour fuels with less than 10 ppm sulphur from 2003. Excise differentials favouring low sulphur diesel also apply in Sweden, Finland, Denmark, Norway and Belgium.

More detailed description of the individual taxation regimes would be required to identify the range of policy objectives, but a general observation across Member States is that domestic and transport use of fuels is more heavily taxed than industrial use. Another general observation is that mineral oils for automotive use are more heavily taxed than fuel for other uses.[10]

United Kingdom

Among EU members, the fuel taxation policies of the United Kingdom provide a good example of the varied objectives governments pursue through taxation of energy products. The general VAT of 17.5 per cent is applied to transport fuels, but petroleum fuels and coal and gas for domestic heating are taxed concessionally at five per cent. VAT on fuels for industry is refunded. The UK's rates of fuel excise are the highest in the OECD[11]. Taxes were 78 per cent of the final price of petrol and automotive diesel in March 2001.[12]

United Kingdom fuel taxes (in Australian cents per litre)

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[8] *Ibid* p53

[9] European Commission, *Recent trends in the application of economic instruments in EU member states plus Norway and Switzerland*, July 2000, p6

[10] OECD, *Environmental Tax Policy Database*, Paris, 2000

[11] *Energy Prices and Taxes Third Quarter 2000,* International Energy Agency, Paris 2001

[12] *Ibid*

March 2001	Petrol	Petrol (Low S)	Diesel (Low S)	LPG/CNG	Biodiesel (from 2002)
Excise duty	127.1	124.4	124.4	47.88	72.8*

A$1=£0.3684, *Foreshadowed at 20p/litre below diesel.

Excise rates for standard unleaded petrol rose from 22.41 pence per litre (ppl) in 1992 to 46.82 ppl at present. This rise was due largely to the adoption of a policy in 1993 to increase duty by CPI plus 3 per cent (the 'escalator'). This was imposed shortly after the Rio climate change conference. The environmental contribution was emphasised in public presentation, but the UK government at the time had a commitment not to increase income tax. Fuel excise increases had reached 5 per cent over CPI in 1994 and 6 per cent in 1998. The Chancellor said that excise duties must also advance the Government's environmental objectives. [13]

With steady or declining crude oil prices, the steep increase in road fuel did not cause significant public opposition before 1998, but led to widespread public resentment in 1999 following the sharp increase in crude oil prices that year. This public reaction was followed by abandonment of any indexation above CPI. Environment conservation groups protested against the end of the escalator.

More aggressive protests in September 2000 coincided with the peak of crude oil prices. In March 2001 the excise on low sulphur petrol and diesel was reduced by two and three ppl respectively to 45.82 ppl.

Low sulphur petrol and diesel are taxed at the same rate, unlike all other EU members, as there is no policy of discriminating between fuel types of comparable environmental impact. Diesel has greenhouse gas advantages (higher efficiency) but petrol has air quality advantages (lower particulates). The UK has, however, actively fostered cleaner burning, low sulphur variants of fuel. It introduced a duty differential for ultra-low sulphur diesel (USLD) which rose to 3 ppl from 1997 to 1999. This led oil companies to produce and supply ULSD and an almost complete conversion of the diesel market in just two years. This effect was more rapid and complete than the switch from leaded to unleaded petrol, as no change was required to existing engines.

[13] *Road fuel prices and taxation,* House of Commons Library Research Paper 00/69. 12 July 2000, p16-17

The introduction of an excise differential between standard and low-sulphur petrol of one ppl in late 2000 saw the low-sulphur variant increase its share of the total petrol market from 42 to 93 per cent from mid-November 2000 to 31 March 2001.[14]

The vehicle excise duty (registration fee) is also used to achieve environmental objectives. From March 2001, vehicle owners pay duty on a sliding scale depending on carbon dioxide emissions per kilometre, with petrol, diesel and alternative fuelled vehicles attracting different rates. For example, for emissions of up to 150 grams of CO_2 per kilometre petrol cars are levied £100 per year, diesel cars £110, and alternate fuels £90. This rises to £140, £150 and £130 for these classes of vehicles emitting 166 to 185 gms CO_2 per km with higher charges for more powerful engines. This works out to a 4ppl advantage for average annual fuel consumption for vehicles with petrol engines less than 1 litre capacity and 7ppl advantage for similar sized diesel engines.

Rebates are provided on fuel tax and vehicle excise duty for farmers and other off-road users. This reduction is from 51.8 ppl to 3.1 ppl. Rebated fuel is dyed to make detection of diversion easier.

Rebates will be provided to alternative fuels with biodiesel receiving a 20 pence per litre advantage from 2002. This was expected to cost £15 million in revenue forgone by 2003-4. The UK already provides a differential excise rate for diesel water emulsion, and LPG, natural gas and methane when used as fuel in motor vehicles.

New Zealand

New Zealand has an atypical fuel taxation regime with no excise on diesel, and a comprehensive regime to levy charges for road use for diesel vehicles. Unleaded petrol is excised at 34.3 NZcents per litre (cpl), domestically produced methanol used as a fuel at 30.2 cpl, LPG at 10.4 cpl, and compressed natural gas (CNG) at NZ$3.17 per gigajoule.[15] Diesel is not excised, but all diesel powered vehicles pay Road User Charges. All other vehicles over 3.5 tonnes also pay Road User Charges in addition to any excise charges.

New Zealand fuel taxes (in Australian cents per litre)

July 2001	Petrol	Methanol	LPG	CNG

[14] HM Treasury *Budget Press Releases DETR1*, London, March 2001
[15] On an energy content comparison, LPG would be excised at $4.05 per gigajoule.

	(motor fuel)			
Excise Duty	42.84	37.72	12.99	5.83*

Rate A$1=NZ$1.249 (Source OANDA) * Energy content basis

The petrol excise is allocated to the National Roads Fund (13.6 cpl), general revenue (18.7 cpl), and Accident Compensation Corporation (2.0 cpl). Additional charges of 0.66 cpl are levied as a local authority tax and 0.025 cpl to fund fuel standard monitoring. All of the funds from the Road User Charges are dedicated to the National Roads Fund.

Road User Charges are levied in three different ways. Diesel vehicles require distance licences, purchased for travel in units of 1,000 km at rates ranging from NZ$18.46 for a single axle vehicle up to 2 tonnes gross to NZ$740 for a two-axle vehicle up to 17 tonnes gross. Non-road going diesel vehicles (front-end loaders, graders, trench diggers etc) require a time licence which varies in cost with vehicle type and weight. Time licences range in cost from NZ$18.86 to NZ$3,324.42 per year. Supplementary licences are required if vehicles carry loads that take the vehicle over the registered gross weight for single journeys. These are purchased in 50 kilometre units. Costs range from $1.12 to $64.94 per 50 km.

Rebates of excise are provided for farming vehicles, vehicles which pay a Road User Charge, or fuel used in commercial vessels and for commercial purposes other than as a fuel in a vehicle, vessel or aircraft. These rebates are 15.3 cpl for petrol, 11.7 cpl for LPG and $3.57 per gigajoule for CNG. This effectively provides a slight subsidy to LPG and CNG vehicles which pay Road User Charges. The rebate for petrol is slightly higher than the proportion of excise dedicated to road funding.

South Africa

The general fuel levy is described in South African Budget papers as serving a variety of purposes; an important source of revenue, environmental benefits by limiting fuel consumption, and assisting the balance of payments by limiting consumption. South Africa's economic situation differs from the other

economies considered in this paper, and it has low levels of fuel taxation compared to most developed economies.[16]

South Africa recently introduced concessions of excise on fuels used as business inputs. This policy seems to be aimed at fostering international competitiveness as the economy moves away from the apartheid era policies of self-sufficiency responding to sanctions.

[16] 1998 GNP per capita in South Africa US$3031 cf Australia US$ 20409, IEA Key World Energy Statistics, 2000 Edition, Paris, 2001

South African fuel taxes (in Australian cents per litre)

July 2001	Leaded petrol	Unleaded petrol	Diesel
General fuel levy	23.4	22	19.4
Road Accident Fund levy	3.9	3.9	3.9
Equalisation Fund levy	0.0	.7	0.0
Customs and Excise	.96	.96	.96
Total	27.8	26.7	24.3

A$1=SARand 4.18, Source: National Treasury, Pretoria, 2001 Budget Review

The general fuel levy is a general source of revenue, but 3.7 South African cents per litre (cpl) of the levy was dedicated to the National Roads Agency in 2000/01 for use in road construction and maintenance[17].

The Equalisation Fund levy was originally established to provide protection for the synthetic fuel industry [18], but the decline in world oil prices up to 1998 forced a review of this policy and conversion of the Fund to an industry adjustment mechanism. It was then used to keep the prices of leaded and unleaded petrol comparable during a transition phase as the octane rating of unleaded petrol was increased to match leaded petrol.[19]

The Road Accident Fund levies, which are dedicated to a third party motor vehicle insurance fund, were increased in 2001 by 2.0 cpl to overcome a deficit in the Fund following an increase in claims. The Road Accident Fund levy for diesel was 10.3 cpl prior to the introduction of other concessions for diesel users in the 2001 Budget, but was increased to parity with petrol in that Budget.

Diesel used for rail is granted a complete exemption from the Road Accident Fund contribution to eliminate a distortion favouring road-using competitors in freight and passenger travel.

Diesel concessions were introduced in the 2001 budget for the primary production sectors as these industries had limited opportunity to use

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[17] South African Government, *Budget Review 1998,* p30
[18] South African Government, *Budget Review 1999,* p164
[19] South African Government, *Budget Review 2001, p 85*

alternative energy sources, such as electricity, and the cost of diesel affected the competitive position of those industries. The Budget papers noted that previous concession schemes for diesel had been withdrawn due to widespread fuel tax fraud, in which lighting paraffin (kerosene) which was only taxed at VAT rates, was substituted for diesel taxed at fuel excise rates.[20][21]

Offshore users such as fishing, coastal shipping, and offshore mining now qualify for a 100 per cent concession on general fuel levy and, unsurprisingly, the Road Accident Fund contribution.

Primary producers qualify for a concession of 100 per cent of the Road Accident Fund contribution and 31.6 per cent of the general fuel levy for fuel used in farming, forestry and mining.

The Customs and Excise levy reflects the specific circumstances of South Africa and demonstrates how fuel taxes are used for a wide range of policy objectives. The levy is used to supplement the pooled revenue of the Southern African Customs Union countries, which include Botswana, Lesotho, Namibia and Swaziland. This revenue pool is seen as contributing to stability within the region.[22]

The general fuel levy is not indexed and the revenue contribution is maintained by occasional increases announced with annual Budgets. For example, the levy on unleaded fuel was increased by 2.4 cpl and diesel by 1.9 cpl in April 2001.[23]

Japan

Japan's rates of taxation for transport fuels fall in the middle of the range of taxes applied by OECD countries, but a number of local and national taxes also are levied on vehicles which make the total cost of vehicle operation relatively expensive. Most of the fuel and vehicle taxes are dedicated to road construction which has been a major policy objective in recent decades. Import duties and a specific petroleum tax are also applied to imports of fuels. The import duties were imposed as a temporary measure in 1960 to help the domestic coal industry against competition from oil. The petroleum tax was

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[20] *Ibid* p84
[21] South African Government, *Budget Review 1999,* p164
[22] National Treasury, Statement on selective fuel boycott, 30 Nov 2000
[23] Republic of South Africa, Ministry of Finance, Budget Papers, 2001, p 85

established in 1978 to fund policies such as oil stockpiling and also funds expenditure on alternative energy sources.[24]

Kerosene, used for domestic heating and cooking, is taxed at concessional rates compared to near substitutes, such as diesel, used in transportation.

Japanese fuel taxes (in Australian cents per litre)

December 1999	Petrol	Diesel	Kerosene	Aviation fuel	LPG
Customs duty	2.1	1.9	0.9	3.2	0
Petroleum tax	3.1	3.1			0.5
Road Tax	8.0				
Gasoline tax	74.0				
Aircraft fuel tax				39.6	
Light oil delivery tax		48.9			0.0
LPG tax					14.0
Total	87.2	53.9	0.9	42.8	14.9

A$1 = ¥0.01523, International Energy Agency

Fuel taxes

- Gasoline Tax of 48.6 ¥pl: levied by national government on per litre basis for petrol sales. Funds from this tax are allocated to the national government's road fund.

- Light Oil (Diesel) Delivery Tax of 32.1 Yen per litre (¥pl): levied by local government on basis of volume of diesel delivered. Revenue is allocated to prefectural governments' funds for roads.

- Local Road Tax of 5.4 ¥pl: levied by national government on per litre basis for petrol sales. Funds from this tax are allocated to local governments' road funds.

[24] International Energy Agency, *Review of Japan's Energy Policy 1999,* Paris 2000 Chapt 8

Non-fuel taxes

- Automobile Acquisition Tax: levied by local government at rate of 5 per cent on purchase of vehicle based on price. Revenue is transferred to municipal and prefectural road funds. The cost for a base model Toyota Tarago, for example, would be around A$1,900.

- Motor Vehicle Tonnage Tax: levied by the national government according to the weight and type of vehicle each time the vehicle is inspected for road-worthiness. Private passenger vehicles are inspected after three years, then every subsequent two years. For a Toyota Tarago the three-year inspection would cost A$1,150, and the subsequent two-year inspections A$770. (Payments customarily made to garages to submit the vehicle for inspection and pre-emptive or corrective repairs are usually around A$700).[25] Three quarters of the revenue from this tax are transferred to the national government's general fund, but 80 per cent of the funds transferred are earmarked for national expenditure on roads. The remaining 25 per cent of the revenue from this tax are transferred to municipal governments' road funds. In sum, 87 per cent of the Motor Vehicle Weight Tax is dedicated to national or municipal road funds.

- Automobile and Light Vehicle Taxes: levied by local governments annually based on engine displacement and vehicle type. The Automobile Tax (A$450 per year for cars less than 1000 cc) revenue is allocated to prefectural governments' general funds, while revenue from the Light Vehicle Tax (A$109 per year for cars less than 1000 cc) is allocated to municipal governments' general funds.

There are variations within the rates of taxation to encourage the adoption of more fuel efficient and low-emission vehicles. For example, buyers of low-emission vehicles receive a rebate of 2.4 per cent and hybrid powered vehicles a rebate of 3 per cent on the Automobile Acquisition Tax.

[25] Australian Embassy, Tokyo