

## Road Financing in Selected Countries

### Occasional Paper

This Occasional Paper compares road expenditure and road user taxation in Australia with that in five overseas countries (Canada, Federal Republic of Germany, Great Britain, New Zealand and USA). These five countries were selected because they are federal systems, and/or because they have similar socio-economic backgrounds to Australia.

Subject

Series

Date

A to Z

Search

Results

Print

Exit

# Road Financing in Selected Countries

© Commonwealth of Australia 1982

ISBN 0 644 01735 x

Printed by Watson Ferguson and Co., Brisbane

## **FOREWORD**

This Occasional Paper compares road expenditure and road user taxation in Australia with that in five overseas countries (Canada, Federal Republic of Germany, Great Britain, New Zealand and USA). Amongst the issues explored are levels of road expenditure and road user taxation in each country; the degree of national government involvement in roads of various categories (relative to other levels of government); and the extent to which government revenues from road users are hypothecated for road expenditure.

The background research for this paper was carried out by Mr R.J. Shaw, under the supervision of Mr D.P. Luck. The bulk of the work reported in this paper was undertaken while Mr P.W. Blackshaw was the Assistant Director of the Financial Assessment Branch.

The co-operation of overseas transport agencies (identified in Chapter 1) and embassy staff in providing data on their respective countries is gratefully acknowledged. However, the assessments made on the basis of that data are solely the responsibility of the Bureau.

**A.J. SHAW**  
Assistant Director  
Financial Assessment Branch

Bureau of Transport Economics  
Canberra  
February 1982

## CONTENTS

	Page
<b>FOREWORD</b>	iii
<b>SUMMARY</b>	ix
<b>CHAPTER 1 INTRODUCTION</b>	1
Objectives and scope of the paper	1
Outline of the paper	1
<b>CHAPTER 2 THE ROAD SYSTEMS IN PERSPECTIVE</b>	3
Area and population	3
Road densities	3
Motor vehicles	4
<b>CHAPTER 3 INSTITUTIONAL ARRANGEMENTS</b>	7
Direct responsibilities	7
Indirect responsibilities	8
Road categories financed by national governments	10
Conditions of national government assistance for roads	12
<b>CHAPTER 4 ROAD EXPENDITURE</b>	13
Comparative levels of expenditure	13
Growth in road expenditure	15
Construction and maintenance expenditure	15
<b>CHAPTER 5 ROAD USER CHARGES</b>	19
Sales and equivalent taxes on motor vehicles and parts	19
Taxes on fuel	19
Heavy vehicle taxes and charges	22
Vehicle registration and drivers' licence fees	23
Comparison of revenue from road user charges	23
Hypothecation	26
Road user revenues relative to roads expenditure	27
<b>APPENDIX I AUSTRALIA</b>	29
<b>APPENDIX II CANADA</b>	39
<b>APPENDIX III FEDERAL REPUBLIC OF GERMANY</b>	53
<b>APPENDIX IV GREAT BRITAIN</b>	61
<b>APPENDIX V NEW ZEALAND</b>	73
<b>APPENDIX VI USA</b>	83

## TABLES

	Page
2.1 Area and population of selected countries, 1978	3
2.2 Road lengths and densities, 1978	4
2.3 Road systems by surface type, 1973-78	4
2.4 Registered motor vehicles, 1972-78	5
2.5 Vehicle ownership rates, 1972-78	6
3.1 Constitutional responsibility for roads by level of government	7
3.2 Expenditure on roads by level of government, 1972-73 to 1977-78	9
3.3 Comparison of road systems by category	10
3.4 Road expenditures by category and level of government, 1977-78	11
4.1 Total road expenditure in selected countries, 1973-74 to 1977-78	13
4.2 Road expenditure as per cent of GDP, 1973-74 to 1977-78	13
4.3 Road expenditure per kilometre of road, 1973-74 to 1977-78	14
4.4 Expenditure per kilometre of sealed road, 1973-74 to 1977-78	14
4.5 Road expenditure per vehicle, 1973-74 to 1977-78	14
4.6 Road expenditure per capita, 1973-74 to 1977-78	15
4.7 Expenditure on roads, in constant prices, by level of government, 1972-73 to 1977-78	16
4.8 Expenditure on road construction and maintenance, in percentage terms, 1972-73 to 1977-78	17
5.1 Sales and equivalent taxes on vehicles and parts, 1978	20
5.2 Sales and excise taxes on fuel as at 30 June 1980	21
5.3 Retail prices of motor spirit, mid-1980	22
5.4 Revenue from selected road user charges, 1972-73 to 1977-78	24
5.5 Revenue per registered motor vehicle from selected road user charges, 1972-73 to 1977-78	25
5.6 Net revenues to the USA Federal HTF, 1977-78	27
5.7 Comparison of road expenditures and revenues, 1973-74 to 1977-78	28
I.1 Australia: road length, road expenditure and motor vehicles by State and Territory	29
I.2 Australia: control of the road system in the States by level of government as at 30 June 1977	30
I.3 Australia: annual road expenditures by source of funds, 1974-75 to 1978-79	30
I.4 Australia: Federal Government road expenditure, 1974-75 to 1978-79, by category	34
I.5 Australia: Federal specific purpose road grants to the States and the Northern Territory, 1977-78 to 1980-81	34
I.6 Australia: State gross revenue from road users, 1971-72 to 1978-79	35
I.7 Australia: State and Territory government road expenditure, 1974-75 to 1978-79, by category	37
I.8 Australia: estimated local government road expenditure 1974-75 to 1978-79, by category	38
II.1 Canada: road length and density by Province or Territory, 1977	39
II.2 Canada: road expenditures by type of work and level of government, 1970-71 to 1976-77	40
II.3 Canada: ownership of roads by level of government, by Province/Territory, 1969 and 1976	42

	<i>Page</i>	
II.4	Canada: Federal Government expenditure on roads, 1970-71 to 1976-77	46
II.5	Canada: provincial sales and fuel tax levels, June 1978	48
II.6	Canada: provincial road-related revenues and expenditures, 1970-71 to 1976-77	49
II.7	Canada: local government road expenditures by type of expenditure and source of funds, 1970-71 to 1976-77	51
III.1	FRG: length of roads by category, 1971-79	54
III.2	FRG: roads responsibilities	55
III.3	FRG: expenditure on roads, 1971-76	56
III.4	FRG: mineral oil taxation receipts and their distribution, 1970-79	58
III.5	FRG: expenditure on Federal trunk roads, 1976-77 and 1979-80	58
IV.1	Great Britain: area and population	61
IV.2	Great Britain: roads classification, 1978	61
IV.3	Great Britain: total public expenditure on roads, 1970-71 to 1977-78	63
IV.4	Great Britain: central government revenues from road-related sources, 1970-71 to 1979-80	66
IV.5	Great Britain: annual commercial vehicle charges as at March 1980	67
IV.6	Great Britain: duty and VAT rates on fuel, 1971-80	67
IV.7	Great Britain: direct central government expenditure on roads, 1970-71 to 1977-78	69
IV.8	Great Britain: transport supplementary grants, 1976-77 to 1980-81	70
IV.9	Great Britain: local government expenditure on roads, 1970-71 to 1977-78	71
V.1	New Zealand: classification of roads, as at 31 March 1979	73
V.2	New Zealand: roads expenditure, 1973-74 to 1978-79	75
V.3	New Zealand: National Roads Board receipts, 1973-74 to 1978-79	78
V.4	New Zealand: central government motor taxation receipts, 1973-74 to 1978-79	81
V.5	New Zealand: National Roads Board expenditure, 1973-74 to 1978-79	82
V.6	New Zealand: local government road expenditure, 1973-74 to 1978-79	84
VI.1	USA: road length by type of road and responsible level of government, December 1978	86
VI.2	USA: total road expenditure, all levels of government, 1973-78	87
VI.3	USA: Federal highway-related tax levels, 1956-84	90
VI.4	USA: net revenues to the Federal Highway Trust Fund, fiscal years 1970-71 to 1977-78	91
VI.5	USA: receipts, expenditures and annual balances of the Highway Trust Fund, fiscal years 1968-69 to 1977-78	92
VI.6	USA: Federal highway expenditure by highway category for calendar years 1977 and 1978	93
VI.7	USA: State government receipts applied to road expenditure, 1974-78	98
VI.8	USA: disbursement of State motor fuel tax receipts, 1974-78	98
VI.9	USA: State government highway expenditures, 1974-78	100
VI.10	USA: local government revenues applied to roads, 1976 and 1977	101
VI.11	USA: local government authority road expenditures, 1976 and 1977	102

## SUMMARY

This paper compares road expenditure<sup>1</sup> and road user taxation in Australia with that in five overseas countries, Canada, Federal Republic of Germany, Great Britain, New Zealand and USA. These five countries were selected because they are federal systems, and/or because they have similar socio-economic backgrounds to Australia.

The paper suggests that road expenditure per vehicle, per capita, or as a proportion of Gross Domestic Product, is relatively high in Australia. Expenditure per kilometre of road is low compared with the other countries (except New Zealand). However, traffic volumes are much lower on large parts of the Australian road network than in the other countries, so it would be unrealistic to expect expenditure per kilometre of road in Australia to be comparable to that in the other countries.

Comparisons of road user taxation in the selected countries are complicated by the different types of taxes imposed, and the different distribution of taxing powers between the various levels of government. However, overall it would appear that Australian road users pay higher road user charges than their counterparts in Canada and USA, but less than motorists in the Federal Republic of Germany, Great Britain and New Zealand.

The distribution of taxes between road user classes differs considerably between countries. Owners of heavy vehicles appear to contribute proportionately less towards total road tax revenues in Australia than in the overseas countries.

Annual road expenditure in Australia is approximately 1.3 times the total proceeds from fuel taxes (excluding the crude oil levy, for reasons explained in the report) and fees for vehicle registration and drivers' licences. This is comparable to the expenditure/revenue ratio in Canada, considerably below that in the USA (1.57) and considerably above that in the Federal Republic of Germany, Great Britain and New Zealand (where the ratio is less than one).

The national government in Australia finances (by direct expenditure and specific purpose grants to the States) just under 30 per cent of total roads expenditure. This is considerably less than the national government's share in Great Britain and New Zealand (where there are no State governments), but more than the national government's share in the other federations, except the Federal Republic of Germany (where the national government finances approximately 40 per cent of total roads expenditure).

All national governments (except Canada) accept most or all of the responsibility for national highways. However, of the four federations studied, only the Australian and USA national governments provide substantial funds for arterial roads (a State responsibility), and only the Australian national government provides substantial funds for local roads.

---

1. Road expenditure includes all expenditure related to the planning, construction, maintenance and administration of public roads. This includes signposting, streetlighting, soil stabilisation and conservation relating to road works.



## CHAPTER 1 — INTRODUCTION

### OBJECTIVES AND SCOPE OF THE PAPER

This study compares road administration and financing arrangements in Australia with those in various overseas countries. The principal emphasis is on the constitutional and *de facto* responsibilities of national governments. However, the roles of other levels of government are also considered, albeit more briefly.

Two factors influenced the choice of countries to be studied. Firstly, Canada, the Federal Republic of Germany (FRG) and the United States of America (USA) were chosen because, like Australia, they have a federal system of government. Secondly, Great Britain and New Zealand were studied because although they are not federations, they have socio-economic backgrounds similar to Australia's<sup>1</sup>.

The limited availability within Australia of reliable and current information on overseas countries posed a major problem for the study. This was overcome by requesting the national road authorities in each country (except the USA, for which information was more readily available in Australia) to provide information of both a general and specific nature. The authorities contacted in each country were:

- Canada—Canadian Transport Commission and the Highways Directorate, Ministry of Transport;
- FRG—Federal Ministry of Transport;
- Great Britain—Department of Transport; and
- New Zealand—Roading Directorate, Ministry of Works.

### OUTLINE OF THE PAPER

Meaningful comparison of road administration and financing arrangements in Australia with those in other countries requires information about the different sociological factors in the countries under examination. Chapter 2 contains, therefore, basic statistical and general information on each country. This includes, for example, important influences on road funding such as population densities, size of road networks and motor vehicle populations.

Institutional arrangements, particularly the differences between the four federations and the other two countries are compared in Chapter 3. The focus of this chapter is on the administrative and financial responsibilities of the different levels of government in each country.

Chapter 4 contains comparisons of road expenditure in each country in total and in relation to the various factors discussed in Chapter 2.

Taxation of road users and the sources of finance for government expenditure on roads are examined in Chapter 5. This chapter also provides some comparative information on the relationship between the level of road expenditure and the level of road user taxation.

Appendixes I to VI contain more detailed information for each country of the factors discussed in the body of the report.

---

<sup>1</sup> As explained in the Appendices Canada, the Federal Republic of Germany and the United States of America have constitutional powers divided between the Federal government and State governments (called Provinces, Lander and States respectively). Great Britain and New Zealand are unicameral, having only a national government and no separate States. All countries studied have a form of local government.

## CHAPTER 2—THE ROAD SYSTEMS IN PERSPECTIVE

As noted in the introduction, a number of factors relating to each country's road network need to be considered before a comparison of levels of road expenditure in each country becomes meaningful. The size of the network and its level of usage, for example, have an important bearing on the level of road expenditure. These factors in turn depend on geographic features such as area and location of population centres, and on demographic factors such as population density, vehicle ownership and usage. This chapter compares the more important of these factors.

### AREA AND POPULATION

Table 2.1 provides comparative information on the area and population of each country. Australia, Canada and the USA have comparable areas, while the areas of FRG, Great Britain and New Zealand are considerably smaller, but comparable with each other.

TABLE 2.1—AREA AND POPULATION OF SELECTED COUNTRIES, 1978

	Area <sup>a</sup> ( <i>'000 sq km</i> )	Population ( <i>'000</i> )	Population density ( <i>person/ sq km</i> )	Average annual population growth rate ( <i>per cent</i> ) 1973-78
Australia	7 682	14 249	1.85	1.26
Canada	9 976	23 499	2.36	1.26
FRG	249	61 327	246.67	-0.21
Great Britain	230	55 895	243.04	-0.04
New Zealand	269	3 129	11.64	1.05
USA	9 191	218 548	23.78	0.76

a. Includes inland waterways and lakes.

Sources: *Europa Year Book* (1979) (for area) and OECD (1980, p89) (for population).

FRG and Great Britain have comparable population densities, much higher than the other countries. Australia has the lowest population density. However, there is considerable variation in population densities within countries. For example, population densities in the north-eastern States of the USA are approximately five times the national average and about half the averages for FRG and Great Britain. Similarly, over 90 per cent of Canada's population lives in the southern half of the country and almost half of this lives in the Windsor-Quebec corridor. In like vein, population density in Australia's south-eastern coastal areas is considerably higher than in the remainder of the country.

FRG and Great Britain experienced a decline in population between 1973 and 1978, and New Zealand experienced a net population decline in 1979.

### ROAD DENSITIES

Table 2.2 compares road densities in the countries studied with density being measured in terms of road length (which takes no account of dual lanes). FRG and Great Britain have the highest densities per square kilometre but the lowest per capita. Australia has the second lowest density per square kilometre (after Canada) but the highest density per capita and per vehicle.

TABLE 2.2—ROAD LENGTHS AND DENSITIES, 1978

Country	Total public road length ('000 km)	Road density ('000 km)		
		Per sq km	Per capita	Per vehicle
Australia	866.0	0.11	0.06	0.127
Canada	884.0	0.09	0.04	0.075
FRG	466.8	1.88	0.01	0.019
Great Britain	336.5	1.46	0.01	0.020
New Zealand	92.8	0.35	0.03	0.044
USA	6 251.7	0.68	0.03	0.044

Sources: *Europa Year Book* (1979) and Tables I.1, II.1, III.1, IV.2, V.1, VI.1.

Table 2.3 presents information on the road system by surface type for four of the countries studied. No information could be obtained for the FRG while British statistics only cover sealed roads (which are understood to represent almost all roads). New Zealand and USA both have about half of their public road systems sealed, compared with about one-quarter in Australia and Canada. Canada has a much higher proportion of its remaining network gravel surfaced than Australia, which has almost half of its network neither sealed nor gravel surfaced.

TABLE 2.3—ROAD SYSTEMS BY SURFACE TYPE<sup>a</sup>, 1973-78  
(per cent)

	1973	1974	1975	1976	1977	1978
Australia						
Sealed	24.5	na	26.5	27.0	27.5	29.1
Gravel	24.2	na	24.9	24.9	24.9	25.8
Other	51.3	na	48.6	48.1	47.6	45.1
Canada						
Sealed	25.6	26.7	27.6	28.3	na	na
Gravel	57.4	52.3	52.6	52.3	na	na
Other	17.0	20.0	19.8	19.4	na	na
New Zealand						
Sealed	45.9	47.6	47.4	48.0	na	na
Gravel	46.1	45.2	45.3	44.7	na	na
Other	8.0	7.2	7.3	7.3	na	na
USA						
Sealed	46.3	47.6	48.3	na	50.7	51.8
Gravel	33.6	32.8	32.4	na	31.1	30.7
Other	20.1	19.6	19.3	na	18.2	17.5

a. Sealed means bitumen, cement or other 'permanent' seal. Gravel means paved with 'non permanent' cover. Other means unpaved but formed road.

Excluded are tracks of only natural surface.

na not available.

Sources: Australian Bureau of Statistics (1977, 1978, 1979a, 1980).

Statistics Canada (1973a-1976a).

New Zealand Department of Statistics (1975-1980).

Federal Highway Administration (1973-1978).

## MOTOR VEHICLES

Details of the growth in the total number of registered motor vehicles in each country are presented in Table 2.4. The table shows the growth in both total vehicles and cars, commercial vehicles (buses and trucks) and other vehicles (primarily motor cycles and registered agricultural and construction equipment). It is interesting to note the variations in the composition of the total vehicle population between countries. In 1978,

cars constituted between 72.5 per cent (New Zealand) and 82.6 per cent (Great Britain) of total registered vehicles while commercial vehicles constituted between 10.4 per cent (Great Britain) and 21.0 per cent (New Zealand).

TABLE 2.4—REGISTERED MOTOR VEHICLES, 1972-78  
(*'000*)

	1972	1974	1976	1978	Average annual growth rate (per cent)
<b>Australia</b>					
Cars	4 141	4 604	5 073	5 462	4.7
Commercial vehicles	996	1 090	1 215	1 360	5.3
Other	180	259	293	292	8.4
Total	5 317	5 953	6 580	6 822	4.2
<b>Canada</b>					
Cars	7 407	8 328	9 016	9 554	4.3
Commercial vehicles	2 002	2 025	2 317	442	3.3
Other	291	501	453	551	11.2
Total	9 700	10 854	11 786	12 547	4.4
<b>FRG</b>					
Cars	14 831	15 999	17 474	19 634	4.8
Commercial vehicles	3 892	4 079	4 213	4 425	2.1
Other	303	346	421	553	10.5
Total	19 025	20 424	22 108	24 611	4.4
<b>Great Britain<sup>a</sup></b>					
Cars	12 745	13 667	14 081	14 106	1.7
Commercial vehicles	1 722	1 841	1 836	1 776	0.5
Other	1 083	1 145	1 220	1 194	1.6
Total	15 549	16 653	17 137	17 076	1.6
<b>New Zealand</b>					
Cars	963	1 087	1 205	1 252	4.5
Commercial vehicles	195	204	340	362	10.8
Other	63	87	108	112	10.0
Total	1 220	1 378	1 653	1 726	5.9
<b>USA</b>					
Cars	97 096	104 857	110 189	116 575	3.1
Commercial vehicles	21 546	25 036	28 231	32 174	6.9
Other	3 760	4 966	4 982	5 142	5.3
Total	122 402	134 859	143 402	153 891	3.9

a. Since 1974 the basis for each census has changed. Therefore the figures for 1976 and 1978 are not directly comparable with those for earlier years.

Sources: Annual Reports of Transport Ministries and Departments, Yearbooks and Handbooks for each country, and *Europa Year Book* (1979).

Between 1972 and 1978, the total vehicle fleet in each country grew at an annual rate of 4 to 6 per cent, except for Great Britain, where the annual growth rate was significantly lower (1.6 per cent). Another significant feature of Table 2.4 is that in New Zealand and USA the number of commercial (and other) vehicles grew approximately twice as fast as the number of cars, whereas in FRG and Great Britain the number of commercial vehicles grew at less than half of the rate at which cars increased.

The USA has the highest vehicle ownership rate per capita of the countries studied, and a rate over twice that of Great Britain (Table 2.5). New Zealand has a perhaps surprisingly high total vehicle ownership rate, due largely to a high ownership rate for vehicles other than cars. Australia ranks behind USA, New Zealand and Canada in terms of total vehicle ownership rates.

TABLE 2.5—VEHICLES OWNERSHIP RATES, 1972-78

	<i>(number of registered vehicles per hundred persons)</i>			
	1972	1974	1976	1978
<b>Cars</b>				
Australia	31.4	33.8	36.4	38.3
Canada	33.9	37.1	39.1	40.6
FRG	24.0	25.7	28.3	32.0
Great Britain	22.8	24.4	25.1	25.2
New Zealand	33.0	35.8	38.5	40.0
USA	46.4	49.4	51.2	53.3
<b>Other vehicles</b>				
Australia	8.9	9.9	10.8	11.6
Canada	10.5	11.3	12.0	12.7
FRG	6.8	7.2	7.6	8.1
Great Britain	5.0	5.3	5.5	5.3
New Zealand	8.8	9.6	14.4	15.1
USA	12.2	14.2	15.4	17.1
<b>All vehicles</b>				
Australia	40.3	43.7	47.2	49.9
Canada	44.4	48.4	51.1	53.3
FRG	30.8	32.9	35.9	40.1
Great Britain	27.8	29.7	30.6	30.5
New Zealand	41.8	45.4	53.0	55.1
USA	58.6	63.6	66.6	70.4

Sources: Tables 2.1 and 2.4

## CHAPTER 3—INSTITUTIONAL ARRANGEMENTS

The previous chapter contained an examination of some of the more important factors affecting the road system in each country (and thus the level of road expenditure). This chapter is concerned with the factors affecting the pattern of road revenue and expenditure in each country. It includes a comparison of the roads responsibilities between different levels of government in each country. Emphasis is placed on comparing the role of national governments.

In describing a government's roads responsibilities, a distinction must be made between direct (actual construction and maintenance of roads) and indirect responsibilities (generally assumed rather than legal), the latter arising (for example) where a national government passes funds on to a subsidiary government for expenditure on roads. The importance of the distinction is nowhere better illustrated than in Australia, where the Commonwealth Government has direct responsibility for only 0.3 per cent of the road network (representing roads in Commonwealth Territories or on Commonwealth property). However, it finances about 30 per cent of the nation's total roads expenditure by making specific purpose grants to the States for roads expenditure. These grants may be spent either by the States or passed on to local government.

### DIRECT RESPONSIBILITIES

As noted in Chapter 1, of the six countries studied, four (Australia, Canada, the FRG and the USA) are federations, each with three main levels of government (national, State, and local), while two (Great Britain and New Zealand) are unitary systems having two main levels of government (central government and local authorities).

Each of the federations has a constitution, but only that of the FRG was framed since the commencement of mass production of motor vehicles. This probably accounts for the fact that it is the only constitution of the four to attach any importance to a national road system and to allot the Federal Government a specific role in its development. In the other three federations, roads are the constitutional responsibility solely of the State governments, except on federal land and in federal territories. As shown in Table 3.1, national governments in the federations tend to be legally responsible for only a small proportion of the road network (by length), ranging from 0.3 per cent in Australia to 8.3 per cent in FRG.

TABLE 3.1—CONSTITUTIONAL RESPONSIBILITY FOR ROADS BY LEVEL OF GOVERNMENT

	('000 km)			
	<i>National</i>	<i>State</i>	<i>Local</i>	<i>Total</i> <sup>a</sup>
Australia	2.2( 0.3) <sup>b</sup>	154.7(18.3)	685.5(81.4)	842.3(100)
Canada	13.8( 1.6)	294.9(33.3)	575.6(65.1)	884.3(100)
FRG	39.3( 8.3)	65.4(13.7)	371.0(78.0)	475.7(100)
Great Britain	14.9( 4.4)	..	321.7(95.6)	336.5(100)
New Zealand	11.5(12.3)	..	81.9(87.7)	93.4(100)
USA	371.4( 5.9)	1 273.6(20.4)	4 606.7(73.7)	6 252.0(100)

a. Totals may not add due to rounding.

b. Figures in parenthesis represent percentages.

.. not applicable

Sources: Tables I.2, II.3, III.1, IV.2, V.1, VI.1.

In Australia, Canada and the USA, the various State governments are responsible for the road network within their borders, apart from those roads which are the direct responsibility of the Federal Government. In practice, they have devolved most of this task (in terms of length of road) to local authorities. In the FRG, a similar distribution of responsibility exists, but has been laid down by the constitution. As shown in Table 3.1, the proportion of the network for which State governments are responsible varies from 13.7 per cent in the FRG to 33.3 per cent in Canada.

Local authorities in the federations are responsible for between 65 per cent (Canada) and 81 per cent (Australia) of the total road length (Table 3.1). However, these roads are generally lower quality roads than those administered by the national and State governments.

As noted earlier, Great Britain and New Zealand are not federations of a number of States and have only two levels of government, a national or central government and numerous local authorities. Further, neither country has a written constitution. The national government may determine the functions of local authorities. In both countries, the national government accepts direct responsibility for the major highway systems and local authorities are responsible for the remainder of the network. As shown in Table 3.1, this tends to leave the national governments with direct responsibility for only a small proportion (by length) of the total network, especially in Britain where the proportion is even lower than for two of the national governments in the federations.

In all but two of the six countries examined the administration of the road program at the national level is undertaken by a government department. The two exceptions are the USA and New Zealand where separate authorities have been established for the purpose. In the USA the Federal Highway Administration (FHWA) administers the Highway Trust Fund into which road user taxation earmarked for road works is paid. The FHWA is responsible for overseeing the Federal Aid Highway Program of financial assistance to the States for road expenditure and research and development. In New Zealand the National Roads Board administers the National Roads Fund which also receives earmarked road funds. The Board is responsible for the development of the whole New Zealand road system and provides direct advice on all road matters to the Government.

### **INDIRECT RESPONSIBILITIES**

The distribution of *de facto* responsibility for roads, especially financial responsibility, differs considerably from the foregoing description of direct responsibilities. In particular, the national governments in Australia, New Zealand, the USA and (to a lesser extent) Canada, provide funds to subsidiary levels of government specifically for road construction and for maintenance. As shown in Table 3.2, in Australia and USA these 'indirect' expenditures dwarf direct expenditures by the national government, accounting for about 90 per cent of total road spending by that level of government. In both countries, such indirect expenditures by the national governments account for about one-quarter of total roads spending by all levels of government.

Indirect spending by the New Zealand national government is also significant. In Canada, the national government's indirect spending is large in relation to its direct spending, but still insignificant in relation to total roads spending by all levels of government.

Prior to 1975, the national government in Great Britain made specific purpose grants to local government for roads (shown as indirect expenditure in Table 3.2). However, in 1975 these were replaced by block grants not specifically designated for roads. Roads expenditure from these grants is thus regarded as being at the discretion of the local authorities and is therefore attributed to the latter from 1975-76 onwards. This accounts for most of the change in the national (as opposed to local authority) share of road spending shown for Great Britain in Table 3.2.

TABLE 3.2—EXPENDITURE ON ROADS BY LEVEL OF GOVERNMENT, 1972-73 TO 1977-78<sup>a</sup>

	<i>(per cent)</i>					
	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78
Australia <sup>b</sup>						
Federal						
Direct	3.6	3.5	3.1	2.7	2.2	3.1
Indirect	31.3	32.3	29.1	27.3	27.2	25.3
Total	34.9	35.8	32.2	30.0	29.4	28.4
State	30.9	30.5	26.1	27.6	30.0	31.6
Local	34.2	33.6	41.7	42.4	40.6	40.0
Total	100.0	100.0	100.0	100.0	100.0	100.0
Canada						
Federal						
Direct	2.2	2.7	2.5	2.5	2.6	na
Indirect	4.8	3.2	3.8	3.5	3.2	na
Total	7.0	5.9	6.3	6.0	5.8	na
State	61.8	64.3	63.5	63.6	59.5	na
Local	31.2	29.8	30.2	30.4	34.7	na
Total	100.0	100.0	100.0	100.0	100.0	na
FRG						
Federal	40.4	39.3	39.0	39.8	41.3	na
State	25.3	26.0	29.4	31.2	29.7	na
Local	34.3	34.7	31.6	29.0	29.0	na
TOTAL	100.0	100.0	100.0	100.0	100.0	na
Great Britain						
Central						
Direct	32.0	33.3	31.8	35.6	35.8	32.1
Indirect	14.4	14.0	11.6	2.5	2.5	3.9
Total	46.4	47.3	43.4	38.1	38.3	36.0
Local <sup>c</sup>	53.6	52.7	56.6	61.9	61.7	64.0
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
New Zealand						
Central						
Direct	42.7	41.1	41.7	41.4	40.7	39.1
Indirect	27.0	28.3	27.5	26.2	25.4	26.2
Total	69.7	69.4	69.2	67.6	66.1	65.3
Local	30.3	30.6	30.8	32.4	33.9	34.7
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
USA <sup>d</sup>						
Federal						
Direct	2.2	2.0	2.3	2.5	2.5	2.5
Indirect	19.4	22.0	23.6	22.1	23.0	22.4
Total	21.6	24.0	25.9	24.6	25.5	24.9
State	59.1	56.3	53.8	50.9	51.4	53.0
Local	19.4	19.7	20.3	24.5	23.1	22.1
Total	100.0	100.0	100.0	100.0	100.0	100.0



TABLE 3.2—EXPENDITURE ON ROADS BY LEVEL OF GOVERNMENT, 1972-73 TO 1977-78<sup>a</sup>—*continued*

- a. Errors may occur for lower levels of government (especially in the case of federations where intergovernment transfer payments are present) due to a lack of information.
- b. Figures for the years 1972-73 and 1973-74 are not directly comparable with subsequent years but are included for order of magnitude comparisons.
- c. Includes expenditure from Central Government Transport Supplementary and Rate Support Grants since 1975. For details see Appendix IV.
- d. USA expenditures are for calendar years.
- na not available.
- Sources: Commonwealth Bureau of Roads (1975), Bureau of Transport Economics, (1979), Statistics Canada (1973a-1976a), FRG Federal Ministry of Transport (1977 and 1978), New Zealand National Roads Board (1973a-1978a), United Kingdom Department of Transport (1973a-1978a), and US Federal Highway Administration (1973-1978).

### ROAD CATEGORIES FINANCED BY NATIONAL GOVERNMENTS

Road classification systems vary in their detailed application from one country to another. However, in general terms they all tend to distinguish between three categories of roads:

- national highways;
- arterial roads; and
- local roads.

National highways may be defined generally as the principal roads linking the major centres of population and industry. Of all non-urban roads these roads are usually the most heavily-used with the longest average journey lengths and highest volume capacities. Of the six countries studied, only Canada does not have a declared national highway system.

Arterial roads may be defined as the denser back-up feeder/distributor networks for the national highways. These roads provide the main means of intra- and inter-regional travel. Typically used by traffic having lower average journey lengths than for the national highways, these roads are still usually of reasonably high safety/engineering standards.

Local roads are a group of great diversity, primarily serving as feeder/ distributor networks for the arterial roads, and providing property access. Engineering/safety standards of these roads may vary considerably, as may the level of usage.

Using the above classification, the percentage of each type of road in each country is shown in Table 3.3 while Table 3.4 shows the distribution of road expenditure by national governments on each type of road.

TABLE 3.3—COMPARISON OF ROAD SYSTEMS BY CATEGORY  
(per cent)

	<i>National highways</i>	<i>Arterial roads</i>	<i>Local roads</i>	<i>Total roads</i>
Australia	1.9	16.1	82.0	100.0
Canada	..	33.9	66.1	100.0
FRG	8.3	27.6	64.1	100.0
Great Britain	4.4	10.2	85.4	100.0
New Zealand	12.4 <sup>a</sup>	.. <sup>b</sup>	87.6	100.0
USA	1.1	20.6	78.3	100.0

a. Includes arterial roads. Available data do not distinguish between national highways and arterial roads.

b. Included in national highways. See (a).

.. not applicable.

Sources: Tables I.2, II.3, III.1, IV.2, V.1, VI.1.

TABLE 3.4—ROAD EXPENDITURES BY ROAD CATEGORY AND LEVEL OF GOVERNMENT, 1977-78

(per cent)

Country and level of government	National highways	Arterial roads	Local roads	Total roads
Australia				
Federal	36.4	34.5	29.1	100.0
State	3.3	77.9	18.8	100.0
Local	—	3.6	96.4	100.0
Canada				
Federal	na	na	na	na
State	na	na	na	na
Local	na	na	na	na
FRG				
Federal	100.0	—	—	100.0
State	na	na	na	na
Local	na	na	na	na
Great Britain				
Central	88.5	11.0	0.5	100.0
Local <sup>a</sup>	—	47.1	52.9	100.0
New Zealand				
Central	55.9	1.3	42.8	100.0
Local	—	—	100.0	100.0
USA				
Federal	46.9	37.8	15.3	100.0
State	4.5	63.5	32.0	100.0
Local	—	3.1	96.9	100.0

a. Total expenditure by local authorities—i.e. includes TSG Grants.

na not available.

Sources: Bureau of Transport Economics (1979). UK Department of Transport, (1979), Table V.2, Federal Highway Administration (1979).

### National Roads

in each of the countries studied, national governments have accepted responsibility, albeit to varying degrees, for developing and maintaining the national highway system.

In Australia, the Commonwealth Government has, since 1974, accepted 100 per cent financial responsibility for approved construction and maintenance projects on the designated national highway system. Prior to 1974, these roads were classified as rural arterial roads, with funds being available from the Commonwealth Government for construction purposes only.

In Canada, there is at present no declared national highway system. The only major involvement of the Federal Government with national highways was the Trans-Canada Highway Program (1949-71). In this instance, the Federal Government provided funds for 50 per cent of the construction costs of approved projects. All funding for maintenance remains a Provincial responsibility.

In the FRG, the Federal Government finances 100 per cent of construction and maintenance work on the national highway system, although the State governments carry out the work as in Australia.

In Great Britain and New Zealand, the central governments have accepted 100 per cent responsibility for construction and maintenance of the national highway systems in their respective countries.

In the USA, the Federal Government provides funds for 90 per cent of the cost of approved national highway construction programs. The Federal Government also

provides funds for major maintenance projects under the '3R' scheme (re-surfacing, restoration and rehabilitation) although routine or day-to-day maintenance is still a State responsibility.

As shown in Table 3.4, all national government roads expenditure in FRG is devoted to national highways, and most of the national government's road expenditure in Great Britain is devoted to this category. In 1977-78 national highways accounted for about half of the national government's road expenditure in New Zealand and USA, and about one-third in Australia. No figures are shown for Canada, but most national government expenditure there would be on arterial roads. As noted earlier, the only expenditure of a national highway nature was that on the Trans-Canada Highway, between 1949 and 1971.

### **Arterial and local roads**

Most of the remaining national government expenditure in Great Britain and USA is for arterial roads, whereas in Australia and New Zealand the national government also provides substantial support for local roads. Of the federations studied, Australia is thus the only one where the Federal Government provides specific purpose assistance for local roads.

### **CONDITIONS OF NATIONAL GOVERNMENT ASSISTANCE FOR ROADS**

The degree of control exercised by national governments over funds they provide to subsidiary levels of government for roads expenditure varies between road categories and between countries. National governments in the four federations studied tend to exercise considerable control over expenditure on national highways<sup>1</sup>. Generally, the national government undertakes the strategic planning of the network and determines general design standards, while State road authorities undertake the detailed project design and construction work (and subsequent maintenance). As noted earlier, the national governments finance both construction and maintenance<sup>2</sup>, and the funding is tied to specific projects. That is, the national government exercises both program-level and project-level control over the funds.

The degree of control exercised over national government assistance for expenditure on other road categories is much more varied<sup>3</sup>. In Canada and the USA, such assistance is, as for national highways, tied to specific projects and programs approved by the national government (though frequently the projects are generated by the States/Provinces). In Great Britain and New Zealand, the national governments exercise very little control over the funds they pass to local governments for roads expenditure, although local governments' road programs are oversighted in a general way.

In Australia, the Federal Government does not exercise any project level control over expenditure of funds it provides for roads other than national highways, even though such outlays account for approximately two-thirds of its financial assistance to the States and local governments for roads. Since the 1920s the Federal Government has allotted funds to the States for both arterial and local roads. The conditions attached to these grants have varied considerably over this period. At present it can be said that the Commonwealth Government exercises much more control over the funds it provides for national roads than funds for other roads<sup>4</sup>.

---

1. As this section is concerned with the control exercised by national governments over funds passed to subsidiary governments, the following discussion of national highways does not deal with those systems in Great Britain and New Zealand, where the national government directly carries out all work on national highways. In the case of Canada, discussion relates to the Trans-Canada Highway.

2. Except for Canada, where maintenance of the Trans-Canada Highway is the financial responsibility of the provinces. In Australia and the FRG, the Federal governments finance 100 per cent of construction and maintenance and in the USA, 90 per cent (though initially the Federal Government financed only 50 per cent of the cost of national highway projects).

3. FRG does not feature in this discussion as it does not provide any such assistance.

4. For a more detailed discussion of this issue see BTE (1981).

## CHAPTER 4—ROAD EXPENDITURE

Roads expenditure in each country is examined in this chapter both in total and in relation to the factors discussed in Chapters 2 and 3. Significant changes in the pattern of roads expenditure in each country over the past few years are also identified.

### COMPARATIVE LEVELS OF EXPENDITURE

#### Total road expenditure

Table 4.1 shows total road expenditure in each country over the past few years. As expected, roads expenditure in the USA is considerably greater than in the other countries studied.

TABLE 4.1—TOTAL ROAD EXPENDITURE IN SELECTED COUNTRIES, 1973-74 TO 1977-78

	(\$A million, current prices)				
	1973-74	1974-75	1975-76	1976-77	1977-78
Australia	984	1 363	1 619	1 775	1 963
Canada	2 222	2 858	3 547	3 775	na
FRG	4 760	5 464	5 588	na	na
Great Britain	1 805	2 082	2 243	2 476	2 534
New Zealand	137	147	146	160	193
USA	24 506	26 660	29 263	29 596	32 150

a. Converted to Australian currency at average exchange rates prevailing in each year.

na not available.

Sources: OECD (1980), Annual Reports and other publications of the transport authorities in each country, ABS (1981), BTE (1979).

#### Road expenditure as a percentage of GDP

As shown in Table 4.2, each country spends between 1 and 2.5 per cent of its Gross Domestic Product (GDP) on roads. Australia and Canada spend the highest percentages while the lowest percentages occur in Great Britain and New Zealand. In all of the countries studied there has been a decline in the percentage of GDP spent on roads in recent years.

TABLE 4.2—ROAD EXPENDITURE AS PER CENT OF GDP, 1973-74 TO 1977-78

	(per cent)				
	1973-74	1974-75	1975-76	1976-77	1977-78
Australia	2.30	2.66	2.81	2.44	2.35
Canada	2.09	2.28	2.21	2.10	na
FRG	1.79	1.70	1.53	na	na
New Zealand	1.39	1.38	1.29	1.19	1.20
Great Britain	1.50	1.31	1.38	1.26	1.06
USA	1.85	1.75	1.73	1.58	1.52

na not available.

Source: As for Table 4.1

#### Expenditure per kilometre of road

As shown in Table 4.3, between 1973-74 and 1977-78 the FRG spent considerably more per kilometre of road than the other countries studied. On this basis, Australia and New Zealand spent considerably less than the other countries.

TABLE 4.3—ROAD EXPENDITURE PER KILOMETRE OF ROAD, 1973-74 TO 1977-78  
(\$A, current prices)

	1973-74	1974-75	1975-76	1976-77	1977-78
Australia	1 139	1 540	1 920	2 108	2 403
Canada	2 638	3 320	4 068	4 269	na
FRG	10 742	12 311	12 570	na	na
Great Britain	5 331	6 288	6 726	7 388	7 529
New Zealand	1 599	1 595	1 653	1 725	2 079
USA	2 818	3 009	3 602	3 891	4 639

a. Converted to Australian currency at average exchange rates prevailing each year.  
na not available.

Source: As for Table 4.1.

However, this comparison ignores the fact that the Australian road network, and to a lesser extent the networks in Canada and the USA, have high proportions of roads with traffic levels considerably below those in the FRG and Great Britain.

Bearing in mind that a very high proportion of each country's road expenditure occurs on sealed roads, it could be argued that a more meaningful comparison is total expenditure per kilometre of sealed road. This comparison is presented in Table 4.4. Figures for the FRG are estimated assuming that all roads are sealed. It could be expected that, as with Great Britain, most of the network in the FRG is already sealed, so that there would be little difference between expenditure per kilometre of road either in total or for sealed roads.

TABLE 4.4—EXPENDITURE PER KILOMETRE OF SEALED ROAD<sup>a</sup>, 1973-74 TO 1977-78

	1973-74	1974-75	1975-76	1976-77	1977-78
Australia	4 649	6 160	7 244	7 806	8 737
Canada	10 306	12 435	14 738	15 086	na
FRG <sup>c</sup>	10 743	12 311	12 570	na	na
Great Britain	5 331	6 288	6 726	7 388	7 529
New Zealand	3 484	3 351	3 488	3 593	4 030
USA	6 086	6 321	7 458	7 860	9 149

a. Total road expenditure divided by length of sealed roads.

b. Converted to Australian currency at average exchange rates prevailing each year.

c. Estimated assuming that all roads in the FRG are sealed.

na not available.

Source: Table 2.4 and 4.1.

On this basis, the level of Australian road spending is comparable to that in Great Britain and the USA, but considerably below that in Canada (and the FRG).

### Expenditure per vehicle

Canada has the highest expenditure per vehicle (Table 4.5), followed by the FRG and then Australia.

TABLE 4.5—ROAD EXPENDITURE PER VEHICLE, 1973-74 TO 1977-78  
(\$A, current prices<sup>a</sup>)

	1973-74	1974-75	1975-76	1976-77	1977-78
Australia	165	217	246	260	288
Canada	205	253	301	301	na
FRG	237	268	266	na	na
Great Britain	105	119	126	140	144
New Zealand	71	78	73	77	92
USA	129	138	162	169	195

a. Converted to Australian currency at average exchange rates prevailing each year.  
na not available.

Source: As for Table 4.1.

### Road expenditure per capita

As shown in Table 4.6, those countries with large areas but small population spend significantly more per capita on roads than do the smaller countries. Thus Canada and Australia spend far more per capita on roads than the smaller countries such as Great Britain, New Zealand and the FRG. The USA has, however, a higher population density than New Zealand but spends more per capita on roads than New Zealand.

TABLE 4.6—ROAD EXPENDITURE PER CAPITA, 1973-74 TO 1977-78  
(*\$A, current prices<sup>a</sup>*)

	1973-74	1974-75	1975-76	1976-77	1977-78
Australia	73	99	117	127	139
Canada	99	126	153	163	na
FRG	76	88	91	na	na
Great Britain	33	38	41	46	47
New Zealand	46	48	47	51	62
USA	82	87	104	112	133

a. Converted to Australian currency at average exchange rates prevailing each year.  
na not available.

Source: As for Table 4.1.

### GROWTH IN ROAD EXPENDITURE

Of the six countries studied only Australia and Canada increased their total road expenditure in real terms over the period 1972-73 to 1977-78 (Table 4.7)<sup>1</sup>. Table 4.7 further shows that expenditures by all national governments declined in real terms (except USA), but in the case of Australia and Canada this was more than offset by the increase in real expenditures by State and local governments.

### CONSTRUCTION AND MAINTENANCE EXPENDITURE

Table 4.8 shows the percentage distribution of expenditure between construction and maintenance, in the four countries for which information was available, over the period 1972-73 to 1977-78<sup>2</sup>. Considerable care needs to be exercised in making intercountry comparisons as countries may differ in how they distinguish between construction and maintenance. However, it is clear from available information that there is reasonable consistency insofar as each country classifies major reconstruction as construction and routine repair work (including resealing/resheeting) as maintenance.

1. The Canadian situation is somewhat clouded by the unavailability of 1977-78 data and the negative growth rate in 1976-77.

2. Information on expenditure on construction and on maintenance in the FRG and New Zealand is only available for the national highway system in each country.

TABLE 4.7—EXPENDITURE ON ROADS, IN CONSTANT PRICES, BY LEVEL OF GOVERNMENT, 1972-73 TO 1977-78<sup>a</sup>

Country and level of government	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	Average annual growth rate
Australia <sup>b</sup> (\$A million)							
Federal	421	411	440	411	405	407	-0.6
State	360	338	340	375	416	435	4.1
Local	323	297	323	381	432	349	2.6
Total	1 104	1 046	1 103	1 167	1 254	1 191	1.7
Canada (Can\$m)							
Federal	240	204	239	235	219	n.a.	-1.6
State	2 133	2 213	2 415	2 479	2 255	n.a.	1.6
Local	1 079	1 027	1 148	1 185	1 314	n.a.	5.3
Total	3 452	3 444	3 801	3 899	3 788	n.a.	2.7
FRG (DM bill)							
Federal	8	7	7	7	7	n.a.	-3.4
State	5	5	5	5	5	n.a.	0.2
Local	7	6	6	5	5	n.a.	-7.6
Total	19	19	18	17	16	n.a.	-5.8
Great Britain <sup>c</sup> (£m)							
Central	640	666	536	508	463	380	-9.5
Local	739	742	697	826	745	674	-1.3
Total	1 379	1 408	1 232	1 334	1 208	1 054	-4.9
New Zealand (\$NZm)							
Central	121	114	116	105	96	96	-4.6
Local	53	51	52	50	49	51	-0.6
Total	174	165	167	155	145	146	-3.5
USA <sup>d</sup> (US\$m)							
Federal	6 176	6 816	7 288	6 863	6 823	6 780	2.1
State	16 919	16 004	15 133	14 187	13 741	14 444	-3.0
Local	5 554	5 592	5 732	6 833	6 173	6 027	2.1
Total	28 649	28 412	28 153	27 883	26 737	27 251	-1.0

a. Current price expenditures were deflated by the respective GDP price index. Totals may not add due to rounding.

b. Figures for Australia are based on data supplied by NAASRA and do not include expenditures on roads in the Northern Territory.

c. Local Government expenditure from 1975-76 on is influenced by the Transport Supplementary Grant, figures for which are not included in the expenditure of the Central Government because it is not hypothecated to road use.

d. Figures for the USA are for calendar years.

Source: Table 4.1 and OECD (1980).

There is a remarkable degree of similarity in the overall construction/ maintenance split between countries. This is particularly true of the early years when construction in all countries accounted for 64 to 68 per cent of total roads expenditure and maintenance for 32 to 36 per cent. Another noteworthy feature is that in each country other than Australia there has been a noticeable shift away from construction and towards maintenance<sup>1</sup>. This is particularly true of Great Britain and to a lesser extent the USA and Canada. In Great Britain and the USA this decreasing importance of construction to total road expenditure coincides with the pending completion of major highway systems and the stated intentions of both national governments not to undertake any major new road construction programs (Great Britain, Department of Transport 1980, p2; Adams 1978b, p96).

1. In New Zealand information on construction and maintenance expenditures separately is only available for the State Highways network. Over the period 1973-74 to 1978-79 construction expenditure declined from 68 to 49 per cent of total expenditure.

TABLE 4.8—EXPENDITURE ON ROAD CONSTRUCTION AND MAINTENANCE, IN PERCENTAGE TERMS, 1972-73 TO 1977-78  
(per cent)

	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78
Australia						
Construction	na	na	66.4	65.8	66.0	66.0
Maintenance	na	na	33.6	34.2	34.0	34.0
Canada						
Construction	64.9	64.4	64.6	62.5	60.1	na
Maintenance	35.1	35.6	35.4	37.5	39.9	na
Great Britain						
Construction	66.5	67.5	67.4	65.7	63.6	55.4
Maintenance	33.5	32.5	32.6	34.3	36.4	44.6
USA						
Construction	67.2	66.7	na	64.2	60.2	60.4
Maintenance	32.8	33.3	na	35.8	39.8	39.6

na not available.

Sources: Tables I.4, I.7, and I.8, II.2, IV.3 and VI.2.

It is also of interest to note that the significant decreases in construction as a percentage of total expenditure occur in the countries which have the highest percentage of sealed roads (refer Chapter 2).

Both of these factors suggests that as the Australian road system develops (with decreasing rate of growth in system length and increasing proportion of sealed and gravel roads) there is likely to be a similar decrease in the proportion of construction in total roads expenditure. This in turn may have important implications for the current allocation of Commonwealth Government road grants, most of which are currently allotted to construction. However, it should be noted that if the Commonwealth Government's present emphasis on development of a national highways network continues, it may be some time before there is any significant change in the construction/maintenance split of Commonwealth Government road expenditures.



## CHAPTER 5—ROAD USER CHARGES

Due to the large number of charges levied on road users in each country and the complexity of some of the charging structures, only the more important charges are discussed here, namely:

- sales and equivalent taxes on motor vehicles and parts;
- taxes on fuels;
- heavy vehicle taxes and charges; and
- fees for motor vehicle registration and drivers' licences.

### SALES AND EQUIVALENT TAXES ON MOTOR VEHICLES AND PARTS

Table 5.1 summarises the sales and equivalent taxes levied by the various governments on motor vehicles and parts. In percentage terms these taxes are highest in Great Britain and New Zealand and lowest in Canada and the USA. The absolute amounts of such taxes are related to wholesale vehicle prices in the various countries. Unpublished data provided by the Department of Industry and Commerce suggest that relative wholesale prices are in approximately the same relationship as the percentage tax rates. Wholesale prices are lowest in USA and Canada, higher in Australia, FRG and Great Britain and highest in New Zealand. Thus, it would appear that in absolute terms such taxation payments by motorists (per vehicle) are lowest in USA and Canada and highest in Great Britain and New Zealand, with Australia and FRG in between.

It will be noted from the Table that New Zealand and USA are the only countries which hypothecate (or ' earmark') revenue from sales tax on vehicles and parts for road expenditure.

### TAXES ON FUEL

Table 5.2 summarises the taxes levied by the various countries on fuel used by road vehicles. The figures include fuel excises and import duties except for New Zealand for which figures were not available but exclude production levies on crude oil, such as is imposed in Australia. It was not possible to obtain information on these although it is known that at least in the USA (excess profits tax on oil companies) some such form of tax exists. For consistency they are not considered further in this report. Fuel excise taxes (including State taxes) in Australia are moderate compared with those in the other countries. Commonwealth fuel excise in Australia is 5.2 cents per litre while State fuel franchise schemes, introduced by Victoria, South Australia and Western Australia in 1979, to replace road maintenance charges, vary from around 1 cent to 3 cents per litre. Fuel taxes in FRG and Great Britain are considerably higher than in Australia. Federal taxes in Canada and the USA are lower than in Australia, but after taking account of State taxes the total tax paid by motorists in those countries generally exceeds that paid by Australian motorists.

TABLE 5.1—SALES TAXES AND EQUIVALENT TAXES ON VEHICLES AND PARTS<sup>a</sup>, 1978

Country	National government	Other levels of government	Comments
Australia	<ul style="list-style-type: none"> <li>• 15% on new vehicles and 27.5% on parts</li> </ul>	Nil	Paid into general revenue
Canada	<ul style="list-style-type: none"> <li>• \$30-\$60 per vehicle up to 2.4 tonnes with an additional charge of \$60 per 45 kg above 2.4 tonnes</li> <li>• 5% on motor cycles of capacity of 250cc or greater</li> <li>• 12% on parts and accessories</li> </ul>	Provincial Sales Tax of 5% to 11%	Paid into general revenue
FRG	VAT on vehicles and parts at general rate of 13%	Unknown	Paid into general revenue
Great Britain	<ul style="list-style-type: none"> <li>• Sales tax of 10% on new vehicles</li> <li>• VAT at standard rate of 15%</li> </ul>	Nil	Paid into general revenue
New Zealand	<ul style="list-style-type: none"> <li>• 30% to 60% on new cars, increasing with engine capacity</li> <li>• 10% on trucks and buses<sup>b</sup></li> <li>• 20% to 40% on motor cycles, increasing with engine capacity</li> </ul>	Nil	Paid into National Road Fund
USA	<ul style="list-style-type: none"> <li>• 10% on buses, trucks and trailers<sup>c</sup></li> <li>• 8% on parts and accessories</li> </ul>	States and some city administrations levy sales taxes on vehicles. Rates vary, but eg New York has a city tax of 4% and a State tax of 4%	Federal revenues paid into Highway Trust Fund  State revenues paid into general revenue

a. All percentage tax rates are on wholesale prices after all other taxes and duties have been added.

b. 40% prior to introduction of heavy vehicle taxes—see text.

c. Sales taxes on motor cycles and cars repealed in 1955 and 1971 respectively.

Source: Appendixes I-VI.

TABLE 5.2—SALES AND EXCISE TAXES ON FUEL<sup>a</sup> AS AT 30 JUNE 1980

Country	National government	Other levels of government	Comments
Australia	<ul style="list-style-type: none"> <li>• 5.155 c/litre on motor spirit and automotive distillate</li> <li>• 1.4c/litre on LPG</li> </ul>	Business Franchise Licence Fees in Vic, SA and WA. In Vic and SA the rates are 4.5% of value of motor spirit sold (about 1.5 cents per litre) and 7.1% of value of automotive distillate sold (about 2.4 cents per litre). In WA the rates are 1.5c per litre on petrol and 3.0c per litre on automotive distillate.	National Government revenue paid into Consolidated Revenue. Part of the revenue obtained in Vic is hypothecated. All revenue in SA and WA is hypothecated. Federal revenues are not hypothecated.
Canada	<ul style="list-style-type: none"> <li>• approximately 3c/litre on motor spirit</li> <li>• 0.92c/litre on automotive distillate</li> </ul>	<ul style="list-style-type: none"> <li>• All Provincial/Territorial governments except Alberta levy taxes on motor spirit and automotive distillate of 2.80-5.38c/litre with the excise on motor spirit generally being lower than that on automotive distillate.</li> <li>• Only 3 Provincial and one Territorial government levy taxes on special fuels—at rates considerably below those already mentioned.</li> </ul>	All revenue, both Federal and Provincial is paid into respective Consolidated Revenue.
FRG	<ul style="list-style-type: none"> <li>• 21.73c/litre on motor spirit</li> <li>• 20.25c/litre on automotive distillate</li> <li>• special fuels are also taxed but details on rates are not available</li> <li>• VAT 7.37c/litre</li> </ul>	Nil	There is only partial hypothecation of Federal revenues.
Great Britain	<ul style="list-style-type: none"> <li>• 20.27c/litre on motor spirit and automotive distillate</li> <li>• 10.14c/litre on LPG</li> <li>• 7.7c/litre VAT</li> </ul>	Nil	All revenue received is paid into Consolidated Revenue
New Zealand	16.3c/litre on motor spirit <sup>b</sup>	Local authorities are empowered to levy tax at the rate of 0.57c/litre on motor spirit and 0.28c/litre on automotive distillate.	About half of National Government receipts are hypothecated to roads expenditure. Local authority receipts are treated as general revenue.
USA	3.47c/litre on all road fuels	All except two State governments levy an excise tax. Rates vary from 5.21-9.54c/litre. The rate on automotive distillate is generally higher than that on motor spirit.	Federal tax is paid into the Highway Trust Fund. Information was not available on whether State receipts are hypothecated.

a. All amounts are expressed in Australian currency using exchange rates applicable at 30 June 1980.

b. Excise on automotive distillate was discontinued in 1977 and replaced by heavy vehicle tax. See text.

Source: Appendixes I-VI.

Table 5.3 shows the national average retail price of motor spirit (petrol) in each of the countries. The price of motor spirit in Australia is considerably lower than in FRG, Great Britain and New Zealand<sup>1</sup>, comparable with that in USA, and considerably higher than the price in Canada which has not implemented import parity pricing. (The Canadian price is, however, for a year earlier).

TABLE 5.3—RETAIL PRICES OF MOTOR SPIRIT, MID-1980  
(Australian cents per litre)

Country	Price
Australia	33.0
Canada	17.6 <sup>a</sup>
FRG	56.7
Great Britain	57.9
New Zealand	44.9
USA	30.0

a. As at 30 June 1979.

Source: Warden (1980, p22).

### HEAVY VEHICLE TAXES AND CHARGES

Charges on the use of heavy vehicles are levied by the Central governments in Great Britain and New Zealand and by the Federal Government and approximately half the State governments in the USA. Most State governments in Australia levied similar charges prior to July 1979. The Federal Government in the FRG does not levy such taxes but information on State government charges, if any, is not available. Canada does not levy heavy vehicle taxes and charges at either the federal or State level.

In Great Britain, a fixed annual charge is levied on the maximum legal loaded weight of heavy vehicles. The charge per unit weight increases with the weight of the vehicle. For example, as of March 1980 the owner of a truck with maximum loaded weight of 2 tons paid the equivalent \$A308 (\$A154 per ton) per year, while the owner of a truck with maximum loaded weight of 20 tons paid the equivalent of \$A5333 (\$A267 per ton). Appendix IV provides more details. All revenue from this charge is paid into general revenue.

In New Zealand, charges on the use of heavy vehicles underwent a major change in 1977. Prior to 1977, two charges (Mileage Tax and Heavy Traffic Fees) were levied on the use of heavy vehicles. Mileage Tax was a fixed charge for every kilometre travelled by non-petrol powered vehicles. It was a heavy vehicle tax equivalent to the excise on motor spirit, with rebates of differing amounts on the standard charge depending on the type of fuel used. Heavy Traffic Fees were annual licences levied against the ownership of vehicles with a gross laden weight in excess of approximately 2 tonnes. The fee was a charge based on the nominated gross laden weight of the vehicle. As such, it was unrelated to the load carried or distance travelled by the vehicle. In March 1978, a new comprehensive road user charge was introduced, to be phased in over three years and to replace the two previous charges. It applies to all vehicles with a tare weight of over 3.5 tonnes, and is calculated according to each vehicle's weight and payload capacity, the distance it travels and the number of axles and their configuration. In April 1979, the Secretary for Transport estimated that the annual road user charge to be paid by a typical rural transport vehicle in 1979 was \$NZ2729 and that this would represent approximately 7.9 per cent of the vehicle operating costs excluding personal and company taxation (Gresham 1979, pp1-5).

The level of the charges is based on proposed expenditure by the National Roads Board and the amount of this expenditure estimated to be attributable to each class of

1. The higher retail price in New Zealand would be partly due to higher import duties in New Zealand than Australia.

vehicle. Proceeds from the charges are hypothecated to roads expenditure, and form the second largest component in the National Roads Fund, accounting for 27 per cent of NRF receipts (Appendix V).

In the USA, heavy vehicle taxes are levied by both the Federal and State Governments. The Federal tax takes a similar form to that in Great Britain. The charge applies to all vehicles weighing in excess of 11.8 tonnes when fully loaded, and all vehicles to which the charge applies pay the same amount per unit weight regardless of the vehicle's total weight. The charge is therefore unrelated to distance travelled. In 1980, the owner of a rigid truck with a gross maximum laden weight of 22 tonnes paid an annual charge of \$US148 (\$A128), significantly less than the heavy vehicle charge on a comparable vehicle in Great Britain. Proceeds are paid into the Highway Trust Fund and form the fourth largest component of that Fund. State taxes take one of three forms: taxes on gross receipts of for hire carriers (at rates of 0.5 to 3 per cent), mileage taxes, or fuel tax surcharges.

In Australia, road maintenance charges were levied by each State government (except that of Tasmania) prior to 30 June 1979. Under this system, the owner of a truck with a tare weight of 7 tonnes and a payload capacity of 14 tonnes that travelled an annual distance of 51000 km (32000 miles) (ABS, 1976) would have been required to pay approximately \$A1120 per annum in road maintenance charges. As noted earlier, three States have replaced the road maintenance tax with a Petroleum Business Franchise fee. Tasmania proposes to introduce such a scheme in December 1981. While this new tax is intended to provide approximately the same revenue as the road maintenance tax, the distribution of the burden is significantly different, as the Franchise fee relates to fuel sold for all vehicles, not just trucks. Four States (Queensland, Tasmania, Victoria and Western Australia) currently levy commercial vehicle fees originally related to regulating road transport competition with government railways. However, revenues from such fees account for only about 5 per cent of total State Government revenues from motor taxation in those States.

### **VEHICLE REGISTRATION AND DRIVERS' LICENCE FEES**

These fees are levied by the central government in Great Britain, local governments in New Zealand, and by the State governments in the four federations<sup>1</sup>. In Australia, most of the revenue obtained from registration fees is hypothecated to roads. In Canada, Great Britain and New Zealand, revenue from this source is not hypothecated. It was not possible to determine the exact extent of hypothecation of these revenues in the USA or FRG; the situation appears to vary considerably between States<sup>2</sup>. In general, revenue from these fees is less important than that contributed by the previously mentioned charges. This is especially true of commercial vehicles used for interstate transport in Australia, which pay only nominal registration fees.

### **COMPARISON OF REVENUE FROM ROAD USER CHARGES**

It has not been possible to make a comprehensive comparison of the total taxes paid by motorists in each country. However, Table 5.4 presents a comparison of revenues from selected road user charges. Sales tax and VAT have been excluded for Australia and Canada, because revenue figures are not presented in a disaggregated form which allows determination of the revenue derived from motor vehicles. Road user charges levied by local authorities have also been excluded because of the unavailability of the data for a number of countries. However, such charges are relatively insignificant, although local governments in the USA levy annual property taxes on motor vehicles (and other property) of around 4 per cent.

- 
1. In the three federations of Australia, the USA and Canada, where the central governments administer federal territories, vehicle registration and drivers' licence fees are also levied by the central governments
  2. For example, in the FRG one State hands over all registration receipts to local authorities for expenditure on roads while another places all revenues into its general funds.

TABLE 5.4—REVENUE FROM SELECTED ROAD USER CHARGES, 1972-73 TO 1977-78

	(\$A million)					
	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78
<b>AUSTRALIA</b>						
Federal taxes <sup>a</sup>						
Customs and excise - fuels	506.5	670.9	722.5	742.0	801.9	818.2
State taxes						
Registration fees	225.6	242.9	287.8	338.6	402.2	468.7
Licence fees	28.0	29.9	43.8	55.3	60.8	61.4
Road maintenance tax	17.6	17.2	15.2	15.6	15.9	14.5
Road transport taxes	40.1	43.3	44.4	44.4	44.7	44.5
<b>TOTAL</b>	<b>789.2</b>	<b>968.8</b>	<b>1 070.5</b>	<b>1 165.4</b>	<b>1 283.9</b>	<b>1 411.6</b>
<b>CANADA</b>						
Federal taxes						
Excise - fuels	638.9	706.0	783.4	883.9	911.0	na
State taxes						
Motor fuel taxes	892.0	1 002.1	1 078.6	1 249.5	1 327.7	na
Registration, licence fees & other	340.1	371.3	490.5	477.6	554.0	na
<b>TOTAL</b>	<b>1 870.9</b>	<b>2 079.4</b>	<b>2 271.6</b>	<b>2 619.3</b>	<b>2 792.7</b>	<b>na</b>
<b>FRG</b>						
Federal taxes						
Fuel taxes	4 381.5	4 316.3	5 314.4	5 887.5	7 453.0	8 901.0
State taxes						
Motor vehicle tax	1 317.7	1 387.3	1 646.0	1 829.2	2 303.4	2 732.6
<b>TOTAL</b>	<b>5 699.2</b>	<b>5 703.6</b>	<b>6 960.4</b>	<b>7 716.7</b>	<b>9 756.4</b>	<b>11 633.6</b>
<b>GREAT BRITAIN</b>						
Customs - fuels	2 446.8	2 367.8	2 410.4	2 107.4	3 091.7	3 696.9
Car tax (sales)	533.7	192.2	206.2	239.4	354.2	478.8
Registration and licence fees	846.2	824.0	868.8	851.8	1 283.0	1 726.2
VAT - fuel	—	—	219.7	587.4	511.6	847.2
VAT - vehicles	—	244.3	262.0	257.0	369.9	502.3
<b>TOTAL</b>	<b>3 846.7</b>	<b>3 628.3</b>	<b>3 967.1</b>	<b>4 043.0</b>	<b>5 610.4</b>	<b>7 251.4</b>

TABLE 5.4—REVENUE FROM SELECTED ROAD USER CHARGES, 1972-73 TO 1977-78—continued

	(\$A million)					
	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78
<b>NEW ZEALAND</b>						
Motor fuel tax	88.7	97.6	92.0	139.7	174.9	203.3
Customs - fuel	na	na	na	na	na	na
Customs - vehicles & parts	27.3	35.7	43.0	33.9	49.6	57.8
Sales tax - vehicles	98.5	105.6	121.7	112.6	133.4	137.9
Transport Act fees	19.2	21.1	18.8	19.5	18.1	38.6
Heavy traffic fees	10.8	11.7	11.5	10.6	12.0	9.5
Mileage tax	5.5	5.7	6.3	6.0	8.2	10.5
Road user charges	—	—	—	—	—	43.8
Licence fees	.9	.9	.9	.8	.9	.9
<b>TOTAL</b>	<b>250.9</b>	<b>278.3</b>	<b>294.2</b>	<b>323.1</b>	<b>397.1</b>	<b>502.3</b>
<b>USA</b>						
<b>Federal taxes</b>						
Motor fuel and vehicle taxes	na	4 254.5	4 354.0	5 065.1	6 222.0	6 123.2
<b>State taxes</b>						
Motor fuel and vehicle taxes	na	7 818.2	8 652.3	9 956.7	11 468.9	11 824.3
Tolls	na	67.3	80.4	91.3	106.0	108.1
<b>TOTAL</b>	<b>na</b>	<b>12 140.0</b>	<b>11 286.7</b>	<b>15 113.1</b>	<b>17 796.9</b>	<b>18 055.6</b>

NOTES: See discussion in Appendixes for more details. Other sources of 'non road user' revenue is also applied to road expenditure in some countries, and not all road user revenue is applied to road expenditure.

a. Sales taxation revenue figures for Australia are not available for individual items.  
na not available.

Sources: Australian Bureau of Statistics (1979b), Commonwealth Government (1973a-1979a), Statistics Canada (1974a-1976a), Statistics Canada (1978b), Statistisches Bundesamt, (1973-1979), British Road Federation (1973-1979), New Zealand Motor Trade Federation (1979), US Federal Highway Administration (1973-1979).

The data contained in Table 5.5 suggests that, on a per vehicle basis, the selected road user charges in aggregate are lowest in the USA, followed by Australia and then New Zealand. In 1977-78, road user charges per vehicle in Great Britain and FRG were, respectively, 88 per cent and 123 per cent higher than in Australia.

TABLE 5.5—REVENUE PER REGISTERED MOTOR VEHICLE FROM SELECTED ROAD USER CHARGES, 1972-73 TO 1977-78

	(\$A)					
	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78
Australia <sup>a</sup>	149	174	181	188	197	212
Canada	220	192	201	222	230	na
FRG	284	279	331	349	418	473
Great Britain	221	206	222	222	308	398
New Zealand <sup>a</sup>	152	158	158	166	196	271
USA	na	90	82	105	120	117

a. Does not include production levy on crude oil and LPG—see text for details.

b. Does not include local taxation on petrol and diesel.

na not available.

Sources: BTE estimates based on details in Appendixes.

These comparisons should be treated carefully because of the exclusion of sales tax on vehicles in Australia and Canada and the inability to obtain figures on customs duties on fuels in New Zealand. However, they indicate that Australian road user charges are reasonably similar in impact to those in New Zealand, above those in the USA and below those in other countries.

## **HYPOTHECATION**

While there is no reason, at least in terms of economic efficiency, why all (or a specific proportion of) revenues collected from road users should be spent on roads<sup>1</sup>, there is nevertheless considerable interest in this question. Accordingly, this section provides details on the extent to which governments in the countries studied hypothecate or ' earmark ' revenues collected from road users for roads (or more general transport) expenditure. The related question of how total road expenditures and total revenues from road user charges compare, even where there is no hypothecation, is addressed in the following section.

Before discussing each country separately, the following general observations can be made:

- there is no hypothecation of any road user charges in Canada and Great Britain;
- national governments in FRG, New Zealand and USA practice hypothecation to varying degrees;
- State governments in Australia, FRG and USA hypothecate at least some road user charges; and
- no evidence could be found of local governments hypothecating user charges.

### **Australia**

All Federal Government revenue from road users is regarded as general revenue. However, between 1926 and 1959 there was partial hypothecation of fuel tax receipts. (Initially, about one-third of such receipts were earmarked for roads, rising to about two-thirds in 1959.)

At the State level, most of the revenue raised from State road user charges is hypothecated to roads. Such revenues are equivalent to about three-quarters of Federal fuel tax revenue.

### **Canada**

Canadian tax laws generally do not permit the hypothecation of any revenue raised by any level of government.

### **Federal Republic of Germany**

The fuel tax is the only major road user charge at the Federal level. Approximately 45 per cent of the revenue obtained from this tax is supposedly hypothecated for expenditure on Federal roads, and such expenditure is financed entirely from that revenue. However, since 1973, use of this ' earmarked ' revenue has been broadened to include any matters of direct concern to the Federal Ministry of Transport. A further 14 per cent of the tax proceeds is hypothecated to local transport projects while the remaining 41 per cent of revenue is allotted to general revenues.

At the State level, it is not possible to generalise about hypothecation of road user revenues as the situation varies greatly between States, from no hypothecation to complete hypothecation. Total State revenues from road user charges are equivalent to less than a third of the Federal Government's revenue from fuel tax, and of course an even lower proportion of total Federal Government road user revenues (ie including VAT).

---

1. For a discussion of these issues, see CBR (1973, pp145-146).



### Great Britain

As with Canada, there is no hypothecation of road user revenues at any level of government in Great Britain<sup>1</sup>.

### New Zealand

In New Zealand, the National Government levies several road user charges. Some of these are either wholly or partially hypothecated to roads while the revenue from others is paid into the Consolidated Revenue Account. Revenues hypothecated to roads include 50 per cent of the net revenue from the motor spirit tax and all revenue from the heavy vehicle charges. The revenues paid into the Consolidated Revenue Account include all revenues from customs duty on vehicles and parts, sales tax on motor vehicles, the remaining 50 per cent of net receipts from the motor spirit tax, and all receipts from fees and charges levied under the *Transport Act* (mainly motor vehicle registration fees and drivers' licences). In 1977-78, approximately 25 per cent of total road user revenue of \$NZ505.8 million was hypothecated to roads (Gresham 1979, p1). If the revenue from customs and excise on motor vehicles and parts is excluded from this calculation, the amount hypothecated to roads rises to approximately 44 per cent.

### USA

The hypothecation of road user revenues by the Federal Government commenced in 1956 with the introduction of the Highway Trust Fund (HTF). Prior to 1956, revenue obtained from fuel excise had been used only as a benchmark for Federal expenditure on roads. Legislation passed in 1956 formally hypothecated all net revenue from this and other road-related sources to road expenditure. Since 1956, further taxes have been hypothecated to the HTF. Sources of net revenues to the HTF are shown in Table 5.6<sup>2</sup>. The tax on motor fuel accounts for the bulk of HTF net revenues.

TABLE 5.6—NET REVENUES TO THE USA FEDERAL HIGHWAY TRUST FUND, 1977-78

Tax	US\$ million	Per cent
Excise tax		
Motor fuel	4 722	68
Lubricating oil	80	1
Sales tax		
Tyres, inner tubes, etc	818	12
Trucks, buses, trailers	851	12
Parts and accessories	188	3
Federal heavy vehicle tax	246	4
<b>TOTAL</b>	<b>6 905</b>	<b>100</b>

Source: Federal Highway Administration (1979, p58).

The expenditures which can be made from the HTF have been gradually broadened to include road maintenance and assistance for public transport. In 1978-79 an estimated US\$675 million was transferred from interstate to mass transit programs (*Congressional Quarterly* 1978 p537).

### ROAD USER REVENUES RELATIVE TO ROADS EXPENDITURE

Table 5.7 provides a comparison of road expenditures and revenues in the countries studied. The revenue figures relate only to fuel taxes, heavy vehicle charges and fees for vehicle registration and drivers' licences. Roads expenditure in the USA exceeds revenue from these sources by a considerable margin. Roads expenditure in Australia and Canada exceeds revenue by approximately 30 per cent, while expenditure in FRG and, since 1975-76, New Zealand is 20 to 30 per cent less than revenue from those sources.

1. Revenue obtained from motor vehicle registration fees was hypothecated to roads prior to 1937.

2. See Appendix VI for further details.

TABLE 5.7—COMPARISON OF ROAD EXPENDITURES AND REVENUES<sup>a</sup>, 1973-74 to 1977-78

	(\$A million)				
	1973-74	1974-75	1975-76	1976-77	1977-78
<b>Australia</b>					
Expenditure	984	1 363	1 619	1 775	1 963
Revenue	1 008	1 122	1 256	1 400	1 530
Exp/Rev	0.98	1.21	1.29	1.27	1.28
<b>Canada</b>					
Expenditure	2 222	2 858	3 547	3 775	na
Revenue	2 079	2 272	2 619	2 793	na
Exp/Rev	1.07	1.26	1.35	1.35	na
<b>FRG</b>					
Expenditure	4 760	5 464	5 588	na	na
Revenue	5 704	6 960	7 717	9 756	11 634
Exp/Rev	0.83	0.78	0.72	na	na
<b>Great Britain</b>					
Expenditure	1 805	2 082	2 243	2 476	2 534
Revenue	3 628	3 967	4 043	5 610	7 251
Exp/Rev	.50	.52	.55	.44	.35
<b>New Zealand</b>					
Expenditure	137	147	146	160	193
Revenue <sup>b</sup>	251	278	294	323	397
Exp/Rev	.55	.53	.50	.50	.49
<b>USA</b>					
Expenditure	17 801	20 368	23 937	26 696	28 414
Revenue	12 140	11 287	15 113	17 797	18 056
Exp/Rev	1.41	1.80	1.58	1.50	1.57

a. Revenues include only fuel excise taxes, heavy vehicle charges, vehicle registration fees and drivers' licence fees.

b. Does not include local government revenue from fuel taxation, or customs duties on fuel.

na not available

Source: Tables 4.1 and 5.4

## APPENDIX I — AUSTRALIA

### INTRODUCTION

In 1977 the total length of public roads in Australia was 842 000 km while annual expenditure on roads by all levels of government in 1977-78 was \$1963 million. Using this road network was a total motor vehicle population of 6.9 million vehicles. Information on the State and Territory composition of these numbers is given in Table I.1.

TABLE I.1 — AUSTRALIA: ROAD LENGTH, ROAD EXPENDITURE AND MOTOR VEHICLES BY STATE AND TERRITORY

<i>State/ Territory</i>	<i>Total road length 30 June 1977 (km)</i>	<i>Public road expenditure 1977-78 (\$A million)</i>	<i>Motor vehicles on register in June 1977</i>
New South Wales	188 985 <sup>a</sup>	734.2	2 252 400
Victoria	159 685	463.7	1 853 815
Queensland	185 548	310.2	1 129 600
South Australia	100 529	136.3	669 000
Western Australia	163 313	175.6	661 800
Tasmania	21 835	73.7	209 400
Northern Territory	20 151	28.3	38 100
Australian Capital Territory	2 082	40.6	98 700
Australia	842 128	1 962.6	6 911 800

a. As at 30 June 1976. Does not include 20 286 kilometres of untrafficable road.

Sources: Australian Bureau of Statistics (1977 and 1978), Bureau of Transport Economics (1979).

### LEVELS OF GOVERNMENT AND THEIR CONSTITUTIONAL ROADS RESPONSIBILITIES

There are three levels of government in Australia; Federal, State and local. Each has specific roads responsibilities.

The functions and responsibilities of the Federal Government are set out in the Australian Constitution. Those powers not specifically allotted to the Federal Government remain the responsibility of the six State governments.

Under the Constitution the Federal Government is only given roads responsibilities in the Territories. It has no specific powers with regard to roads in the States. In the case of the Northern Territory, the responsibility for roads was transferred from the Federal Government to the Northern Territory Legislative Assembly when the Northern Territory became self-governing in 1978. Consequently, since that time the Federal Government has only had constitutional responsibility for roads in the Australian Capital Territory.

Each State government has control over the public road network within its borders. In practice, they have divested much of this responsibility to local authorities established under State legislation.

Table I.2 presents details of State/local government roads responsibilities. In the Northern Territory the Legislative Assembly and the local authorities share the responsibility for roads. In the Australian Capital Territory they are solely a Federal Government responsibility.

TABLE I.2—AUSTRALIA: CONTROL OF THE ROAD SYSTEM IN THE STATES BY LEVEL OF GOVERNMENT AS AT 30 JUNE 1977

State	Total roads (kms)	State controlled (kms) (per cent)	Local authority controlled (kms) (per cent)
New South Wales	188 985	42 771 22.6	146 214 77.4
Victoria	159 685	23 657 14.8	136 028 85.2
Queensland	185 548	40 121 21.6	145 427 78.4
South Australia	100 529	13 554 13.5	86 975 86.5
West Australia	163 313	24 091 14.8	139 222 85.2
Tasmania	21 835	3 645 16.7	18 190 83.3
All States	819 895	147 839 18.0	672 056 82.0

Source: Australian Bureau of Statistics (1980).

Table I.3 gives annual roads expenditure details by each level of government from own-sourced funds for the period 1974-75 to 1978-79, both in current prices and as percentage figures. Annual average growth rates for each level of government over the period are also given.

TABLE I.3—AUSTRALIA: ANNUAL ROAD EXPENDITURES BY SOURCE OF FUNDS, 1974-75 TO 1978-79

Year Ending 30 June	Commonwealth (\$A (per cent) million)	State (\$A (per cent) million)	Local (\$A (per cent) million)	All levels (\$A (per cent) million)
1975	439.1 (32.2)	356.1 (26.1)	567.7 (41.7)	1 362.9 (100.0)
1976	486.5 (30.1)	446.1 (27.6)	685.6 (42.3)	1 618.8 (100.0)
1977	521.1 (29.4)	533.3 (30.0)	720.4 (40.6)	1 774.8 (100.0)
1978	558.2 (28.5)	619.0 (31.5)	785.4 (40.0)	1 962.6 (100.0)
1979	584.0 (27.3)	696.4 (32.6)	859.0 (40.1)	2 139.4 (100.0)
TOTAL	2 588.9 (29.2)	2 651.5 (29.9)	3 618.1 (40.9)	8 858.5 (100.0)

Average  
annual  
rate of  
growth  
(per cent)

7.4

18.3

10.9

11.9

Source: Bureau of Transport Economics (1979, pp318-321).

## THE COMMONWEALTH GOVERNMENT ROLE

Despite its limited constitutional responsibility for roads the Commonwealth Government has been able to influence the level and direction of road expenditure in the States through the use of Section 96 of the Constitution, which allows it to provide grants to the States and attach terms and conditions as it sees fit. By this means the Commonwealth has been able to exert a strong influence in an area in which it has no direct constitutional power.

### Commonwealth departments involved with roads

Three Commonwealth departments, the Department of Transport Australia (DOTA), the Department of the Capital Territory (DCT) and the Department of Housing and Construction (DHC) have functions relating to the provision of roads.

DOTA is responsible for administering the Federal Government's financial assistance to the States for roads, and supervising State compliance with the terms and conditions of the legislation.

DCT and the National Capital Development Commission (NCDC) are responsible for the road system in the ACT. The initial design and construction of new roads is the responsibility of the NCDC while maintenance is carried out by DHC acting as an agent for the DCT.

### **Commonwealth roads legislation**

The first Commonwealth legislation relating to roads was enacted in 1922. Since then there has been a succession of Acts covering different time periods and applying different conditions<sup>1</sup>. The current legislation is the *Roads Grants Act 1981*, which provides funds to the States and the Northern Territory for 1981-82 for three road categories, national roads, arterial roads, and local roads. The Government has announced the total level of grants it intends to provide for roads for the following three years, to 1984-85.

### **Criteria for allocating road funds**

The criteria for allocating Commonwealth road grants between the States and between road categories has varied over the years, but takes account of several considerations, including an assessment of the relative importance of national interest in each category; the interstate comparability of road systems; the availability of funds from State and local sources and the results of CBR and BTE assessments of road needs. Grants made under the 1922 legislation were distributed between the States on a per capita basis. From 1923 to 1958 grants were distributed as follows: 5 per cent to Tasmania, and of the remainder three-fifths in proportion to area and two-fifths in proportion to population. From 1959 until 1969 grants were distributed on the basis of 5 per cent of total funds to Tasmania and of the remaining 95 per cent one-third in proportion to area, one-third in proportion to population and one-third in proportion to the number of vehicles on register in each State. In the 1969 legislation equal weighting was given to this method and the allocation recommended by the CBR based on its economic assessment of State roads needs (Burke 1977, pp11-12).

In subsequent legislation the distribution among States has been partly guided by the results of investigations by the former CBR and more recently by those of the BTE, based on economic analyses of expenditure requirements. However, with the exception of Western Australia (whose share has declined) distribution between States has not varied much since the 1969 legislation.

### **Commonwealth revenues from road users**

Most Commonwealth Government revenue from road users accrues from the following sources:

- customs duty on the importation of vehicles, parts, and refined petroleum products;
- excise duty on the sale of refined petroleum products within Australia;
- excise on the production of crude oil and LPG within Australia;
- sales tax on new vehicles and parts; and
- charges on the ownership and operation of vehicles and the licensing of drivers within the ACT.

There is no hypothecation of revenues at the Commonwealth Government level, the revenues received from these taxes being paid into Consolidated Revenue.

---

1. The history of this legislation is described in detail in Burke (1977) and BTE (1981).

### **Customs duties**

Customs duties are levied by the Commonwealth Government on the importation into Australia of vehicles, parts and refined petroleum products - including motor spirit and automotive distillate. LPG, however, is not subject to import duties. The level of customs duties on the importation of completely-built-up (CBU) passenger vehicles into Australia is 57.5 per cent of the manufacturer's price. This 57.5 per cent is made up of a substantive duty of 45 per cent and a 12.5 per cent tariff duty surcharge which is applied to goods which are imported for final consumption and limited by quota. The level applying to CBU heavy commercial vehicles is 22.5 per cent. Four-wheel-drive vehicles attract a rate of 25 per cent.

In the case of parts and completely-knocked-down (CKD) vehicle packs the rate is 35 per cent for passenger vehicles not assembled by the five recognised motor vehicle producers (Nissan, Toyota, Mitsubishi, Ford and GMH) and duty free for heavy commercial vehicles. In the case of the five vehicle producers the CKD vehicle packs are duty-free under an 85 per cent local content plan agreement.

Motor cycles attract an import duty of 2 per cent - there being no local manufacturers.

Between 1974-75 and 1978-79 estimated receipts from import duties on motor vehicles and parts has fluctuated between \$A153.1 million and \$A317.5 million annually. Receipts from duties on CBU vehicles has fluctuated between \$A147.1 million and \$A283.3 million annually while duties on CKD vehicles and parts has fluctuated between \$A5.9 million and \$A34.2 million annually. Receipts from duties on motor cycles has fluctuated between \$A8 144 and \$A731 616 per annum.

As at November 1979, the level of customs duty on both motor spirit and automotive distillate stood at 5.2 cents per litre (although the duty on automotive distillate is reclaimable if it is not used as a road fuel). In 1977-78 estimated revenue from customs duties on petroleum products was approximately \$A5.2 million (Australian Institute of Petroleum, 1979, p13).

This was down from \$A12.8 million in the previous year. Of the \$A5.2 million, \$A2.1 million came from customs duty on motor spirit and \$A0.1 million from automotive distillate. The drop in revenue received from customs duty on motor spirit and automotive distillate between 1976-77 and 1977-78 can be accounted for entirely by a drop in the volume imported of both items. In 1977-78, 41.4 megalitres of motor spirit and 2.5 megalitres of automotive distillate were imported as opposed to 167.5 megalitres and 10.1 megalitres respectively in 1976-77 (Australian Institute of Petroleum 1978, p13 and 1979 p13).

### **Excise duties on refined petroleum products**

In addition to the customs duties levied on petroleum products, the Commonwealth Government also levies excise duties on the production of refined petroleum products within Australia. Included in these excise duties are those on motor spirit, automotive distillate and LPG.

Since August 1977 (when it was increased from 4.9 cents per litre) the excise duty on both motor spirit and automotive distillate has stood at 5.2 cents per litre. Since June 1979 when a 2.1 cents per litre excise was removed, there has been no excise on the sale of LPG. Between 1975-76 and 1979-80 annual receipts by the Commonwealth Government from excise duties on all petroleum products increased from \$A745 million to \$A914 million per annum (Commonwealth of Australia, Budget Speech, 1977, 1978, 1979, 1980). Of these receipts, approximately 85 per cent comes from the sale of motor spirit and 10 per cent from the sale of automotive distillate (Australian Institute of Petroleum, 1979). The remaining 5 per cent of revenue comes from aviation fuels.

### Excise duty on the domestic production of crude oil and LPG

Since the mid 1970s, the Commonwealth Government has been moving toward import parity pricing of domestic crude oil 'to encourage exploration and ensure full economic recovery of known (oil and gas) deposits, by pricing all Australian-produced crude to refineries at import parity prices' (Commonwealth of Australia 1978a, p17). This move to import parity pricing has two components. Firstly, it includes a component of increased returns to the producer to encourage production and exploration and, secondly, it includes an excise duty levy. The reasons given by the Commonwealth Treasurer for introducing this levy were that while a realistic energy pricing policy was necessary, the Government felt that the world price for oil had been set by 'a cartel of foreign oil producers' and that to move to import parity-pricing of domestic crude without a Government levy would lead to domestic producers obtaining excessive profits.

Since the partial introduction of the crude oil and LPG excise in 1976-77 and its full implementation in August 1978, Commonwealth receipts from this source have been substantial. Receipts from this source, as shown in the Treasurer's Annual Budget Speeches are as follows:

		\$A million
1976-77	—	340
1977-78	—	469
1978-79	—	1 227
1979-80	—	2 270

Of course, crude oil and LPG is used for purposes other than road transport, so the incidence of this levy is not confined to road users.

As with all other Commonwealth receipts, the proceeds are paid into Consolidated Revenue.

### Sales tax on vehicles and parts

The Commonwealth Government levies sales tax on a wide range of goods sold in Australia. There are three rate classes, 2.5 per cent, 15 per cent and 27.5 per cent. Sales tax on motor vehicles in Australia is 15 per cent while that on most parts is 27.5 per cent. Details of Commonwealth receipts from sales tax are not available in a disaggregated form and therefore it is not possible to accurately estimate the receipts from sales tax on motor vehicles and parts.

### Charges on the ownership and operation of motor vehicles

In the ACT the Commonwealth Government is responsible for those functions relating to the ownership and use of motor vehicles and the licensing of drivers that are State government responsibilities in the States and the Northern Territory.

These charges were also collected by the Commonwealth Government in the Northern Territory prior to its gaining self-government in 1978. Between 1975-76 and 1978-79 Commonwealth receipts from motor vehicle registrations and drivers' licences collected in the ACT rose from \$A4.1 million to \$A7.8 million per annum (ABS 1979b, p9). Over the period 1975-76 to 1977-78 Commonwealth receipts from these sources in the Northern Territory were approximately \$A1 million per annum (ABS 1979b, p13).

### Commonwealth road expenditures

The Commonwealth Government makes both direct and indirect expenditures on roads. Direct expenditures are made only on roads in the ACT and on roads on or leading to Commonwealth property. Indirect expenditures are made on roads in the States via Section 96 grants and the Northern Territory via Section 122 grants which accounted for approximately 95 per cent of Commonwealth Government roads expenditure in 1978-79 (BTE 1979, pp317-18).

Total Commonwealth Government expenditure on roads from 1974-75 to 1978-79 is presented in Table I.4, by type of expenditure, while Commonwealth Government grants to the States and the Northern Territory for road purposes over the period 1977-78 to 1980-81 are presented in Table I.5. Table I.5 also shows the annual amount each State government was required to spend from its own sources (quota) to be eligible to receive this grant.

TABLE I.4—AUSTRALIA: FEDERAL GOVERNMENT ROAD EXPENDITURE, 1974-75 TO 1978-79, BY CATEGORY

(\$A million)

Category	1974-75	1975-76	1976-77	1977-78	1978-79	Total for period	Average annual growth rate
							(per cent)
Construction							
National highways	93.2	120.4	137.9	158.0	177.6	687.1	17.49
National commerce roads	1.5	11.2	18.9	16.3	16.8	64.7	82.94
Total	94.7	131.6	156.8	174.3	194.4	751.8	16.16
Rural roads							
Arterial	50.0	48.7	58.1	71.3	76.4	304.4	11.33
Local	55.5	51.0	56.9	72.0	72.9	308.3	7.06
Total	105.5	99.7	115.0	143.3	149.7	613.2	9.14
Urban roads							
Arterial	156.2	143.3	127.2	106.1	106.6	639.4	-10.02
Local	17.8	27.6	40.1	45.9	33.6	165.0	17.21
Total	174.0	170.9	167.3	152.0	140.2	804.4	-5.55
Miters	4.8	13.8	12.2	13.5	14.6	58.9	32.06
Total construction	379.0	416.0	451.3	483.1	498.9	2 228.3	7.11
Maintenance	55.3	65.0	64.0	70.4	77.3	332.0	8.73
Planning and research	4.8	5.5	5.8	4.7	7.8	28.6	12.91
<b>TOTAL</b>	<b>439.1</b>	<b>486.5</b>	<b>521.1</b>	<b>558.2</b>	<b>584.0</b>	<b>2 588.4</b>	<b>7.39</b>

NOTE: Figures may not add due to rounding.

Source: Bureau of Transport Economics (1979, p318).

TABLE I.5—AUSTRALIA: FEDERAL SPECIFIC PURPOSE ROAD GRANTS TO THE STATES AND THE NORTHERN TERRITORY, 1977-78 TO 1980-81

(\$A million)

	1977-78		1978-79		1979-80		1980-81	
	Grant	Quota	Grant	Quota	Grant	Quota	Grant	Quota
New South Wales	155.6	147.7	164.5	158.0	176.8	169.8	196.5	186.8
Victoria	98.9	123.6	105.8	132.2	113.7	142.1	126.4	156.4
Queensland	100.0	58.2	106.9	62.2	114.9	66.9	127.8	75.8
South Australia	40.4	37.2	43.2	39.8	46.4	42.8	51.6	48.2
Western Australia	61.3	39.8	64.4	42.6	69.2	45.7	76.9	51.2
Tasmania	21.7	12.3	23.2	13.2	24.9	14.1	27.7	15.9
Northern Territory	—	—	—	—	19.0	—	21.1	3.2
<b>TOTAL</b>	<b>477.9</b>	<b>418.8</b>	<b>508.0</b>	<b>447.9</b>	<b>565.0</b>	<b>481.4</b>	<b>628.0</b>	<b>537.5</b>

NOTE: Figures may not add due to rounding.

Source: Commonwealth Government (1977a-1980a).



## STATE GOVERNMENT ROLE

Each State is responsible for the construction, maintenance and operation of the road system within its borders. Each State has its own road authority which undertakes the construction, reconstruction and maintenance of a proportion of the total State network known as the 'declared' road network—the 'declared' network comprises State highways and developmental/tourist roads, main and trunk roads and some local roads. State road authorities also co-ordinate the State-wide road construction program, and receive all Commonwealth Government road grants, distributing a proportion of these funds to local authorities for local roads.

### State government revenues from road users

Each State government levies a number of charges on road users. The most important of these are motor vehicle registration fees, drivers' licence fees, road maintenance charges and petroleum franchise licence fees. Revenues obtained from these sources for the six States from 1971-72 to 1978-79 are presented in Table I.6<sup>1</sup>. From these revenues collection costs are deducted and the residual is either wholly or partly hypothecated to road purposes according to the requirements of the respective State legislation.

TABLE I.6—AUSTRALIA: STATE GROSS REVENUE FROM ROAD USERS, 1971-72 TO 1978-79

Year	(\$A million)			Total
	Registration fees and taxes	Drivers' licences	Road Maintenance charges	
1971-72	190.1	25.1	38.8	254.0
1972-73	223.7	27.8	40.1	291.6
1973-74	240.3	29.2	43.3	312.8
1974-75	284.2	43.1	44.4	371.7
1975-76	334.2	54.3	44.4	433.0
1976-77	397.1	59.9	44.7	501.7
1977-78	461.4	60.4	44.5	566.3
1978-79 <sup>a</sup>	499.5	74.4	45.3	619.2

NOTE: Figures may not add due to rounding.

a. Includes the Northern Territory.

Source: Australian Bureau of Statistics (1979b, p10).

### Motor vehicle registration fees

Motor vehicle registration fees are levied in each State with the charge being related to the number of power-weight units of the vehicle. In Tasmania, registration fees are broken into motor taxation and vehicle registration fees.

### Drivers' licences

Drivers' licences are required in each State and are issued with regard to the type of vehicle which is to be driven. The charge for a driver's licence is an annual one and may vary between type of licence.

### Road maintenance charges

Prior to mid-1979 each State except Tasmania also levied road maintenance charges on heavy vehicles (exceeding 4 tons) in recognition of the extra damage they cause to the road system. The rate of payment in all States was 5/18 of a cent per ton per mile, calculated on the tare weight of the vehicle, plus 40 per cent of its licensed carrying capacity. The charges were difficult and expensive to administer, and were repealed in 1979 after complaints from the road haulage industry. In lieu of road maintenance

1. As petroleum franchise licence fees did not commence until 1 July 1979 they do not appear in Table I.6.

charges Tasmania levied considerably higher annual registration fees on vehicles weighing in excess of two tonnes. Petroleum franchise licence fees were introduced in three States in mid-1979 to replace the revenue lost through the cessation of road maintenance charges. The fees are charged on wholesalers and retailers of petroleum products. Wholesalers pay a fixed fee plus a variable fee according to the volume sold. Retailers pay a fixed annual fee.

#### **Transport regulation charges**

Some States also levy a variety of transport regulation charges including special permits or licences for particular journeys or to carry particular goods or passengers.

Apart from the above, the only other major State charge or tax levied on the ownership or operation of motor vehicles is stamp duty on vehicle registration which in 1978-79 raised \$A141 million, paid into general revenue.

Each State also receives specific purpose road grants (mentioned earlier) and general purpose funds from the Commonwealth Government. They may also make grants or loans from their general revenue funds to local government and may receive special loans or grants from the Commonwealth Government for such items as drought relief, unemployment relief and flood damage which may be spent on roadworks.

#### **State government road expenditures**

State governments make both direct and indirect road expenditures. Direct road expenditures are made largely via the State road authority in each State although some other State government departments and authorities may also make road expenditures in the course of carrying out their major responsibilities. State road authorities are largely responsible for the classified or declared road network in each State. Indirect expenditures are made via grants and loans to local authorities to assist them with their road responsibilities on the unclassified network. Total State (and Northern Territory) government road expenditure, both direct and indirect, between 1974-75 and 1978-79 is presented in Table I.7. From the Table it may be noted that, when administration charges are apportioned, construction accounts for approximately 60 per cent of annual expenditures and maintenance 38 per cent over the period.

TABLE I.7—AUSTRALIA: STATE AND TERRITORY GOVERNMENT ROAD EXPENDITURE, 1974-75 TO 1978-79, BY CATEGORY<sup>a</sup>  
(*\$A million*)

Category	1974-75	1975-76	1976-77	1977-78	1978-79	Total for period	Average annual growth rate (per cent)
Construction							
National highways	5.8	12.1	14.5	9.5	10.5	52.4	16.00
National commerce roads	7.4	2.4	.9	1.2	1.6	13.5	-46.65
Total	13.2	14.5	15.4	10.7	12.1	65.9	-0.28
Rural roads							
Arterial	81.0	111.9	123.7	142.4	163.6	622.6	19.21
Local	29.0	45.5	63.9	52.4	58.6	249.4	19.23
Total	110.0	157.4	187.6	194.8	222.2	872.0	19.22
Urban roads							
Arterial	69.2	60.8	81.6	144.0	161.6	517.2	23.62
Local	19.0	22.4	30.6	23.1	25.0	120.1	7.10
Total	88.2	83.2	112.2	167.1	186.5	637.3	20.60
Miters	1.5	6.4	5.0	5.4	5.4	24.1	40.23
Total construction	212.9	261.5	320.2	378.0	426.7	1 599.3	18.48
Maintenance	138.8	179.1	206.8	233.9	261.7	1 020.3	17.18
Planning and research	4.4	6.1	6.3	7.1	8.0	31.4	16.12
TOTAL	356.1	446.7	533.3	619.0	696.4	2 651.5	18.26

NOTE: Figures may not add due to rounding.

a. Relates to expenditure from own sources only.

Source: Bureau of Transport Economics (1979, p319).

## LOCAL GOVERNMENT ROLE

### Local government revenues from road users

In Australia, local government authorities have only a very limited degree of direct access to road user revenues. The main road user charges levied by local authorities are:

- parking infringement fines;
- charges for parking at council operated car parks; and
- charges for parking at street parking meters.

Details of local government receipts from road users are not available and it is not possible to determine the origin of the revenue drawn from general funds for roads expenditure.

### Local government road expenditure

Local government road expenditure from their own funds for the period 1974-75 to 1978-79 are presented in Table I.8. Expenditure from their own sources, as shown in the Table, includes local road user revenues, local-sourced general purpose funds, loan raisings and general purpose grants from the Commonwealth and State governments.

From Table I.8 it can be seen that only a small percentage of local government own-sourced revenue is spent on the 'declared' road network. Over the period covered in the Table, when administration charges are apportioned, construction accounts for approximately 54 per cent of annual local own-sourced expenditure and maintenance 46 per cent. This compares with a construction/maintenance ratio of 6.6:1 for the Commonwealth Government and 1.6:1 for the State governments.

TABLE I.8—AUSTRALIA: ESTIMATED LOCAL GOVERNMENT ROAD EXPENDITURE, 1974-75 TO 1978-79, BY CATEGORY  
(\$A million)

Category	1974-75	1975-76	1976-77	1977-78	1978-79	Total for period	Average annual growth rate (per cent)
Construction							
National highways	—	—	—	—	—	—	—
National commerce roads	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Rural roads							
Arterial	—	—	—	—	—	—	—
Local	124.7	155.3	167.0	176.0	192.1	815.1	11.41
Total	124.7	155.3	167.2	176.0	192.3	815.6	11.41
Urban roads							
Arterial	10.6	12.8	14.3	15.8	17.1	70.6	12.70
Local	172.3	211.5	210.5	239.0	257.8	1 087.1	10.60
Total	182.9	224.3	224.8	250.8	274.9	1 157.1	10.72
Miters	—	—	—	—	—	—	—
Total construction	307.6	379.6	392.0	426.9	467.2	1 973.3	11.01
Maintenance	260.1	306.0	328.4	358.5	391.8	1 644.8	10.79
Planning and research	—	—	—	—	—	—	—
TOTAL	567.7	685.6	720.4	785.4	859.0	3 618.1	10.91

a. Relates to expenditure from own sources only.

Source: Bureau of Transport Economics (1979, p320).

## APPENDIX II—CANADA

### INTRODUCTION

Covering a total land area of 9 976 169 square kilometres, Canada has a total population of 23.7 million (26 persons per square kilometre). Over 99 per cent of this population live below 60 degrees N on 49 per cent of the available land. Further, approximately 50 per cent of the population live in the Windsor-Quebec Corridor in the south-east of the country.

Below latitude 60 degrees N the land is divided into ten Provinces which have their own legislatures and are largely sovereign States within their own borders. These Provinces vary greatly in size, the smallest being Prince Edward Island (5700 square kilometres) and the largest being Quebec (1 357 800 square kilometres). In general the four eastern seaboard Provinces are the smallest (both by area and population) and least developed of the ten Provinces.

Within the Windsor-Quebec Corridor are four of Canada's largest cities Montreal, Ottawa, Toronto and Quebec with a combined population in June 1977 of 6.9 million (approximately 30 per cent of the Canadian total). As well, three lakes (Huron, Erie and Ontario) and the St Lawrence River are within the corridor providing important transport links for the region.

Above 60 degrees N the land area is divided into two sparsely-populated largely undeveloped Territories. Mineral wealth within this region suggests that it may in future attract large scale associated industries.

### OVERVIEW OF THE ROAD NETWORK AND ROAD EXPENDITURES

By March 1977 Canada had a total public road network of 884 273 kilometres of which 877 791 kilometres (99 per cent) were in the Provinces. The road length and density in each Province and Territory are given in Table II.1

TABLE II.1—CANADA: ROAD LENGTH AND DENSITY BY PROVINCE OR TERRITORY, 1977

Province or territory	Road density		
	(km)	(km/sq km)	(km/'000 people)
Newfoundland	13 205	0.03	23.0
Prince Edward Island	5 583	0.98	45.5
Nova Scotia	28 490	0.54	33.6
New Brunswick	22 959	0.32	32.8
Quebec	113 847	0.08	18.1
Ontario	160 653	0.18	18.9
Manitoba	81 397	0.15	79.0
Saskatchewan	206 191	0.36	215.4
Alberta	180 147	0.28	89.7
British Columbia	65 320	0.07	25.4
Yukon Territory	4 239	0.01	196.3
Northwest Territory	2 243	0.00	51.9
TOTAL CANADA	884 273	0.09	37.4

Source: Statistics Canada (1977, pp14-15).

Annual expenditure for Canada as a whole by type of work and level of government is given in Table II.2. Over the period 1970-71 to 1976-77, the proportion of total expenditure devoted to construction declined slightly, with a compensating increase in the maintenance proportion. Provincial/Territorial governments account for approximately 60 per cent of roads expenditure, and municipal governments for most of the remainder.

TABLE II.2—CANADA: ROAD EXPENDITURES BY TYPE OF WORK AND LEVEL OF GOVERNMENT, 1970-71 TO 1976-77

Item	1970-71		1971-72		1972-73		1973-74		1974-75		1975-76		1976-77	
	(Can \$m)	(per cent)	(Can \$m)	(per cent)	(Can \$m)	(per cent)	(Can \$m)	(per cent)	(Can \$m)	(per cent)	(Can \$m)	(per cent)	(Can \$m)	(per cent)
<b>Expenditures by type of work</b>														
Construction	1 211.1	57.6	1 501.5	59.2	1 608.7	59.5	1 836.6	58.9	2 276.7	59.8	2 475.1	57.9	2 457.3	55.2
Maintenance	730.7	34.8	814.5	32.1	869.8	32.2	1 017.2	32.6	1 246.8	32.8	1 482.8	34.7	1 633.1	36.7
Administration and other	159.6	7.6	219.1	8.7	225.6	8.3	264.2	8.5	280.6	7.4	317.8	7.4	358.7	8.1
<b>Total</b>	<b>2 101.4</b>	<b>100.0</b>	<b>2 535.1</b>	<b>100.0</b>	<b>2 704.1</b>	<b>100.0</b>	<b>3 118.1</b>	<b>100.0</b>	<b>3 804.0</b>	<b>100.0</b>	<b>4 275.7</b>	<b>100.0</b>	<b>4 449.0</b>	<b>100.0</b>
<b>Expenditures by level of government</b>														
Federal	142.3	6.8	156.3	6.2	187.9	6.9	184.4	5.9	238.5	6.3	257.2	6.0	257.1	5.8
Provincial/territorial	1 069.9	50.9	1 631.7	64.4	1 668.0	61.7	1 998.6	64.1	2 414.9	63.5	2 716.5	63.5	2 647.4	59.5
Local	884.4 <sup>a</sup>	42.1	740.5	29.2	843.7	31.2	927.3	29.7	1 147.7	30.2	1 299.7	30.4	1 542.2	34.7
Other	4.8	0.2	6.6	0.2	4.6	0.2	7.8	0.3	3.0	0.0	2.3	0.1	2.3	0.0
<b>Total</b>	<b>2 101.4</b>	<b>100.0</b>	<b>2 535.1</b>	<b>100.0</b>	<b>2 704.1</b>	<b>100.0</b>	<b>3 118.1</b>	<b>100.0</b>	<b>3 804.0</b>	<b>100.0</b>	<b>4 275.7</b>	<b>100.0</b>	<b>4 449.0</b>	<b>100.0</b>
<b>Expenditure as a percentage of GDP</b>														
	2.2		2.4		2.2		2.2		2.3		2.2		2.1	

NOTE: Figures may not add due to rounding.

a. Estimate.

Source: Statistics Canada (1970a-1976a).

Climatic conditions have an important effect on the road network and expenditure on it. The severe winter climatic conditions in Canada present two problems for road authorities. Firstly, roads must be constructed so as to be able to withstand such conditions. Secondly, considerable sums must be expended during winter to keep roads open and usable for general traffic. This represents a considerable cost to the road authorities. In fact, of the Can\$1633 million spent on road maintenance in Canada in 1976-77 Can\$419 million or over 25 per cent was for snow removal, sanding and cleaning.

### **RESPONSIBILITY FOR ROADS**

There are three levels of government in Canada:

- Federal Government;
- Provincial governments; and
- local authorities.

The powers of the Federal and Provincial governments with regard to roads are set out in the *British North America Act 1867* and its amendments, which gave sovereign rights to both levels of government within their own spheres. Under this Act local government is deemed to be the responsibility of the Provincial governments and hence the powers allotted to local authorities within each Province are determined by that Province's legislature.

The Federal Government is allotted jurisdiction over matters of general or national concern and the power to make laws for the peace, order and good government of Canada while the Provincial governments are allotted jurisdiction over matters of a regional or local nature. With respect to roads, the Federal Government is given jurisdiction over international highways, roads in the Territories and roads on Federal land such as airport, defence establishments and national parks. All other roads remain the sovereign responsibility of the Provincial government within whose borders they lie.

However, due to its superior financial capacity the Federal Government has been able to affect to some extent the roads policies of the provincial governments by offering specific purpose grants.

Table II.3 shows ownership of the road system throughout Canada in 1970 and 1977 on a Province/Territory basis. Two important points emerge from this Table. Firstly, between 1970 and 1977 there was a considerable shift in the control of roads in the Yukon and Northwest Territories with the devolution of powers from the Federal Government to the Territorial authorities. Secondly, between 1970 and 1977 the distinction in the pattern of ownership between seaboard and prairie Provinces intensified, with Provincial authorities controlling most of the roads in seaboard Provinces, and municipal authorities controlling most of the roads in the prairie Provinces.

TABLE II.3—CANADA: OWNERSHIP OF ROADS BY LEVEL OF GOVERNMENT, BY PROVINCE/TERRITORY, 1969 AND 1976

Province/territory	Total road length (km)	Federal roads		Provincial roads		Municipal roads	
		(km)	(per cent)	(km)	(per cent)	(km)	(per cent)
<b>1969</b>							
Newfoundland	11 459	75	0.7	9 625	84.0	1 759	15.3
Prince Edward Island	5 479	61	1.1	5 201	94.9	217	4.0
Nova Scotia	27 426	329	1.2	25 039	91.3	2 058	7.5
New Brunswick	23 384	154	0.7	21 636	92.5	1 594	6.8
Quebec	107 184	250	0.2	88 447	82.5	18 487	17.3
Ontario	159 417	1 294	0.8	126 766	79.5	31 357	19.7
Manitoba	76 305	660	0.9	18 902	24.8	56 743	74.3
Saskatchewan	206 696	1 386	0.7	20 386	9.9	184 924	89.4
Alberta	153 217	3 155	2.1	139 213	90.9	10 849	7.0
British Columbia	60 300	1 939	3.2	44 167	73.2	14 194	23.6
Yukon Territory	4 070	3 410	83.8	602	14.8	58	1.4
Northwest Territory	1 578	1 474	93.4	—	—	104	6.6
<b>CANADA</b>	<b>836 515</b>	<b>14 187</b>	<b>1.7</b>	<b>499 984</b>	<b>59.8</b>	<b>322 344</b>	<b>38.5</b>
<b>1976</b>							
Newfoundland	13 205	336	2.6	9 906	75.0	2 963	22.4
Prince Edward Island	5 583	76	1.4	5 263	94.3	245	4.4
Nova Scotia	28 490	261	0.9	26 247	92.1	1 983	7.0
New Brunswick	22 959	214	0.9	20 070	87.4	2 675	11.7
Quebec	113 847	459	0.4	72 821	64.0	40 567	35.6
Ontario	160 653	2 223	1.4	30 232	18.8	128 199	79.8
Manitoba	81 397	1 188	1.5	19 689	24.2	60 521	74.4
Saskatchewan	206 191	1 088	0.5	25 178	12.2	179 925	87.3
Alberta	180 147	3 035	1.7	35 378	19.6	141 733	78.7
British Columbia	65 320	3 581	5.5	45 218	69.2	16 521	25.3
Yukon Territory	4 239	1 019	24.0	3 079	72.6	142	3.3
Northwest Territory	2 243	293	13.1	1 812	80.8	138	6.2
<b>CANADA</b>	<b>884 273</b>	<b>13 773</b>	<b>1.6</b>	<b>294 893</b>	<b>33.3</b>	<b>575 612</b>	<b>65.1</b>

Sources: Statistics Canada (1970a, pp12-13; 1976a, pp14-15).



## THE FEDERAL GOVERNMENT ROLE

As mentioned earlier the role allotted to the Federal Government by the *British North America Act 1867* is quite limited with the various Provincial governments retaining sovereign rights over most roads within their borders. On a Canada-wide basis only 1.6 per cent (13 771 kilometres) of public roads were financed and administered by the Federal Government in 1977. This is a decrease in both percentage and absolute terms over the 1970 figures, largely due to the transfer of roads in the Yukon and Northwest Territories from Federal to Territorial ownership. Federal roads still account for a significant proportion of the total road length in these Territories but account for only a very small percentage of the total road length in each Province, only British Columbia (5.5 per cent) being significantly above the national average figure of 1.6 per cent.

### Federal roads legislation

The current legislation by which the Federal Government participates in developing the road network is the *National Transportation Act 1967*. This Act (currently under review) deals with all commonly used modes of transport and, in line with the *British North America Act*, assigns the Federal Government a rather passive role with regard to roads, except in the Territories. Recent indications suggest, however, that the Federal Government is likely to take an increasing interest in funding roads in future<sup>1</sup>.

### Federal departments and their roads responsibilities

Several Federal departments have specific road funding responsibilities. The most important of these are Transport Canada, the Department of Regional Economic Expansion, the Department of Indian and Northern Affairs, and Environment Canada.

Transport Canada is responsible for ensuring, within the overall guidelines of the National Transportation Policy:

- the overall efficiency of the highway system in Canada on a national basis;
- the appropriate level of balance between competing or complementary modes of transport; and
- a continuous network in the national sense, both in terms of the highway network and in terms of its relationship to other modes.

The Department of Regional Economic Expansion is responsible, within the overall objective of regional economic development, for the use of highways to:

- improve accessibility to selected areas;
- gain access to selected areas to develop economic and socio-economic opportunity;
- gain access to isolated areas to improve social mobility; and
- improve regional infrastructure and supportive services.

The Department of Indian and Northern Affairs is responsible for infrastructure on Indian Reserves and the Northern Roads Program, while Environment Canada is responsible for National Parks infrastructure.

As well as the foregoing departments, two other organisations, Public Works Canada and the Capital City Commission, also have specific roads responsibilities.

### Federal road programs

In Canada, there is no continuing program of specific purpose grants of Federal assistance to the Provinces and local government for roads. All past assistance has been for single or specific programs of limited duration. These programs, except for the Trans-Canada Highway Program, were corollaries to other larger (non-road) Federal programs, eg the Roads to Resources Program 1958-1969.

When Federal road funds have been made available to the Provinces or municipalities they have usually been for construction purposes only, with maintenance remaining a provincial responsibility.

1. See, for example, the National Highway Policy, 1975 which establishes guidelines and conditions for Federal involvement in road programs (Dutz 1979, pp10-13).

Historically, Federal road funds have been provided under six main programs:

- The Mine Access Program 1936-1957, which provided funds on a matching basis.
- The Trans-Canada Highway Program 1949-1971, aimed at facilitating speedier and more efficient interprovincial movement. Funds were made available on a 50/50 basis with the Provinces. Federal expenditure on this program totalled Can\$825 million (Transport Development Agency 1976, p20).
- The Roads to Resources Program 1958-1969, under which each Province received Can\$7.5 million with the Provinces required to match this amount.
- The Atlantic Development Board, Trunk Roads Program 1964-1967, under which New Brunswick, Newfoundland and Nova Scotia each received a total of Can\$12 million and Prince Edward Island received Can\$44 million. Funds were provided on a matching basis.
- Atlantic Provinces (Highways) Strengthening/Improvement Program, which provided funds on a matching basis.
- Prairie Provinces Primary Highways Strengthening Program 1974-1979, which provided funds on a matching basis.

### **Program assessment procedures**

To ensure that the funding guidelines established by the National Highway Policy are complied with, the Federal Government established an Interdepartmental Highway Committee (IHC) in 1975.

Any road project for which Federal funding is sought must be brought before the IHC for assessment. The IHC is responsible for assessing individual projects, co-ordinating the road programs of the various departments and reporting to the Federal Government on the progress made towards its general objectives in the roads area. An important concern of the Federal Government is the integration of the road network, which, reflecting the autonomy of the Provinces, has developed as a series of separate unco-ordinated systems. For this reason the IHC has fostered a co-operative planning approach to future road programs.

Dutz (1979 pp12-13) has described the explicit guidelines governing program approval by the IHC as follows:

- The objective of a proposed program must be clearly identified and categorised as being either:  
essentially social or cultural;  
economic, or;  
a socio-economic combination.
- If the objective is social or cultural, there must be a clear indication of how the highway program acts in support of the broader objective and that it is the best means of achieving the desired goal.
- If the objective is economic, either in terms of improved efficiency or the creation of new wealth, it must be subjected to the normal test of quantifying the benefits (or cost savings) compared to the cost of the program.
- If the program is socio-economic, the economic benefits and costs must be quantified to the degree that this is possible. Additionally, the relationships of the highway program to the broader social or cultural objectives sought should be clearly set out in the same manner as if the program were essentially social.

In addition to the foregoing program approvals, the IHC is required to prepare reports for submission annually to Cabinet by the Minister of Transport as follows:

- a comprehensive report covering the past year's highway activities for all Federal departments;
- a comprehensive report covering all future funds budgeted for highway programs for all Federal departments; and
- a planning report outlining possible future areas for Federal involvement in highway projects.

These reports should detail the relationships of specific highway activities to the fulfillment of the government's policy objectives as well as reporting the facts and figures of federal involvement in highways. (Dutz 1979, p13).

The criteria used to determine the allocation of funds between Provinces varies with each program and is influenced, in part, by the operating mandate of the department involved. For example, an important allocation criterion for the recent Prairie Provinces Primary Highways Strengthening Program, 1974-79, was the length and condition of designated primary highway in each of the three Provinces to which funds were to be given. This criterion was not used with the Roads to Resources Program, 1958-69, for which the location of various resources was the most important criterion. The situation is further complicated by the fact that criteria relevant to the operating mandate of one government department may not be relevant to that of another.

### **Source and control of program funds**

All revenue for Federal road programs is drawn from general revenue. Appropriations to individual programs are made via the Federal budget, generally after formal agreements have been signed with the Provinces concerned.

The Federal Government exercises close control over the use of its program funds, through representation on Federal/Provincial management committees where project selection and spending levels are agreed upon. Provincial expenditure claims are checked by Federal auditors.

### **Federal road expenditures**

Federal Government road expenditures occur through direct expenditures and through grants to Provincial, municipal and other authorities.

Direct Federal expenditures on roads occur only on Federal lands and in the Territories<sup>1</sup>. Consequently, direct Federal expenditure is only a small proportion of total roads expenditure by all levels of government, varying between 1.9 and 2.8 per cent from 1970-71 to 1976-77. Direct Federal road expenditures as a percentage of total Federal road expenditures varied significantly between 1970-71 and 1976-77. However, it was consistently less than 50 per cent, and in 1972-73 was as low as 31 per cent.

The remaining Federal road expenditures occur by way of grants to Provincial and municipal road authorities and other government authorities not normally associated with roads (eg railways for the elimination or protection of grade crossings).

Details of Federal Government expenditures between 1970-71 and 1976-77 are given in Table II.4. Direct expenditures are shown in total and as either construction, maintenance or administration. Indirect expenditures are not categorised in this manner as they are usually made for construction purposes only. Indirect expenditures are shown according to who actually receives the money.

---

1. In Yukon Territory and in the Northwest Territories, engineering services, new construction and supervision of all construction is undertaken by Public Works Canada. Maintenance (including snow ploughing) is done by the Territorial governments. Remedial maintenance work is financed by the Federal Government and performed by private contractors under Public Works Canada supervision.

TABLE II.4—CANADA: FEDERAL GOVERNMENT EXPENDITURE ON ROADS, 1970-71 TO 1976-77  
(Can\$ thousand)

<i>Item</i>	<i>1970-71</i>	<i>1971-72</i>	<i>1972-73</i>	<i>1973-74</i>	<i>1974-75</i>	<i>1975-76</i>	<i>1976-77</i>
Direct							
Construction and improvement	40 505	26 186	42 476	63 444	65 574	70 509	71 588
Maintenance	15 888	21 123	14 967	18 465	25 705	28 854	39 030
Administration	1 217	1 265	1 449	3 839	4 971	6 639	6 676
Total Direct	57 611	48 574	58 892	85 748	96 251	106 002	117 294
Indirect							
Grants to provinces	na	96 709	111 291	84 756	128 638	126 102	122 186
Grants to municipalities	na	6 823	13 460	9 007	10 364	20 648	13 028
Other	na	4 214	4 231	4 920	3 199	4 490	4 641
Total Indirect	84 700	107 746	128 982	98 683	142 201	151 240	139 855
Total direct and indirect	142 311	156 320	187 874	184 431	238 451	257 242	257 149
Direct/indirect	0.68	0.45	0.46	0.86	0.68	0.70	0.84

na not available.

NOTE: Figures may not add due to rounding.

Sources: Statistics Canada (1970a-1976a).

A noteworthy feature of Table II.4 is that annual direct Federal expenditure on maintenance increased by 146 per cent over the seven year period, whilst expenditure on new construction has increased by only 77 per cent. Over the same period, administration charges have increased by almost 450 per cent, an indication of increasing Federal involvement.

### **Federal taxation of road users**

The Federal Government raises general funds from road users through fuel taxes and sales taxes on vehicles, automotive products and parts. The earmarking of revenues for specific purposes is not permitted under Canadian tax laws. Hence, revenue from these sources is paid into Consolidated Revenue.

As at July 1978, there was a general 12 per cent sales tax, as set down in the *Excise Tax Act* 1970, which also covered all automotive products. This has been translated into a sales tax of Can\$30-Can\$60 per vehicle (depending on weight and type) for vehicles between 2 tonnes and 2.4 tonnes with an additional charge of Can\$60 per 45 kg above 2.4 tonnes. Sales tax revenue data are not presented in a form which allows the separate identification of revenues obtained from road related sources.

Under the *Excise Tax Act* there is also a tax on the sale of motor spirit and automotive distillate. In 1978 the Federal excise on motor spirit was between 14.9 and 15.5 cents per (US) gallon, depending on the grade, while automotive distillate was being taxed at slightly over 4.6 cents per gallon. As with sales tax, revenue figures for the excise on petroleum products are not available. However, based on the estimated net sales of motor spirit and automotive distillate on which tax was paid (Statistics Canada 1979b) and the above rates, the revenue in 1978 would appear to be in the order of Can\$1141 million for 1977-78. This is consistent with Dutz (1979, p6) who estimated that between 1971-72 and 1974-75 the figure rose from Can\$835.76 million to Can\$1043.16 million per annum.

### **THE PROVINCIAL AND LOCAL GOVERNMENT ROLES**

As already noted, the Provincial governments bear sovereign responsibility for the organisation of the road system within their borders. Each Provincial government has the authority to delegate to any or all municipalities within its borders any of its road powers and responsibilities it so wishes. As was seen in Table II.3, the percentage of the system under either Provincial or municipal government control varies greatly between the Provinces. The reason for this variation lies in the legislation enacted by the individual Provincial legislatures. In general terms, the seaboard Provinces exercise a much higher degree of control over their road system than do the prairie Provinces.

No uniform classification system for roads exists in Canada. Categories of road existing in one Province are often not readily comparable to those in another Province and hence no details of roads by road type are presented here.

### **Provincial road revenues and road expenditures**

Provincial road-related revenues are obtained from road users from three main sources:

- retail sales tax on vehicles and parts;
- motor fuels tax; and
- motor vehicle taxation and drivers' licences.

Revenues obtained from these taxes are not generally hypothecated, but are placed into Consolidated Revenue. As well, the Provincial governments may receive specific purpose road grants from the Federal Government.

The distribution of taxing power between the various levels of government in Canada is specified in the *British North America Act* 1867. Section 901 gives the Federal Parliament unlimited taxing power, while Section 92 gives the Provincial legislatures power over direct taxation within the Province to raise revenue for Provincial purposes.

Consequently, both Federal and provincial governments may levy similar taxes on the one item, eg income, motor fuels and retail sales. The Territorial governments also collect motor vehicle registration fees and drivers' licence fees. The revenue obtained from these sources is paid into their Consolidated Revenues.

### Retail sales tax

Each Province except Alberta levies this type of tax on the final purchaser or user of a large range of tangible, taxable commodities. The levels applying in each Province are shown in Table II.5 and vary from zero to 11 per cent. Provincial sales tax is not hypothecated but paid into general revenue.

TABLE II.5— CANADA: PROVINCIAL SALES AND FUEL TAX LEVELS, JUNE 1978

<i>Province/Territory</i>	<i>Sales tax (per cent)</i>	<i>Petrol tax (Can c per gal)</i>	<i>Diesel tax (Can c per gal)</i>
Newfoundland	11	27	27
Prince Edward Island	8	21	25
Nova Scotia	8	21	27
New Brunswick	8	20	23
Quebec	8	19	25
Ontario	7	19	25
Manitoba	5	18	21
Saskatchewan	5	19	27
Alberta	..	..	..
British Columbia	5	17	19
Yukon Territory	nil	14	16
Northwest Territory	nil	14	15

.. not applicable

Source: Statistics Canada (1979a, pp32-35).

### Motor fuel taxes

Each Province, except Alberta, also levies a tax on motor spirit, automotive distillate and LPG. This is in addition to the Federal taxes on these commodities, discussed above. The level of provincial taxation applicable on motor spirit and automotive distillate in each Province is also given in Table II.5. In 1976, net Provincial/Territorial revenues (after the deduction of refunds and commissions) from this source were Can\$1563.8 million (Statistics Canada 1976a, p29) compared with estimated Federal government revenue from this source of a little over Can\$1000 million.

### Motor vehicle registrations and drivers' licences

Each Province requires the registration of all motor vehicles using public roads, and requires their drivers to be licensed. The fees and their methods of calculation vary between Provinces. Registration fees are based on one or a combination of the following: vehicle weight, wheel base, year of manufacture, number of cylinders or a flat rate. In 1976, total Provincial/Territorial revenue from these sources was Can\$652.6 million (Statistics Canada 1976a, p29).

### Federal road grants

These funds are usually distributed by the Federal department directly involved to the Provincial highways and/or transport departments in the respective Provinces.

Provincial revenue from road-related sources is shown in Table II.6. Over the seven year period 1970-71 to 1976-77, annual Provincial revenues from road-related sources increased by almost 51 per cent in current prices. The largest percentage increase over the period was in revenue obtained from motor vehicle taxation and drivers' licences. However, revenue from fuel taxes still accounts for two-thirds of Provincial road revenues. Federal grants account for only 5 per cent of Provincial road revenues.

TABLE II.6—CANADA: PROVINCIAL ROAD-RELATED REVENUES AND EXPENDITURES, 1970-71 TO 1976-77

(Can\$ thousand)

Item	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77
Provincial road-related revenues							
Vehicle registration and drivers' licences	398 985	429 458	481 661	520 791	545 278	575 398	652 584
Motor fuel taxes	1 062 385	1 157 851	1 263 431	1 405 417	1 436 256	1 505 397	1 563 782
Federal grants	84 700	96 709	111 291	84 756	128 638	126 102	122 186
Other funds	2 975	3 552	2 999	5 810	1 903	178	178
<b>TOTAL</b>	<b>1 549 045</b>	<b>1 687 570</b>	<b>1 859 382</b>	<b>2 016 774</b>	<b>2 112 075</b>	<b>2 207 075</b>	<b>2 338 730</b>
Road expenditures							
Construction and improvement	753 048	966 257	1 003 520	1 162 948	1 445 029	1 527 930	1 433 010
Maintenance	317 695	314 315	327 656	416 155	549 393	658 178	703 884
Administration	86 783	131 431	128 014	130 568	124 579	151 996	163 246
Grants to local governments	na	319 992	323 124	379 467	426 435	504 670	469 623
<b>TOTAL</b>	<b>na</b>	<b>1 731 995</b>	<b>1 782 314</b>	<b>2 089 138</b>	<b>2 545 436</b>	<b>2 842 774</b>	<b>2 769 763</b>

na not available.

Source: Statistics Canada (1970a-1976a).

Provincial expenditures for road purposes are also shown in Table II.6. The construction proportion has declined from 56 per cent in 1971-72 to 52 per cent in 1976-77, while the maintenance proportion has increased from 18 to 25 per cent. Grants to municipalities have remained stable at around 17 to 18 per cent of total Provincial expenditures.

**Local government road revenues and expenditures**

Local government revenue raising powers and responsibilities both within and between Provinces vary according to the responsibilities accorded them by the Provincial legislatures.

Although responsible for in excess of 65 per cent of Canada's road network, the local authorities have no direct access to revenues from road users. Rather, they are forced to rely on general land rates and grants from the two senior levels of government. As shown in Table II.7 over the period 1970-71 to 1976-77, the percentage of self-sourced local expenditure has risen from 70 per cent to 76 per cent, which has placed an increased pressure on revenue sources for non-road expenditure.



TABLE II.7—CANADA: LOCAL GOVERNMENT ROADS EXPENDITURE BY TYPE OF EXPENDITURE AND SOURCE OF FUNDS, 1970-71 TO 1976-77

<i>Item</i>	<i>(Can\$ thousand)</i>						
	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77
<b>Source of funds</b>							
Federal grants	13 327	6 823	13 460	9 007	10 364	20 648	13 028
Provincial grants	255 026	319 992	323 124	379 467	426 435	504 670	469 623
Municipal sources	616 075	740 482	843 664	927 313	1 147 661	1 299 726	1 542 159
<b>TOTAL</b>	<b>884 428</b>	<b>1 067 297</b>	<b>1 180 248</b>	<b>1 315 787</b>	<b>1 584 460</b>	<b>1 825 044</b>	<b>2 024 810</b>
<b>Expenditure</b>							
Construction and improvement	na	501 797	556 936	603 373	761 764	870 080	945 859
Maintenance	na	479 069	527 220	582 597	671 659	795 777	890 211
Administration	na	86 431	96 092	129 817	151 037	159 187	188 740
<b>TOTAL</b>	<b>884 428</b>	<b>1 067 297</b>	<b>1 180 248</b>	<b>1 315 787</b>	<b>1 584 460</b>	<b>1 825 044</b>	<b>2 024 810</b>

na not available.

Source: Statistics Canada (1970a-1976a).

## APPENDIX III—THE FEDERAL REPUBLIC OF GERMANY

### INTRODUCTION

The FRG is a federation of 10 States (Länder)<sup>1</sup> and the special State of West Berlin. There is a Federal Constitution known as the Basic Law or Grundgesetz which, as well as determining that the FRG will be a sovereign State, a democracy and a federation, allots responsibilities to the various levels of government. There are three levels of government - Federal, State and local - each with some roads responsibilities.

The Federal Government (Bundesregierung) consists of a bi-cameral Parliament. The two houses are the popularly elected Bundestag (House of Representatives) and the Bundesrat (Federal Council), the latter consisting of members of each State government or their representatives. Laws require the express approval of the Bundesrat if they affect the interests of the State governments. The principal Federal responsibilities are foreign affairs, trade, the economy, taxation collection, regional planning and employment.

At the State level each of the ten Federal States and the special State of West Berlin have their own constitution and government. The constitution of each State must not conflict with that of the FRG but otherwise the States are free to shape their constitutions as they wish. The State governments exercise power in a number of important fields including local government, law, police, primary, secondary and some tertiary education, and cultural affairs. In general the States are solely responsible for applying Federal laws and act fairly independently of detailed Federal directives.

There are two types of local government: district councils and municipalities. In the FRG local government is guaranteed by the Basic Law which stipulates that local governments be free to regulate their own communal affairs and that local authorities be democratically organised (Romer 1979, p100). Traditionally, local government has been based on pre-industrial small area administrative structures and this had resulted in a plethora of administrative units (totalling over 25 000 in 1968). In recent years there has been a move toward reorganising local government throughout the FRG to conform more readily with the planning regions set out in the *Federal Regional Planning Act* 1965. This resulted in a reduction in the number of authorities to approximately 8700 in 1978. Local authorities are primarily responsible for matters of specific local interest including road building, public transport, health, building and the environment.

In 1979 the population of the FRG was 61.4 million. After a period of rapid population growth following the end of World War II (largely as a result of migration from the German Democratic Republic), the FRG has been experiencing annual population decreases since June 1974 when its population peaked at 62.054 million (OECD 1980, p89).

### THE ROAD NETWORK AND CLASSIFICATION

The public road network is divided into the classified and unclassified networks as shown in Table III.1. In January 1979 classified roads totalled 170 661 kilometres (36 per cent of the total road network) and unclassified roads estimated at 305 000 kilometres (64 per cent of the total road network).

---

1. The German word for State is Land and the plural is Länder. In this paper the word State(s) will be used.

TABLE III.1—FRG: LENGTH OF ROADS BY CATEGORY, 1971-79  
(kilometres)

Road Category	1971	1976	1979
Classified roads			
Federal trunk roads			
Motorways	4 461	6 213	7 029
Highways	32 616	32 490	32 252
Total	37 077	38 703	39 281
State roads	65 367	65 484	65 377
District roads	62 025	64 959	66 003
Total classified roads	164 469	169 146	170 661
Unclassified roads			
Urban	156 902	176 625	na
Non-urban	119 473	120 112	na
Total unclassified roads	276 375	296 737	305 000 <sup>e</sup>
TOTAL	440 844	465 883	475 661 <sup>e</sup>

e. Estimate.

na not available.

Source: Communication, FRG Ministry of Transport (12 August 1980).

The classified road network may be broken down into several categories (Table III.1). These relate primarily to the level of government responsible for them. In 1979, Federal roads accounted for 23 per cent of the classified network, State roads 38 per cent and district roads 39 per cent. These shares have not changed significantly since 1971.

It is not possible to determine the actual length of unclassified roads in urban and non-urban areas separately in 1979. This is because they are only accurately surveyed every five years, the last survey being in January 1976. On that occasion unclassified roads totalled 296 737 kilometres of which approximately 60 per cent were in builtup areas. Unclassified roads are the responsibility of the local government authority in whose area they lie.

### GOVERNMENT RESPONSIBILITY FOR ROADS

The responsibility of each level of government with respect to roads is summarised in Table III.2.

TABLE III.2—FRG: ROADS RESPONSIBILITIES

Road category	Ownership <sup>a</sup>		
	Outside built-up areas	Inside built-up areas	Administered by
<b>Classified Roads</b>			
Federal trunk roads			
Federal motorways	Federal government	..	States (or the self-governing bodies competent according to the law of the State concerned) on behalf of the Federal Ministry of Transport—Art. 85 Basic Law
Federal highways	Federal government	communities <sup>c</sup>	
State roads	State government <sup>b</sup>	communities <sup>d</sup>	States (or the self-governing bodies competent according to the law of the State concerned)
District roads	Landkreise (administrative districts)	communities	Districts except where the State authorities act on their behalf
<b>Unclassified Roads</b>	communities <sup>e</sup>		communities

a. Body responsible for meeting the costs of construction and maintenance.

b. In Northrhine-Westphalia the regional authorities (Landschaftsverband).

c. With more than 80 000 inhabitants.

d. With more than 9000 to 50 000 inhabitants, depending on the State legislation.

e. Or the residents concerned, according to local law.

Source: FRG Ministry of Transport (1980, p4).

The Federal Government's involvement with roads may be described as purely a financial one. Whilst it provides funds for roads it is not directly involved in the planning, administration or construction processes. Each State has its own roads authority which is responsible for the planning, financing and construction of State highways. As well they are empowered by the Basic Law to act as agents of the Federal Government and administer the Federal motorways and highways in their respective States.

District authorities are entirely responsible for district roads, local authorities for municipal roads. They can choose to do the work on these roads for themselves or transfer these functions to the State road construction authorities.

TABLE III.3—FRG: EXPENDITURE ON ROADS, 1971-76

Year	Federal Government		State Government		Administrative districts and communities		Total expenditure
	(DM bill)	(per cent)	(DM bill)	(per cent)	(DM bill)	(per cent)	(DM bill)
1971	6.2	37.8	4.2	25.6	6.0	36.6	16.4
1972	6.7	40.4	4.2	25.3	5.7	34.3	16.6
1973	6.8	39.3	4.5	26.0	6.0	34.7	17.3
1974	6.9	39.0	5.2	29.4	5.6	31.6	17.7
1975	7.0	39.8	5.5	31.2	5.1	29.0	17.6
1976	7.1	41.3	5.1	29.7	5.0	29.0	17.2

NOTE: Billion equals one thousand million.

Source: FRG Ministry of Transport (1980, p5).

The Federal Government contributes the most towards expenditure on roads and its share is increasing. Over the same period the relative importance of district and municipal authorities (the two levels of local government) decreased from 36.6 per cent to 29.0 per cent while that of the State governments rose from 25.6 per cent to nearly 30 per cent.

## THE FEDERAL GOVERNMENT ROLE

The Basic Law allots responsibility for the Federal motorway and highway network (trunk roads) to the Federal Government, at the same time stating that the State authorities will administer these roads for the Federal Government.

### Federal government departments involved with roads

Federal Government involvement with roads is vested in the Federal Ministry of Transport (Road Construction Division) which administers the relevant Federal roads legislation, establishes the overall plans for the Federal trunk road network and provides finance for their construction and maintenance. It also administers grants for expenditure on selected municipal roads. Although the Federal Government is responsible for 100 per cent of the costs of constructing and maintaining the Federal Trunk Road network it does not actually undertake the work. Detailed project planning, administration, construction and maintenance is carried out by the State road authorities acting as agents of the Federal Government. In turn the State road authorities usually contract out projects to private enterprise rather than doing the actual construction work themselves.

The Federal Minister for Transport may deal only with the individual State road authorities. He has no power to deal with any lower level of government except that he may make grants to local authorities for specific construction purposes on non-Federal highways and streets.

### **Administrative arrangements**

The Federal Government is responsible for developing the overall plans for the Federal trunk road network and for issuing program instructions. Where a specific project's estimated cost does not exceed DM10 million in the case of roads and DM5 million in the case of bridges the State authorities do not have to seek Federal project approval. These exemptions are for specific projects, usually ancillary to a Federal road, and are only a very minor proportion of total Federal road expenditure.

### **The Federal planning mechanism**

The Federal Government makes long-term, medium-term and short-term road plans. All relate only to Federal Trunk Roads. Since 1959 there have been two long-term plans:

- the 1959-1970 plan or 1st development plan which set down the new construction and improvement requirements for the period; and
- the 1971-1985 plan associated with the *Federal Trunk Road Construction Act*, subject to a requirement in the Act that long-term plans be reviewed every five years. A revised plan was presented in 1976.

Long-term plans are based on socio-economic development studies, regional planning and environmental policy and the total need for Federal trunk roads.

Within the framework established by the long-term plans, medium-term financial plans are established for all construction to be financed over a five year period. These plans also form the basis for the allocation of funds between the States.

Short-term or annual budgetary planning occurs within the framework established by the medium-term programs with plans being subject to the volume of funds available. The allocation of funds between States is based on the programs identified in the long, medium and short-term plans which, as already stated, are based on socio-economic studies of the Federal transport infrastructure and regional and environmental objectives.

### **Federal taxes on road users**

The Federal Government's major source of revenue from road users is the mineral oil tax, an excise tax, part of which is hypothecated to road expenditure.

Between November 1978 (first available data) and January 1980 (latest available data) the mineral oil tax was fixed at 44.0 pfg per litre (approximately \$A0.20 per litre) for motor spirit (both super and standard grades) and 41.15 pfg per litre for automotive distillate.

As shown in Table III.4, approximately one-third of the revenues from this tax is earmarked for expenditure on Federal roads, compared with approximately one-half in the early 1970s. A further five to six per cent is earmarked for municipal roads.

Details of the gross revenue collected from the mineral oil tax together with the amounts allocated to Federal roads and municipal roads are given in Table III.4.

### **Federal expenditure on roads**

As already stated the Federal Government provides funds to the State governments for Federal roads, and grants to municipalities for selected municipal streets. It was not possible to obtain a time series for Federal expenditures except in the aggregated form presented in Table III.3. However, details of expenditure on Federal trunk roads were available for 1976-77 and 1979-80 (Table III.5).

TABLE III.4—FRG: MINERAL OIL TAXATION RECEIPTS AND THEIR DISTRIBUTION, 1970-79

Year (Calendar)	Mineral oil tax revenue <sup>a</sup> (DM m)	Federal roads share		Municipal roads share		Total roads share	
		(DM m)	(per cent)	(DM m)	(per cent)	(DM m)	(per cent)
1970	10 553	5 107	48	500	5	5 607	53
1971	11 353	5 772	51	539	5	6 311	56
1972	13 239	5 948	45	864	7	6 812	52
1973	15 611	5 972	38	1 081	7	7 053	45
1974	15 244	5 864	38	1 110	7	6 974	45
1975	16 398	5 823	36	990	6	6 813	42
1976	17 310	5 793	33	1 143	7	6 936	40
1977	18 530	5 983	32	953	6	6 936	37
1978	19 546	6 597	34	1 031	5	7 628	39
1979	19 847	7 219	36	1 138	6	8 357	42

a. Gross figures not including those from heating fuel oil.

Source: Communication, FRG Ministry of Transport (12 August 1980).

TABLE III.5—FRG: EXPENDITURE ON FEDERAL TRUNK ROADS, 1976-77 AND 1979-80

Expenditure category	1976-77		1979-80	
	(DM m)	(per cent)	(DM m)	(per cent)
<b>Construction</b>				
Federal motorways	2 701	45	2 813	41
Federal highways	1 571	26	1 331	20
Other	124	2	629	9
Total	4 396	73	4 773	70
Other capital expenditure	704	12	1 032	15
<b>Current expenditure</b>				
Maintenance and repair	607	10	750	11
Other	276	5	295	4
Total	883	15	1 045	15
<b>TOTAL</b>	<b>5 983</b>	<b>100</b>	<b>6 850</b>	<b>100</b>

Source: FRG Ministry of Transport (1977, p5 and 1980, p5).

## THE STATE GOVERNMENT ROLE

Each of the ten States and West Berlin has its own road authority. As well as administering the Federal trunk roads as agents of the Federal Government they bear sole responsibility for the planning, construction, maintenance and financing of State highways. In some cases they also construct and administer district roads as agents of the district authorities.

### State road user revenues

State governments fund State highways entirely from their own revenue sources. The major source of revenue obtained from road users is motor vehicle taxation which in 1978 accounted for DM6282 million or approximately 41.8 per cent of all State tax revenues (Statistisches Bundesamt 1979, p416). The proportion varied considerably between individual States, ranging from 24 per cent for Hamburg to 51 per cent for Lower Saxony.

Use of the revenues obtained from motor vehicle taxation varies between States and it is up to the State government to decide how to use the revenue obtained:

some States use this revenue entirely for road construction, others do not use it in full or spend even more, and at least one State places the entire motor vehicle tax at the disposal of the administrative districts and communities.

(Communication, FRG Ministry of Transport 12 August 1980)

**LOCAL GOVERNMENT ROLE**

No information was readily available on the roads activities of this level of government.



## APPENDIX IV—GREAT BRITAIN<sup>1</sup>

### INTRODUCTION

In June 1978 the population of Great Britain was approximately 54.3 million, distributed among the three countries of England, Scotland and Wales as shown in Table IV.1, which also shows the area and population density of the three countries. Of the three countries, England has the largest and most densely settled population. Scotland, while having the second largest population is by far the most sparsely settled having only 66 persons per square kilometre compared with 355 for England and 133 for Wales.

TABLE IV.1—GREAT BRITAIN: AREA AND POPULATION

Country	Area (sq km)	Population ('000)	Population density (per sq km)
England	130 439	46 349	355
Scotland	78 775	5 179	66
Wales	20 768	2 768	133
Great Britain	229 982	54 296	236

Source: Central Office of Information (1980a, pp1 and 7).

### THE ROAD NETWORK

Great Britain has a road network of approximately 336 600 kilometres (mid 1978), of which 157 700 kilometres are classified roads. The road classification is shown in Table IV.2.

TABLE IV.2—GREAT BRITAIN: ROADS CLASSIFICATION, 1978  
(kilometres)

Road classification	England	Scotland	Wales	Great Britain
Classified roads				
Trunk roads and motorways	10 016	3 144	1 708	14 868 (4.4)
Principal	24 317	7 489	2 451	34 257 (10.2)
Non-principal	78 633	17 628	12 296	108 556 (32.3)
Total	112 966	28 260	16 455	157 681 (46.9)
Unclassified roads	143 424	20 735	14 704	178 863 (53.1)
All public roads	256 390	48 995	31 159	336 543 (100.0)

NOTE: Figures in parentheses are percentage shares.

Source: Department of Transport (1978a, p2).

Since 1976 the length of road under the trunk road and motorway category has been declining as a result of the Central Government's initiatives to downgrade and reclassify those trunk roads which have decreased in importance and at the same time divest itself of responsibility for them. In this way, between April 1976 and April 1978 the trunk road network was decreased from 15617 kilometres to 14868 kilometres.

1. In this paper, the term Great Britain refers to England, Scotland and Wales. Where Northern Ireland is also included the term United Kingdom is used.

## RESPONSIBILITY FOR ROADS

Within Great Britain there are two principal levels of government, the Central Government (or United Kingdom Government), and local government, which itself may be broken down into a number of tiers. In England and Wales there are three levels of local government; county authorities, district authorities, and parish councils. County authorities, of which there are 53, are responsible inter alia for transport planning, highways, and traffic regulation. District councils are responsible for matters of more localised concern such as building applications and refuse collection. Parish councils do not appear to play any significant roads role. On the Scottish mainland there is a two tier system consisting of county and district authorities. However, there are also three special all-purpose island councils for the Orkney, Shetland and Western Isles.

The situation in Northern Ireland, which is not dealt with in this paper, is unique. There are 26 district councils but they are responsible for only a limited range of services. Statutory bodies and regional offices of Central Government departments have been responsible for the major services such as roads<sup>1</sup>, water, health, education and housing since direct Central Government rule was introduced due to secessionist activities.

Great Britain does not have a written constitution. The powers of each level of government are determined by statutes and non-codified convention and may be changed by an Act of Parliament (Central Office of Information 1980a, p20). In general terms the Central Government has accepted all financial and administrative responsibility for the trunk road network (of which the motorways are a part) and the respective county authorities bear the responsibility for all other roads within their boundaries. They are assisted financially in their efforts by the Central Government via the Transport Supplementary Grant Scheme (TSG).

## ROADS EXPENDITURE

Total public expenditure on roads increased from £805.2 million in 1970-71 to £1573.1 million in 1976-77 but declined by £59.7 million to £1513.4 million in 1977-78 largely due to decreased expenditure on the construction of trunk and principal roads (Table IV.3). This was despite the fact that maintenance expenditures on both these classes of road increased. Expenditure on construction and improvement declined from 62.6 per cent of total roads expenditure in 1970-71 to 43.1 per cent in 1977-78. This decrease in the relative importance of construction and improvement coincides with the pending completion of the Central Government's trunk road program, details of which (for England) are discussed in the Government's White Papers on Policy for Roads in 1978 and 1980 (Department of Transport 1978b and 1980). Over the same period maintenance expenditures as a percentage of total expenditures rose from 20.5 per cent to 29.9 per cent while administration charges rose from 6.5 per cent to 12.3 per cent of total road expenditure.

During the period there was also a major shift in the relative contributions of each level of government, with the percentage of expenditure funded by the Central Government dropping from 51.7 per cent in 1970-71 to 36.0 per cent in 1977-78, while the local authority percentage rose from 48.3 per cent in 1970-71 to 64.0 per cent in 1977-78 (Table IV.3). These figures mark an important change in Central Government methods of funding local roads and a re-organisation of local government which occurred at that time. Prior to April 1975 funds for these projects were provided under specific project grants and included in Central Government road expenditure. Since the commencement of the TSG scheme in April 1975 these expenditures, which are now provided in the form of non-specific block grants to local authorities, are recorded as local expenditures.

---

1. The Northern Ireland Department of the Environment, under the control of the Secretary of State for Northern Ireland and the Northern Ireland Office, is responsible for public roads and bears the cost of their construction and maintenance.

TABLE IV.3—GREAT BRITAIN: TOTAL PUBLIC EXPENDITURE ON ROADS, 1970-71 TO 1977-78

	(£ million)							
	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78
Construction, improvement and maintenance								
Trunk roads and motorways								
Construction and improvement	270.0	241.2	245.0	297.1	334.7	462.0	465.3	379.2
Maintenance and cleaning <sup>a</sup>	23.9	30.7	47.4	58.6	43.5	63.3	73.5	80.0
Total	293.9	271.9	292.4	355.7	378.2	525.3	538.8	459.2
Principal Roads								
Construction and improvement	177.6	197.1	208.2	239.0	262.0	257.3	252.5 <sup>b</sup>	207.2 <sup>b</sup>
Maintenance	35.8	40.9	45.7	53.5	62.0	76.1	81.1 <sup>b</sup>	96.6 <sup>b</sup>
Total	213.4	238.0	253.9	292.5	324.0	333.4	333.6	303.8
Other roads								
Construction and improvement	56.7	66.1	84.7	92.4	76.0	80.9	79.7 <sup>b</sup>	65.4 <sup>b</sup>
Maintenance	105.2	118.4	133.7	145.0	171.0	220.0	243.3 <sup>b</sup>	276.3 <sup>b</sup>
Total	161.9	184.5	218.4	237.4	247.0	300.9	323.0	341.7
Total construction, improvement and maintenance	669.2	694.4	764.7	885.6	949.2	1 159.6	1 195.4	1 104.7
Cleaning, gritting and snow clearance <sup>a</sup>	34.5	38.2	44.1	45.0	49.0	59.1	59.4	71.5
Public lighting (installation and maintenance)	35.9	40.4	49.8	55.4	60.0	84.6	94.7	105.6
Vehicle parking	13.5	10.8	10.6	10.3	23.0	16.5	9.4	5.3
Administration	52.1	60.7	72.7	84.6	118.0	158.3	166.8	185.8
Other expenditure	—	—	—	27.4	32.0	48.8	47.3	40.5
TOTAL	805.2	844.5	941.9	1 018.1	1 232.0	1 527.0	1 573.1	1 513.4
Central government expenditure	416.5	408.1	436.9	524.4	534.8	581.7 <sup>c</sup>	603.2 <sup>c</sup>	545.2
Local government expenditure	388.7	436.4	505.0	583.7	697.0	945.3	969.2	968.2

NOTE: Figures may not add due to rounding.

a. Trunk road cleaning is included in maintenance.

b. Estimates only.

c. Includes expenditures made from central government funds supplied under the Transport Supplementary Grant and Rate Support Grant Schemes.

Source: Department of Transport (1978a, p30).

## **CENTRAL GOVERNMENT ROLE**

The principal category of Central Government involvement in road financing and administration is the trunk road and motorway network. The basic aim of this involvement is the development of a system of high quality main routes between the major centres of population and industry and ports and airports to assist in reducing journey times, accidents and vehicle operating costs and remove the heavy through traffic from the many small towns and villages en route (Central Office of Information 1980a, p293). The development of this network began in the mid-1960s and is now almost complete. Consequently investment in the construction of this network is being scaled down.

In England, Central Government emphasis has shifted from completing a predetermined strategic network to providing roads of a standard appropriate to local needs which will assist in solving specific local problems (Department of Transport 1980, p1). The only major project currently being undertaken is the M25 orbital route around London.

In Wales, the two main priorities are the completion of the motorway across south Wales and reconstruction of the north Wales coast road. In Scotland, priority is being given to completing the motorway/dual carriageway links in central Scotland and improving roads which are important to developing the North Sea oil reserves.

### **Central Government departments involved**

There are basically three separate road systems in Great Britain, one in each of England, Scotland and Wales. Three separate Central Government departments administer the trunk road and motorway networks<sup>1</sup>. They are:

- in England, the Department of Transport (DTp) in co-operation with the Department of the Environment;
- in Scotland, the Scottish Development Department of the Scottish Office; and
- in Wales, the Transport and Highways Group of the Welsh Office.

Each department has autonomy over the planning and administration of the network within its area. On matters of general interest or where specific inter-country issues (such as cross border routes) arise co-ordination is usually achieved through informal liaison. Arrangements are occasionally formalised as is the case with the joint working party considering the need for another major crossing over the Severn River. Co-ordination is also sought on major issues before they are submitted to Cabinet (Communication, Department of Transport 22 July 1980).

### **Planning and administering the trunk road network**

The planning and administration of the trunk road/motorway network differs between countries due to the involvement of different Central Government departments. The discussion presented here is limited to England.

In England, the nature of project planning and administration depends primarily on the size and cost of the project. Small projects (usually defined as those costing less than £5 million) are the direct responsibility of the DTp's Regional Offices. Detailed project design and supervision is often carried out by a local county council which acts as an agent for the Department. In some cases, however, a Regional Office may employ private consultants to do the detailed designs and may supervise the construction work itself.

---

1. Details of expenditure on roads in England for the period 1972-73 to 1976-77 together with projections until 1981-82 presented in November 1976 prices, can be found in Department of Transport (1978b p31). They reveal that, for England, over the period 1972-73 to 1976-77, real expenditure on roads decreased at an average annual rate of 4.4 per cent.

The responsibility for planning and supervising large projects (usually defined as those costing £5 million or more) rests with the relevant Road Construction Unit (RCU), of which there are six throughout England. A RCU is a regional highway planning, construction, design and administrative body under direct DTp control (and funded entirely by that Department) but with many officers seconded from county councils. Its purpose is to take account of regional needs and conditions whilst putting the Government's overall national plan into effect. RCUs were first established in 1967 and were intended only as a temporary measure designed to facilitate the administration of the planning and development of the motorway network. With the pending completion of that network and the much smaller nature of future road programs RCUs are likely to be merged with DTp Regional Offices and their staff numbers greatly reduced (Department of Transport 1980, pp16-17).

The actual detailed design and supervision of RCU schemes are carried out by RCU sub-units. There are 16 of these throughout England, based on those county councils with substantial experience in road-building. As with the small projects, detailed project design may be turned over to private consultants.

Following the election of the Conservative Government in May 1979 it was announced that RCU sub-units are to be phased out. Detailed design and supervision work is to be given increasingly to private consultants although RCU headquarters will continue to oversee the work. Some work may also be transferred to county councils who will act as agents for the DTp (Department of Transport 1980, p16).

#### **Criteria for assessing projects and determining priorities**

During the 1970s, the DTp (in England) introduced a computer-based cost-benefit analysis system known as COBA as an objective basis for assessing projects. It can also be used for selecting between alternative project designs and routes and for determining program priorities.

In recent years there has been strong criticism of COBA which resulted in the establishment of the Advisory Committee on Trunk Road Assessment (Leitch Committee). This Committee reported that COBA was basically a sound system for economic appraisal but stated that other non-monetary assessable factors (environmental and social factors) should also be considered (Department of Transport 1977c, pp108-9). This has resulted in the DTp attempting to systematise the evaluation of social and environmental factors.

From the results of the COBA analysis modified by social/environmental considerations a ranked list of projects is established and projects are approved until the budget is exhausted.

#### **Central Government road user revenues**

The Central Government obtains road-related revenues from several sources.

The main ones are:

- import duty;
- vehicle excise duty (motor vehicle registration fees);
- commercial vehicles charges;
- excise duty on petrol, diesel and liquified petroleum gas;
- value-added tax (VAT) on motor vehicles, parts and fuel; and
- car tax on the sale of new vehicles.

The rates of each of these taxes are uniform across Great Britain and, in some cases, the United Kingdom. All revenues are paid directly to the Exchequer and there is no hypothecation of road-related revenues for road expenditure.

#### **Import duties on motor vehicles and parts**

Duties are payable on the importation into Great Britain of motor vehicles and parts from countries other than those in the EEC which are duty free.

The current level of duty on completely built up passenger vehicles, excluding buses is 11 per cent. Buses and heavy commercial vehicles are taxed at 22 per cent. The level of duty applicable to automotive parts varies according to the parts being imported.

### Vehicle registration fees

Vehicles using public roads in Great Britain must be registered. In the schedules of rates applicable, distinctions are made between private vehicles, goods and heavy vehicles and tractors. Until March 1980 all electrically propelled vehicles were charged at a lower rate than conventionally propelled vehicles. Since March 1980 these vehicles have been exempt from duty. In March 1980 the level of vehicle registration fees (called vehicle excise duty in Great Britain) on vehicles for private use was £60 for a twelve month period. The revenue collected from this source between 1970-71 and 1979-80 is given in Table IV.4.

TABLE IV.4—GREAT BRITAIN: CENTRAL GOVERNMENT REVENUES FROM ROAD-RELATED SOURCES, 1970-71 TO 1979-80  
(£ million)

Financial year	Vehicle registration fees	Petrol duty <sup>a</sup>	Diesel duty <sup>a</sup>	Petrol VAT	Car tax <sup>ab</sup>	Drivers' licences	Vehicles VAT
1970-71	436	965	298	..	..	8	..
1971-72	452	1 011	299	..	..	8	..
1972-73	481	1 091	323	..	320	8	..
1973-74	499	1 118	336	..	118	7	150
1974-75	507	1 101	325	130	122	7	155
1975-76	742	1 102	333	400	163	16	175
1976-77	778	1 517	447	325	225	37	235
1977-78	993	1 666	542	506	286	38	300
1978-79	1 063	1 654	559	na	381	31	na
1979-80	1 105	1 975	655	425	na	11	na

a. Figures for Northern Ireland also included.

b. Car Tax replaced Purchase Tax in 1973.

na not available.

.. not applicable.

Source: Communication, Department of Transport (22 July 1980).

### Commercial vehicle charges

Where a vehicle is to be used for commercial purposes the annual registration fee charged is based on the gross licensed weight of the vehicle when fully loaded. The minimum charge as at March 1980 was £60 (\$A121) for a vehicle weighing 16cwt or less. The total charge and the charge per unit of weight increase with the weight of the vehicle. The respective total charges and the equivalent rates per ton (expressed in Australian dollars) for vehicles between 1 and 20 tons in March 1980 are presented in Table IV.5.

### Duties on Petrol, Diesel and LPG

Duty is payable on importation of fuel into Great Britain or when it leaves bonded warehouses, refineries or producers' premises. The current level of duty on petrol and diesel is 10p (\$A0.20) per litre while on LPG it is 5p (\$A0.10) per litre<sup>1</sup>. Collection is the responsibility of HM Customs and Excise. Revenues from these duties for the years 1970-71 to 1979-80 are shown in Table IV.4, while the duty rates applicable over the same period are given in Table IV.6.

1. The level of excise on LPG has always been 50 per cent of that on motor spirit.

TABLE IV.5—GREAT BRITAIN: ANNUAL COMMERCIAL VEHICLE CHARGES AS AT MARCH 1980

Vehicle weight (tons)	£SA)			
	Used without trailer		Used with trailer	
	12 monthly rate	Rate per ton	12 monthly rate	Rate per ton
1-1.25	170	170	243	243
2-2.25	308	154	405	203
3-3.25	446	149	608	203
4-4.25	606	152	825	206
5-5.25	849	179	1 068	214
6-6.25	1 093	182	1 364	227
8-8.25	1 579	197	1 851	231
10-10.25	2 250	225	2 546	255
12-12.25	2 882	240	3 178	265
14-14.25	3 515	251	3 811	272
16-16.25	4 147	259	4 443	278
18-18.25	4 700	266	5 076	282
19-20.00	5 333	270	5 628	285

Source: Communication, Department of Transport (22 July 1980).

TABLE IV.6—GREAT BRITAIN: DUTY AND VAT RATES<sup>a</sup> ON FUEL, 1971-80

Date effective	(pence per litre)			
	Petrol duty	Diesel duty	LPG duty	Petrol VAT
15- 2-1971	4.9	4.9	2.5	—
1- 4-1974	4.9	4.9	2.5	1.1
29- 7-1974	4.9	4.9	2.5	0.9
18-11-1974	4.9	4.9	2.5	2.7
9- 4-1976	6.6	6.6	3.3	1.8
29- 3-1977	7.7	7.7	3.8	2.2
8- 8-1977	6.6	7.7	3.3	1.8
15-11-1978	6.6	7.7	3.3	2.0
6- 4-1979	6.6	7.7	3.3	2.2
18- 6-1979	8.1	9.2	4.1	3.1
27- 3-1980	10.0	10.0	5.0	3.7

a. VAT is calculated as a percentage of basic fuel price plus duty, but is expressed in pence in this Table for comparability with the other figures.

Source: Communication, Department of Transport (22 July 1980).

### VAT on motor vehicles parts and fuel

In Great Britain VAT is charged on the sale of most goods including motor vehicles (and parts) and motor fuel. In both cases the current rate is 15 per cent of the wholesale price. All motor fuels are taxed at the same rate, however commercial users of automotive distillate can claim rebates on the tax. Hence VAT revenue from automotive distillate is insignificant.

### Car tax

This tax was introduced in 1973 to replace Purchase Tax and is payable on the purchase of a new vehicle. Details of revenues obtained from this source are presented in Table IV.4.

With the exception of vehicle excise duty and heavy vehicle charges (which are collected by DTP) the above revenues are collected by HM Customs and Excise.

### **Other central government road-related revenues**

In addition to the above, the Central Government obtains revenue from drivers' licence and testing fees and bridge tolls. The former are administrative charges to cover the cost of licensing drivers. The main instance of the latter in England is the Severn Bridge toll which, in 1978-79, accounted for a gross revenue of £1.3 million (\$A2.7 million) (Communication, Department of Transport 22 July 1980).

### **Central Government expenditure on roads**

The central government makes both direct road expenditures and grants to local government authorities.

#### **Direct expenditures**

In the main, direct central government expenditures are limited to the trunk road and motorway network. This network, although accounting for only 4 per cent of the total road network in 1978 received approximately 30 per cent of total public expenditure on roads in 1977-78 and approximately 85 per cent of direct central government expenditure on roads in that year. The remaining 15 per cent is spent on principal and local roads and administration.

As mentioned earlier, the pattern of direct central government expenditure has been affected by the introduction of the TSG scheme in April 1975. Prior to April 1975 there were specific purpose grants to local authorities for roads, shown in Table IV.7 as expenditure on principal and other roads. However, since that date central government assistance to local authorities for roads is provided as part of non-specific block grants (see below) and therefore not recorded as direct expenditure on roads by the central government. Where specific purpose grants still occur they are the result of commitments made before April 1975 or are special cases. In either case funds are made available for construction purposes only.

Expenditure on the trunk road network has also undergone important changes in recent years. First, the intended system is nearly completed and hence a reduction in construction is to be expected. Secondly, a 1978 policy revision led to a change of emphasis in works programs with the focus shifting to solving specific local problems rather than completing the system as originally conceived. These two changes have led to a reduction in total expenditure on trunk roads and a shift in the construction/maintenance expenditure ratios. Total expenditure (in current prices) on the trunk road network declined in 1977-78, although it had already experienced a decline in real terms the previous year. Construction expenditure as a percentage of total trunk road expenditure has declined since 1974-75 with a consequent increase in the percentage share of maintenance expenditure.

#### **Grants to local authorities**

The method by which the central government provided roads assistance to local government prior to 1 April 1975 has already been outlined. After that date the TSG scheme resulted in the replacement of a number of specific grants to local authorities for transport expenditure. The block grant provided under the TSG scheme is not earmarked for roads specifically and is provided in addition to the Rate Support Grant (RSG), a general purpose grant which may be used for road purposes.

The TSG is paid to those local authorities in England and Wales which have high transport spending needs (TSGs are not paid to local authorities in Scotland, where allowance is made during RSG calculations for the high transport spending needs of some local authorities). The annual transport spending needs of each county are assessed according to an annual Transport Policies and Program (TPP) document prepared by each county council. This program is the council's total estimated transport spending program for the next financial year, including expenditures



TABLE IV.7—GREAT BRITAIN: DIRECT CENTRAL GOVERNMENT EXPENDITURE ON ROADS, 1970-71 TO 1977-78

	(£ million)							
	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78
Trunk roads and motorways								
Construction and improvement	270.0	241.2	345.0	297.1	334.7	462.0	465.3	379.2
Maintenance and cleaning	23.9	30.7	47.4	58.6	43.5	63.3	73.5	80.0
Total	293.9	271.9	292.4	355.7	378.2	525.3	538.8	459.2
Principal roads								
Construction and improvement	113.8	125.8	130.0	149.8	138.9	35.4	36.8 <sup>a</sup>	57.2 <sup>a</sup>
Maintenance	0.1	0.5	1.1	0.4	0.1	—	—	—
Total	113.9	126.3	131.1	150.2	139.0	35.4	36.8 <sup>a</sup>	57.2 <sup>a</sup>
Other roads								
Construction and improvement	1.2	0.8	2.5	3.0	2.3	1.9	1.9 <sup>a</sup>	na
Maintenance	0.5	0.3	0.8	0.5	0.2	—	—	na
Total	1.7	1.1	3.3	3.5	2.5	1.9	1.9 <sup>a</sup>	2.4 <sup>a</sup>
All roads								
Construction and improvement	385.0	367.8	377.5	449.9	475.9	499.3	504.0	438.8
Maintenance and cleaning	24.5	31.5	49.3	59.5	43.8	63.3	73.5	80.0
Total	409.5	399.3	426.8	509.4	519.7	562.6	577.5	518.8
Administration	4.8	5.5	6.4	7.3	8.2	10.2	11.5	11.8
All other expenditure	2.2	3.3	3.7	7.7	6.9	8.9	14.2	14.6
TOTAL	416.5	408.1	436.9	524.4	534.8	581.7	603.2	542.7
Trunk roads as a percentage of total	70.6	66.6	66.9	67.8	70.7	90.3	89.3	84.2
Trunk road construction as a percentage of trunk road expenditure	91.9	88.7	83.8	83.5	88.5	87.9	86.4	82.6
Trunk road maintenance as a percentage of trunk road expenditure	8.1	11.3	16.2	16.5	11.5	12.1	13.6	17.4

NOTE: Figures may not add due to rounding.

a. Estimates only.

na not available.

Source: Department of Transport (1978a, p31).

ineligible for TSG assistance (loan charges, administration costs and concessionary fare expenditure). From these documents the Minister for Transport (in the case of Wales, Secretary of State for Wales) decide the expenditure level which will be accepted as eligible for TSG assistance. Based on the accepted expenditure programs and having regard to the total funds that the Government has decided to make available for local transport, the Ministers then decide on what should be the threshold expenditure level to be eligible for a TSG allocation. Percentage shares of the total TSG allocations are based on expenditure above this threshold level.

Due to the nature of each council's capital works program their expenditure estimates, as expressed in their TPP document, may vary from year to year as large projects are either commenced or completed. Hence, the allocation each council receives and the threshold expenditure level may vary significantly from year to year. TSGs for England and Wales for the years 1976-77 to 1980-81 are presented in Table IV.8. Approximately 90 per cent of TSG allocations go to England.

It is important to remember that the TSG is a block grant paid to local authorities on the basis of their estimates of their transport expenditure for the coming year. It is based on all transport spending not just roads and expenditures made from TSG allocations need not be allocated to roads even if roads expenditure was included in a TPP document. From available information it is not possible to determine what percentage of TSG and RSG funds are used for road purposes.

TABLE IV.8—GREAT BRITAIN: TRANSPORT SUPPLEMENTARY GRANTS, 1976-77 TO 1980-81

Year	England		Wales		Total (£'000) <sup>a</sup>
	(£'000) <sup>a</sup>	(per cent)	(£'000) <sup>a</sup>	(per cent)	
1976-77	264 717	93	20 283	7	285 000
1977-78	232 270	91	22 730	9	255 000
1978-79	246 033	89	28 967	11	275 000
1979-80	288 686	90	31 314	10	320 000
1980-81	318 880	na	na	na	na

na not available.

a. Grants quoted in prices applicable in the November prior to the commencement of the grant.

Source: Department of Transport (1978a).

## LOCAL GOVERNMENT ROLE

Sixty-seven separate local authorities (47 in England, 12 in Scotland and 8 in Wales) administer all the road network apart from the trunk road and motorway network. The appropriate local authorities are the county councils in England and Wales and the regional or island councils in Scotland. Roads under local authority control constituted approximately 96 per cent (by length) of all public roads in Great Britain in 1978. Expenditure on these roads by local authorities from all sources totalled £968 million in 1977-78 (Table IV.9), almost double the central government's direct expenditure on roads (Table IV.7).

Table IV.9 shows all expenditures on roads by local authorities and includes expenditure made from TSG and RSG grants. It is not possible to separate the locally sourced and central government funded components of this expenditure<sup>1</sup>.

From Table IV.9 the effect of the introduction of the TSG grant in 1975 is evident. Expenditure in 1975-76 increased by 36 per cent over the previous year in comparison with an average annual increase of 16 per cent over the previous 4 years. The decreasing importance of construction and improvement and increasing importance

1. Between 1 April 1967 and 1 April 1975 approved improvements on principal roads received a specific capital grant at the rate of 75 per cent while work on non-principal roads was funded through adjustments to the Rate Support Grant Scheme.

TABLE IV.9—GREAT BRITAIN: LOCAL GOVERNMENT EXPENDITURE ON ROADS, 1970-71 TO 1977-78

(£ million)

	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78
Non-trunk roads								
Construction and improvement	119.3	136.6	160.4	178.6	197.0	301.0	293.5	213.0
Maintenance	140.4	158.5	177.5	197.6	233.0	296.0	324.4	372.9
Cleaning, gritting and snow gritting	34.5	38.2	44.1	45.0	49.0	59.1	59.4	71.5
Other expenditure	—	—	—	25.8	30.0	46.6	41.1	34.2
Total	294.2	333.3	382.0	447.0	509.0	702.7	718.4	691.6
Public lighting	33.7	37.1	46.1	49.3	55.0	78.0	87.6	97.4
Vehicle parking	13.5	10.8	10.6	10.1	22.0	16.5	9.4	5.2
Administration	47.3	55.2	66.3	77.4	110.0	148.1	155.3	174.0
TOTAL	388.7	436.4	505.0	583.7	697.0	945.3	969.8	968.2
Construction as a percentage of total	30.7	31.3	31.8	30.5	28.3	31.8	30.3	22.0
Maintenance as a percentage of total	36.1	36.3	35.1	33.9	33.4	31.3	33.5	38.5
Administration as a percentage of total	12.2	12.6	13.1	13.3	15.8	15.7	16.0	18.0

NOTE: Figures may not add due to rounding.  
Source: Department of Transport (1978a, p32).

of maintenance since 1975 is also evident. In 1975-76 construction and improvement accounted for almost 32 per cent of total local expenditures. By 1977-78 this had been cut back to 22 per cent. Over the same period expenditure on maintenance rose from 31 to 39 per cent of total expenditures. The other trend shown in the Table relates to administration charges. Between 1970-71 and 1977-78 administration charges as a percentage of total expenditure rose from 12 to 18 per cent.

## APPENDIX V—NEW ZEALAND

### INTRODUCTION

In December 1979 the total New Zealand population was estimated at 3 150 800 (Department of Statistics 1980, p6). Based on the distribution that existed as at the 1976 Census this would give a North Island population of 2 283 917 (19.96 persons per square kilometre) and a South Island population of 866 882 (5.75 persons per square kilometre) (Department of Statistics 1977, p58). The 1976 Census also showed New Zealand as having a largely urban population with over 83 per cent of the population living in urban areas of in excess of 1000 persons.

New Zealand has two levels of government, national and local. Since the abolition of the Legislative Council in 1950 the New Zealand Parliament has consisted of the House of Representatives and the Governor-General which, together hold plenary power to make laws for New Zealand.

Local government began in New Zealand in 1876 following the abolition of the existing Provinces. The types of local government currently in existence are city boroughs, counties, county boroughs and district councils. At 1 April 1976 there were 241 of these bodies throughout New Zealand associated with road responsibilities.

### THE ROAD NETWORK AND CLASSIFICATION

The latest available figures (National Roads Board 1979b, p6) show that as of 31 March 1978 there was a total length of 93 400 kilometres of formed roadwork in New Zealand—approximately 0.03 kilometres per head of population. Details of the length, surface and status of roads in New Zealand are given in Table V.1. Slightly more than 51 per cent of all public roads, and approximately 93 per cent of Municipal Streets, State Highways and Motorways are sealed.

TABLE V.1—NEW ZEALAND: CLASSIFICATION OF ROADS AS AT 31 MARCH 1979  
(kilometres)

	<i>State highways and motorways</i>	<i>County roads</i>	<i>Municipal streets</i>	<i>Total roads</i>
North Island				
Sealed	5 742	15 731	7 821	29 294
Unsealed	421	22 083	574	23 077
Total	6 163	37 814	8 395	52 371
South Island				
Sealed	5 109	10 543	2 782	18 435
Unsealed	276	22 137	182	22 595
Total	5 385	32 680	2 964	41 030
New Zealand				
Sealed	10 851	26 274	10 603	47 728
Unsealed	697	44 220	756	45 672
Total	11 548	70 494	11 359	93 400

a. Excludes unformed roads and Development Roads.  
Source: National Roads Board (1979b, p6).

The classified road network is divided into State Highways, Motorways, County Roads and Municipal Streets. In addition, there is a category (not shown in Table V.1) called Development Roads, the composition of which varies from year to year (see below).

State Highways (excluding Motorways) consist of heavily used interregional highways supported by a denser network of urban and rural feeder roads. The essential criteria for a road to be declared a State Highway is that it is the primary arterial route linking major centres of population. The network is planned, funded and administered by the central government and in 1979 was 11431 kilometres in length (12 per cent of the total road network).

Motorways are the highest quality sections of the State Highway network. They are located where the traffic volumes are greatest and are developed to high safety and engineering standards. In 1979 there were 117 kilometres of motorways in use.

Development Roads consist of new farm-access roads and other new developmental type roads, which, when completed are handed over to the local authorities. The length of roads in this category varies from year to year. Construction of these roads is subsidised from the Consolidated Revenue (Vote Roads) with work being carried out by local authorities. Central Government expenditure on these roads in 1977-78 totalled \$NZ2.1 million.

County Roads account for all other rural roads (except Development Roads) and represent 75 per cent of the total road network. Less than 40 per cent of their length is sealed.

Municipal Streets consist of roads (other than State Highways and Motorways) in built up areas. There are 11359 kilometres (12 per cent of the total road network) of such roads, over 93 per cent of which are sealed.

## **RESPONSIBILITY FOR ROADS**

Responsibility for the planning, financing, construction, maintenance and general administration of the road network is divided between both levels of government. The division of responsibility has been formalised in four main statutes, the *Public Works Act 1928*, *National Roads Act 1953*, the *Municipal Corporations Act 1954*, and the *Counties Act 1956*. Put simply, urban streets are administered by municipalities, county roads by the counties and State Highways (including motorways) by the New Zealand Government via the National Roads Board (NRB). In addition the NRB is charged with the responsibility of developing an adequate road system balanced to meet the country's needs.

The full cost of State Highway construction and maintenance (both urban and rural) is met by the NRB. Financial and technical control of NRB projects is handled by the Ministry of Works and Development although in certain cases construction and maintenance is delegated to the relevant local authority.

Local authorities are responsible for county roads and municipal streets. They are assisted financially by the central government, through the National Roads Board. Subsidies are paid on approved programs.

## **ROADS EXPENDITURE**

A summary of roads expenditure by source of funds and type of road between 1973-74 and 1978-79 is given in Table V.2. Over the period the NRB/Central Government component of total expenditure decreased from 68 per cent to 64 per cent, reflecting the much faster rate of growth in local authority expenditures than NRB/central government expenditure over the period in question.

Expenditure on the State Highway system varied between 34 and 38 per cent of total annual road expenditure, and accounted for about 55 per cent of NRB expenditure, over the period.

TABLE V.2—NEW ZEALAND: ROADS EXPENDITURE, 1973-74 TO 1978-79

(\$NZ thousand)

Item	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79
NRB expenditure						
State highways	52 615	60 264	67 509	65 073	74 164	84 964
Subsidised highways	1 793	1 714	1 618	1 568	1 775	1 624
County roads	23 499	25 070	23 664	27 038	32 377	38 728
Municipal streets	15 808	19 206	20 743	21 194	24 481	27 895
Total	93 715	106 254	113 534	114 873	132 797	153 211
Vote roads expenditure	2 026	2 219	1 749	1 195	2 120	2 743
NRB and central government	95 741	108 473	115 283	116 068	134 917	155 954
Local authorities expenditure						
County	19 985	21 660	23 659	27 810	35 804	41 214
Municipal	24 463	29 935	36 894	38 517	41 968	47 437
Total	44 448	51 595	60 553	66 327	77 772	88 651
TOTAL	140 189	160 068	175 836	182 395	212 689	244 547
Percentage NRB & Central/Total	68	68	66	64	63	64
Percentage Local/Total	32	32	34	36	37	36
NRB percentage increase	..	13.4	6.9	1.2	15.6	15.4
Roads vote percentage increase	..	9.5	-21.2	-31.7	77.4	29.4
Total central govt.	..	13.3	6.3	0.7	16.2	15.6
Percentage increase						
Local percentage increase	..	16.1	19.3	9.5	16.2	14.0
National percentage increase	..	14.2	9.8	3.7	16.6	15.0

.. not applicable

Source: National Roads Board (1974b-1979b).

## **THE CENTRAL GOVERNMENT ROLE**

Like the United Kingdom, New Zealand does not have a written constitution. The New Zealand Parliament, having sole control over making laws for both internal and external relations, may therefore administer the road system as it sees fit. As mentioned earlier the New Zealand Government has retained responsibility (both financial and administrative) over the State Highway system and delegated responsibility for other roads to local authorities. It has, however, chosen to assist them financially in their efforts.

### **The National Roads Board**

The National Roads Board (NRB) was established in 1954 pursuant to the *National Roads Act 1953* to carry out the New Zealand Government's roads responsibilities. Consisting of ten members under the chairmanship of the Minister for Works and Development, it represents private and commercial motorist groups, counties, municipalities, and the Ministries of Works and Development, and Transport. Central Government members on the Board are in the minority (Department of Statistics 1978, p315). The Board itself does not directly employ staff but utilises the Roading Division of the Ministry of Works and Development's engineering, administrative and financial units to provide its executive function.

The NRB's most important functions are:

- to administer the National Roads Fund (NRF);
- to provide a road system adequate for New Zealand's needs;
- to advise the Government on all road matters including finance;
- to assist and advise local authorities on road problems; and
- to undertake comprehensive road surveys at least every five years.

For administrative purposes the NRB has divided New Zealand into 22 regions. Each region has a District Roads Council, which although it has no executive powers, makes recommendations to the Board on local needs. The District Councils consist of representatives of the same interest groups as the NRB itself. As funds are allocated to regions, having regard to local needs, the views expressed by the District Councils are important to the funding allocation process. As well as receiving reports from the various District Councils, Board members make inspection visits to several Districts annually to assist the Board's decisions on allocation of funds.

Under the *National Roads Act 1953*, the NRB must estimate its revenue (discussed later) for the following year and the volume of funds likely to be available for the various categories of work. Until April 1981 the NRB was required to allocate a minimum of 23 per cent of its funds to counties; a minimum of 16 per cent to municipalities; and a minimum of 50 per cent to State Highways. The remaining 11 per cent of funds was allotted at the Board's discretion.

As a result of a 1980 amendment to the *National Roads Act* the NRB must now allocate a minimum of 39 per cent to local authorities and a minimum of 47 per cent to State Highways with the remaining 14 per cent to be allocated at the NRB's discretion.

### **National Road Board work programs**

Prior to the passage of the *Road User Charges Act* in 1977 the works program for the NRB was largely determined by the amount of road user revenue raised. Following the passage of the Act the situation was largely reversed so that now road user charges are adjusted to cover the program of works approved by the Government for the following year.

By 31 October each year the NRB must submit to the Government a 3-year indicative works program together with its budget implications and an estimate of the road user charge levels necessary to cover it. After consultation with the NRB the Government approves or amends the program and sets the level of road user charges for the next year.



By 31 December the NRB must finalise the forthcoming year's works program to the agreed level and notify all road authorities of their part in the program. As New Zealand's financial year commences on 1 April a firm program is thus established 3 months prior to the commencement of each financial year.

### **The evaluation of proposed road projects**

Currently, the NRB does not attempt any formal economic evaluation of proposed road projects. Rather, it relies on its Ten Year Needs Surveys and on the three year rolling programs developed from these surveys.

The Ten Year Needs Surveys are based on current movement patterns and volumes and predicted future developments that are likely to effect the demand for roads. The accuracy of these surveys is reviewed every three years.

From the above surveys a three year rolling program is developed. This includes all projects to be funded over the three year period and the provisional scheduling of work. These programs are reviewed annually to take account of changing circumstances and to allow concentration on the currently most urgent tasks.

Since the mid-1970s, however, the NRB has shown increasing recognition of the need for formal economic evaluation of proposed road projects to ensure efficient economic allocation of the scarce funds available for roads. Since 1978 it has been engaged in attempting to develop a set code for the formal economic appraisal of road transport investment proposals. This work is nearing completion.

### **The National Roads Fund**

A significant feature of the *National Roads Act 1953* was the establishment of a National Roads Fund (NRF) to finance the operations of the NRB. The Fund, administered by the Board, is financed from road user taxation and an annual Government grant. The road user taxation is mainly petrol tax and charges on the operation of heavy vehicles. Motor vehicle registration charges and drivers' licences which are collected by the Department of Transport are not paid into the Fund.

A summary of revenues paid into the National Roads Fund from 1973-74 to 1978-79 is presented in Table V.3.

### **Petrol tax**

Prior to 1977-78 the level of taxation on petrol was NZ 9 cents per litre of which 4 cents was credited to the NRF. With the passage of the *Road User Charges Act 1977*, the taxation level was increased to NZ 10 cents with NZ 5 cents being hypothecated to the NRF. The reason for the increase was to match an increased roads budget and to counter the effect of a slow increase in petrol consumption. Both of these amounts are reviewed by the national government annually.

In accordance with Section 188 of the *Transport Act 1962*<sup>1</sup> (as amended) (Government Printer 1978b, pp207-208) petrol rebates are made to users of certain classes of vehicle (eg farm machinery, school buses, etc). Refund claims are examined by the Post Office Refund Centre and payments made by the Ministry of Works and Development.

In 1978-79 rebates of petrol tax totalled \$NZ6 812 306. Details of petrol tax receipts paid to the NRB are presented in Table V.3.

---

1. This Act is similar to the State Transport Acts in Australia. It sets out, *inter alia*, the requirements for motor vehicle registration, driver licensing, their respective costs, road traffic regulations, offences and penalties and miscellaneous provisions such as the duty to be paid on petrol.

TABLE V.3—NEW ZEALAND: NATIONAL ROADS BOARD RECEIPTS, 1973-74 TO 1978-79  
(\$NZ thousand)

Item	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79
<b>Motor taxation</b>						
Petrol tax	90 179	89 682	86 192	90 267	111 866	116 486
Less rebate and collection expenses	4 877	4 417	5 447	4 445	5 418	7 039
Net petrol tax receipts	85 302	85 265	80 745	85 822	106 448	109 447
Heavy Traffic Fees	11 958	12 532	13 038	13 708	10 448	110Dr
Less collection expenses	437	459	450	532	445	10Dr
Net heavy traffic fees	11 521	12 073	12 588	13 176	10 003	120Dr
Distance tax	5 797	6 915	7 383	7 772	9 112	1 269
Less collection expenses	106	128	129	215	238	142
Net distance tax	5 691	6 787	7 254	7 557	8 874	1 127
Road User Charges	—	—	—	—	—	50 150
Less rebates	—	—	—	—	—	1 848
Net road user charges	—	—	—	—	—	48 302
<b>Total</b>	<b>102 514</b>	<b>104 125</b>	<b>100 587</b>	<b>106 555</b>	<b>125 325</b>	<b>158 756</b>
Contribution from Consolidated Revenue Account	700	1 250	16 350	21 000	10 000	14 000
Advance from Loan Redemption Account	—	—	2 000	—	4 000	—
Repayment of advances to local bodies	6	10	81	105	107	95
Rents	747	891	1 068	1 464	1 468	1 891
Sale of land and buildings	101	1 200	1 433	983	1 056	821
Interest on advances to local bodies	2	6	—	2	1	10
Bailey bridging <sup>a</sup>	53	88	128	89	103	175
Miscellaneous	567	533	209	414	120	72
Interests on investments	97	101	41	52	61	104
<b>TOTAL RECEIPTS<sup>b</sup></b>	<b>104 787</b>	<b>108 204</b>	<b>121 898</b>	<b>130 664</b>	<b>142 239</b>	<b>175 923</b>
Balance as at 1 April	2 276	8 301	2 981	56	2 315	500
<b>TOTAL IN FUND</b>	<b>107 063</b>	<b>116 506</b>	<b>124 879</b>	<b>130 720</b>	<b>144 554</b>	<b>176 423</b>

a. Emergency temporary bridges.

b. Figures may not add due to rounding.

Source: National Roads Board (1974a-1979a).

### Heavy vehicle taxes

Prior to the commencement on 1 April 1978 of the *Road User Charges Act 1977* there were several different charges on the ownership and use of heavy vehicles, the two principal ones being heavy traffic fees and a distance (travelled) tax. Details of receipts from these fees are presented in Table V.3.

Heavy traffic fees were levied on the licensing of vehicles over a certain weight. Between 1973-74 and 1976-77 this represented approximately 10 per cent of the NRB's annual receipts, dropping to 7 per cent in 1977-78.

Prior to 1977-78 a tax on the distance travelled by heavy vehicles was also levied. Between 1973-74 and 1977-78 receipts from the distance tax averaged approximately 6 per cent of NRB annual receipts.

### Road user charges

Following the passage of the *Road User Charges Act 1977* both the heavy vehicle fees and the distance tax were repealed on 31 March 1978. At the same time, sales tax on heavy commercial vehicles was progressively reduced from 40 per cent to 10 per cent over a 3 year period.

Under the Act a single new charge was made on all vehicles over 3.5 tonnes, to replace the two previous charges. In 1979 this charge applied to approximately 99 400 vehicles. A cut-off tare weight of 3.5 tonnes was chosen as a reasonable dividing line between private and commercial vehicles and between light and heavy vehicles. Certain classes of vehicles (mainly farm machinery) are exempt from the charge.

The user charge is designed to reflect damage caused to the road system by all the various types of vehicles and is calculated according to:

- weight and payload capacity of the vehicle;
- distance travelled by the vehicle; and
- axle number and configuration.

Charges are set out in a Schedule to the Act. The structure of the charges provides a clear incentive for operating vehicles as close as possible to payload capacity and minimising unnecessary trips, especially when unladen.

Details of receipts from this charge in 1978-79 are presented in Table V.3. In 1979-80 gross receipts rose to \$NZ50 150 000. Refunds for the year were \$NZ1 848 000 leaving net receipts of \$NZ48 302 000 (National Roads Board 1980(a), p35).

### Other taxation

In addition to the above (which are hypothecated to roads), the Central Government also levies a number of other charges of interest here but which are not hypothecated to roads. These charges are: motor vehicle registration and associated charges levied under the *Transport Act*; import duties on fuel, motor vehicles and parts; and sales tax on motor vehicles and parts.

### Motor vehicle registration and associated charges

Under the *Transport Act 1962*, all vehicles using roads in New Zealand are required to be registered. Fees are payable to the Registrar of Motor Vehicles on an annual basis with payment being made at Post Offices. A distinction is made in the charging schedule between new and re-registrations. In the case of a re-registration the charge is made up of a licence fee, accident compensation levy, insurance surcharge and licence label fee. In the case of trucks with dual axles, a certification of fitness fee of \$NZ15.00 is also charged. For the period, July 1979 to June 1980, the total registration charge was \$NZ30.60 for motor cycles, \$NZ39.30 for motor cars, \$NZ37.10 for single axle trucks and \$NZ52.10 for dual axle trucks.

Prior to July 1967, receipts from motor vehicle registration charges were hypothecated to roads. However, since July 1967, they have been placed in Consolidated Revenue.

Receipts from this source have increased from \$NZ15.74 million in 1970-71 to \$NZ45.68 million in 1978-79 (New Zealand Motor Trade Federation 1979, p137).

#### **Import duties on motor fuels**

The rate of import duty on petroleum fuels varies widely according to type of fuel, origin and whether in bulk or in container. It is not possible to ascertain an average rate of duty on motor fuels. Revenue from these duties are paid into Consolidated Revenue and details are not separately available.

#### **Import duties on motor vehicle and parts**

The level of import duties applicable on motor vehicles and parts entering New Zealand depends on the country of origin, the type of vehicle and whether the vehicle is built-up (CBU) or knocked-down (CKD). On vehicles entering from Australia and Great Britain, the CBU rate is 20 per cent and the rate on CKD vehicles and parts, 6.25 per cent. On vehicles from other countries the respective rates are 55 and 45 per cent. Revenue from this source rose from \$NZ11.9 million in 1970-71 to \$NZ73.0 million in 1978-79 (New Zealand Motor Trade Federation 1979, p137).

#### **Sales tax on motor vehicles**

In addition to the import duty on motor vehicles the central government also levies a sales tax on motor vehicles sold in New Zealand. The level of sales tax depends on vehicle type and engine capacity. For passenger vehicles, the level of tax ranges from 30 per cent (for vehicles with an engine capacity less than 1350cc) to 60 per cent (for vehicles above 2700cc capacity). For motor cycles the range is 2-40 per cent, again depending upon engine capacity.

Prior to April 1978, the level of sales tax on heavy commercial vehicles was 40 per cent. This has since been progressively reduced to 10 per cent.

Sales tax is also applied to automotive parts and accessories. However, details are not available. Between 1970-71 and 1978-79, annual receipts from sales tax on motor vehicles rose from \$NZ49.0 million to \$NZ174.9 million.

#### **NRB receipts compared with total revenue from motor taxation**

Gross central government receipts from motor vehicle taxation between 1973-74 and 1978-79 together with motor vehicle taxation paid to the NRB over the same period are presented in Table V.4. The percentage of central government motor taxation allotted to the NRB has fallen from 38 per cent in 1973-74 to a low of 26 per cent in 1978-79. The introduction of road user charges has only had a limited effect in reversing this trend.

#### **National Roads Fund expenditure**

A detailed expenditure summary for the NRB for the period 1973-74 to 1978-79 is presented in Table V.5. The process by which projects are selected was outlined earlier.

All work on the State Highway system is funded by the Central Government in accordance with the *National Roads Act 1953*. The NRB may delegate to local authorities in whole or part its powers of control, maintenance and construction. Work delegated to local authorities is performed by them as an agency of the Commissioner for Works.

The Board may transfer to the Commissioner for Works any of its responsibilities related to the design, supervision, construction and maintenance of the State Highway network. Payment for these and other administrative tasks performed by the Ministry of Works and Development is shown in Table V.5 and, between 1973-74 and 1978-79, rose from \$NZ4 million to \$NZ10.6 million annually.

As well as funding work on the State Highway system the NRB is also empowered under the *National Roads Act 1953* to financially assist local authorities with their road commitments. It subsidises work on both county roads and municipal streets. The

TABLE V.4—NEW ZEALAND: CENTRAL GOVERNMENT MOTOR TAXATION RECEIPTS, 1973-74 TO 1978-79

(\$NZ thousand)

Item	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79
<b>Motor taxation</b>						
Import duties on motor vehicles and parts	38 668	46 896	41 624	56 686	63 788	73 000
Sales tax on motor vehicles (exc. parts)	108 300	132 700	138 400	152 300	152 139	174 900
Net motor spirit tax <sup>a</sup>	85 302	85 265	156 120	186 268	206 162	264 709
Vehicle registration and associated fees	11 958	12 532	13 038	13 708	10 448	Dr 110
Mileage tax	5 797	6 915	7 383	9 393	11 600	1 558
Road user charges	—	—	—	—	—	48 302
<b>TOTAL</b>	<b>271 644</b>	<b>304 858</b>	<b>380 465</b>	<b>438 984</b>	<b>486 740</b>	<b>608 043</b>
NRB receipts from motor taxation	102 514	104 125	100 587	106 555	125 325	158 756
NRB receipts as a % of motor taxation	37.8	34.2	26.4	24.3	25.7	26.1

a. Does not include receipts by local authorities.

Sources: New Zealand Motor Trade Federation (1979, pp137-8) and Table V.3.

conditions which must be met by local authorities to be eligible to receive a government subsidy are also set out in the Act. Before agreeing to any subsidy payment, the NRB may require the local authority to provide information on existing road standards and conditions and traffic volumes. Subsidies to local authorities are less than the funds spent on State Highways, being equivalent to about 78 per cent of the latter in 1978-79, but have increased at a somewhat faster rate between 1973-74 and 1978-79 (Table V.5).

The NRB makes advances to local authorities for roadworks and machinery purchases, but these are relatively insignificant (Table V.4).

### Expenditure from the Consolidated Revenue Account (Vote Roads)

Apart from expenditures made by the NRB from the NRF the Government also makes annual expenditures from the Consolidated Revenue Account (Vote Roads). Expenditures from this source are for development roads with funds either being paid to local authorities in the form of subsidies or being used by Government departments such as Lands and Survey and Maori Affairs.

In 1977-78 Central Government expenditure on Development Roads totalled \$NZ2.12 million. Of this \$NZ1.2 million was paid to local authorities for the construction of new farm-access roads in new farming areas and some other roads of a development nature. A further \$NZ818 000 was made available to the Lands and Survey and Maori Affairs Departments for use on lands which they were preparing for land settlement.

### THE LOCAL GOVERNMENT ROLE

Local authorities play a major role in the provision of roads in New Zealand. As illustrated in Table V.1, local authorities have responsibility for over 87 per cent (by length) of public roads in New Zealand. In total, there are 240 local authorities (102 counties, 137 municipalities and the Auckland Regional Authority) which share this responsibility.

TABLE V.5—NEW ZEALAND: NATIONAL ROADS BOARD EXPENDITURE, 1973-74 TO 1978-79  
(\$NZ thousand)

Item	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79
State highways						
Maintenance less miscellaneous receipts	16 702	19 662	25 889	29 342	37 023	43 656
Construction less miscellaneous receipts	35 913	40 602	41 620	35 731	37 140	41 308
Total	52 615	60 264	67 509	65 073	74 163	84 964
Subsidies to local authorities	39 343	44 306	47 448	48 232	56 854	66 619
Subsidised highways	1 793	1 713	1 618	1 568	1 775	1 624
Subsidies on transportation surveys	40	42	50	39	5	—
Ministry of Works and Development						
Administration charges	4 027	5 812	5 757	9 036	9 165	10 600
Advances to local authorities	6	50	54	—	60	65
Fees and travelling expenses	34	37	44	54	78	83
Repayment of advance from Loan Redemption Account	—	—	—	2 000	—	4 000
Miscellaneous	778	1 166	2 173	2 043	1 634	1 354
Bailey bridging	122	130	162	358	316	99
Unauthorised	3	4	8	2	2	6
TOTAL <sup>ab</sup>	98 762	113 525	124 824	128 405	114 054	169 414
Balance in Fund as at 31 March each year	8 301	2 981	56	2 315	500	7 010

a. Figures may not add due to rounding.

b. These figures differ from those in Table V.2 because that table only includes those expenditures actually spent on constructing and maintaining roads — the first three items in this table.

Source: National Roads Board (1974a-1979a).

### **Local authority revenues applied to roads**

In New Zealand local authorities have direct access to road user revenues via a local authorities petroleum tax, drivers' licences (in some cases), parking charges and traffic fines. Revenue from these sources is, however, paid into general funds and not hypothecated to roads. Local authorities also receive roads grants from the Central Government which must be spent on roads. The four road revenue charges are described more fully below.

### **Local authority petrol tax**

This tax was introduced under the *Local Authorities (Petroleum Tax) Act 1970*. Collections commenced in March 1971 with each local authority being allowed to levy up to NZ0.66 cents per litre on motor spirit and NZ0.33 cents per litre on automotive distillate sold within their boundaries. Revenue from this source has increased from \$NZ14.8 million in 1973-74 to \$NZ18.54 million in 1978-79 (New Zealand Motor Trades Federation 1979, p137). As previously stated these funds are available for the general purpose use of each authority.

### **Drivers' licences**

In New Zealand, drivers' licences are generally issued by local authorities, subject to central government conditions, although in many cases by the Ministry of Transport. The charge is set uniformly across New Zealand at NZ 50 cents per annum. Revenues collected are paid into the general funds of the relevant local authorities. Between 1973-74 and 1978-79 revenue from this source has amounted to approximately \$NZ1 million annually.

### **General revenues from land rates, fees, and fines**

Revenues from these sources have, since 1973-74 accounted for approximately 40-50 per cent of local authority annual receipts. All revenues received from these sources are paid into general funds and the allocation of individual revenues to particular expenditures cannot be determined. They are grouped together here because it has not been possible to obtain separate figures for each item.

### **Grants and subsidies from the central government**

Grants and subsidies from the Central Government are an important source of revenue for local authorities. Grants from the NRB make up the vast bulk of these revenues.

### **Loans**

Local authorities have the power to raise loans on their own behalf for any of the services which they provide, although their loan raisings are subject to vetting by the central government via the Local Authority Loans Board which is administered by the Treasury. One of the services is the construction and maintenance of roads. The level of loans raised varies annually.

### **Local authority road expenditures**

Local authorities in New Zealand make road expenditures both from their own funds and from grants and subsidies provided by the Central Government. Details of local authority road expenditures between 1973-74 and 1978-79 are presented in Table V.6.

From Table V.6 and the total road expenditure figures presented in Table V.2 it may be seen that roads expenditure by local government authorities accounts for approximately two-thirds of total road expenditure in New Zealand, but that only half of local authority road expenditures are financed from their own sources, with grants from the Central Government accounting for the remainder. Over the period 1973-74 to 1978-79 locally-sourced expenditures have increased at an average annual rate of 15.3 per cent per annum while Central Government grants and subsidies have increased at the rate of 11.1 per cent per annum.

TABLE V.6—NEW ZEALAND: LOCAL GOVERNMENT ROAD EXPENDITURE, 1973-74 TO 1978-79

	(\$NZ thousand)					
	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79
Expenditure from own-sourced funds						
County	19 985	21 660	23 659	27 810	35 804	41 214
Municipality	24 463	29 935	36 894	38 517	41 968	47 437
Total	44 448	51 595	60 553	66 327	77 772	88 651
Expenditure from central government funds						
NRB	39 307	44 276	44 407	48 232	56 858	66 565
Roads Vote	2 026	2 219	1 749	1 195	2 120	2 743
Total	41 333	46 495	46 156	49 327	58 978	69 308
<b>TOTAL</b>	<b>85 781</b>	<b>98 090</b>	<b>106 709</b>	<b>115 754</b>	<b>136 750</b>	<b>157 959</b>
Per cent local-sourced	52	53	57	57	57	56
Per cent central govt sourced	48	47	43	43	43	44

Source: Table V.2.



## APPENDIX VI—USA

### INTRODUCTION

By December 1979 the population of the USA was in excess of 222 million. Much of this population resided in the densely settled north-east quarter between Chicago and New York. Population density generally decreases westward, except for the major population centres around the west coast cities of Los Angeles, San Francisco and Seattle.

The USA is a federation of 50 States (Hawaii and Alaska having joined in 1959). The form of Federal Government is laid down in the United States Constitution. Executive power is given to the President who is elected by the people every four years (Paxton 1979, p1369). Legislative power is in the hands of a bicameral congress consisting of the House of Representatives and the Senate. Below this, each State has its own constitution, judicial system and legislature (Paxton 1979, p1374). The State governments are also responsible for the organisation of local government within their borders.

### THE ROAD NETWORK AND CLASSIFICATION

At 31 December 1978 there were approximately 6 252 000 kilometres of public roads in the USA. The classification of and responsibility for this network is given in Table VI.1.

Over 82 per cent of roads in the USA are classified as rural. The majority of road length in the USA is under the jurisdiction of the States and local governments. The Federal Government directly controls 6 per cent of the road network, the State governments 20 per cent and local governments (both county and municipal) 74 per cent. Roads under Federal Government control are located in Federal parks, forests and reservations and on Federal Government establishments not a part of the State and local highway systems. All major systems such as the interstate and defense highway system and the primary and secondary highway systems are under State government control.

The 'State Primary System' refers to roads designated by the States as their primary system of State highways. The selection criteria varies greatly among States, but the system includes the principal intercounty, intercity, and interstate roads in each State. Where the primary system passes through urban areas but remains under State control it has been listed in Table VI.1 as a primary system extension. The 'Secondary System' is also designated by the State governments and consists of a system of principal intraregional roads that act as a feeder network to the Primary System. Where these roads pass through urban areas but remain under State control they are also listed separately as extensions in Table VI.1. Some States, in addition to designating a secondary system, are also responsible for constructing and maintaining specified local roads. These are shown in Table VI.1 as 'other roads' under State control.

Roads under local government control have been divided into 'county roads' (principal intracounty roads), 'town and township roads' (rural local roads in population centres of less than 1000 people), 'other roads' (rural local roads outside population centres), and 'municipal roads and streets' (all roads within defined municipalities and delimited unincorporated places not prescribed by the State as primary or secondary extensions) (Federal Highway Administration 1978, p128).

Superimposed on these State-defined systems are a number of Federal classifications based on functional usage (reclassified on 1 July 1976) which relate to the Federal

Government funding mechanisms. The State and Federal classifications are not separate systems. The Federal classifications only have significance for funding purposes and there is some overlap with State classifications. The major Federal classifications are:

- National System of Interstate and Defense Highways;
- Federal Aid Primary System;
- Federal Aid Secondary System;
- Urban Extensions of Federal Aid Systems; and
- Federal Aid Urban System.

TABLE VI.1—USA: ROAD LENGTH BY TYPE OF ROAD AND RESPONSIBLE LEVEL OF GOVERNMENT, DECEMBER 1978

Road classification and level of government responsible	Rural roads		Municipal roads <sup>a</sup>		Rural and municipal roads	
	('000 km)	(per cent)	('000 km)	(per cent)	('000 km)	(per cent)
Federal						
Total	371	7	—	—	371	6
State						
Primary system	649	12	—	—	649	10
Secondary system	437	9	—	—	437	7
Other (non-urban)	48	1	—	—	48	1
Primary extension	—	—	108	10	108	2
Secondary extension <sup>c</sup>	—	—	32	3	32	1
Total	1 134	22	140	13	1 274	20
Local						
County	2 747	54	—	—	2 747	44
Town and township	835	16	—	—	835	13
Other (non-urban)	47	1	—	—	47	1
Municipal streets	—	—	978	87	978	16
Total	3 629	71	978	87	4 607	74
<b>TOTAL</b>	<b>5 134</b>	<b>100</b>	<b>1 118</b>	<b>100</b>	<b>6 252</b>	<b>100</b>

NOTE: Figures may not add due to rounding.

a. Includes all roads, streets and public ways not under State control in municipalities and delimited unincorporated places having an estimated population of 1000 or more.

Source: Federal Highway Administration (1979, p128).

The National System of Interstate and Defense Highways was established by the *Federal Aid Highways Act* of 1944 and further defined by the *Federal Aid Highways Act* of 1956. It is limited by law to a maximum length of 68 383 km (42 500 miles) except that other Federal Aid primary routes of satisfactory standard may be incorporated where they constitute logical additions.

Originally the system was to be completed by 1972 but the completion date has been extended several times. The provisions of the *Surface Transportation Assistance Act* 1978 aim at a completed system by 1990. When completed the system will link principal metropolitan areas, cities and industrial centres of the nation, service national defense requirements, and connect the USA to Canada and Mexico at suitable border points. The system generally consists of non-toll, controlled access, divided freeways with lanes at least 3.66 metres wide, without stop signs, traffic lights, sharp curves or steep hills.

The Federal Aid Primary System was authorised by the *Federal Highway Act* of 1921 under which 7 per cent (by length) of all public roads in each State at that date were declared to be 'primary' for funding purposes. This percentage limitation was discontinued in 1976. The system provides the main means of interstate, intrastate and regional travel and incorporates the Interstate and Defense Highway System which constitutes its highest standard sections. It is designated by the State governments

with the approval of the Secretary for Transportation and excludes roads within city limits.

This Federal Aid Secondary System consists of approximately 670 000 kms of locally owned and maintained principal secondary and feeder roads which link farm distribution outlets and smaller rural communities to the Federal Aid Primary System. As with the primary system, urban segments of this system are classified separately.

Urban Extensions of Federal Aid Systems were designated because the *Federal Aid Highways Act* of 1921, restricted Federal aid to rural roads. However, they are considered to be integral parts of Federal Aid Systems. Under current legislation an urban area is one with a population of 5000 or more in, or adjacent to, a municipality.

The Federal Aid Urban System was first authorised by the *Federal Aid Highway Act* of 1970 and modified by the *Federal Aid Highway Act* of 1973. It is established in each recognised urban area and includes high traffic volume arterial and collector routes to major activity centres and transportation nodes. Designation of the system is subject to the approval of the Secretary of Transportation.

### ANNUAL ROADS EXPENDITURE

Total annual expenditures on roads by all levels of government in the USA from 1973 to 1978 are presented in Table VI.2. Over this period there has been a shift away from construction to maintenance, with construction expenditures dropping from 52 per cent to 44 per cent of total road expenditures, while maintenance expenditures rose from 25 per cent to 29 per cent.

TABLE VI.2—USA: TOTAL ROAD EXPENDITURE, ALL LEVELS OF GOVERNMENT, 1973-78

	(US\$ million)					
	1973	1974	1975	1976	1977	1978 <sup>a</sup>
Capital expenditure	12 169	13 116	na	13 891	13 026	14 412
Maintenance expenditure	5 947	6 562	na	7 735	8 612	9 462
Administration	1 746	1 780	na	2 209	2 194	2 547
Police and safety	1 892	2 116	na	2 632	2 842	3 031
Bond interest	1 039	1 077	na	1 229	1 272	1 379
Total direct expenditure	22 793	24 651	na	27 696	27 946	30 831
Bond redemptions	1 406	1 438	na	1 567	1 650	1 679
<b>TOTAL</b>	<b>24 199</b>	<b>26 089</b>	<b>na</b>	<b>29 263</b>	<b>29 596</b>	<b>32 510</b>

a. Provisional figures only.

na not available.

Source: Federal Highway Administration (1974-1979).

### DIVISION OF RESPONSIBILITY FOR ROADS

The statutory responsibilities of the Federal and State governments in the USA are determined by the United States Constitution. Under Article 1, Section 8, the United States Congress is empowered to 'establish Post Offices and Post Roads' (roads used by the United States Mail). The 10th Amendment to the Constitution, ratified 15 December 1791, states:

The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people. (Office of the Federal Register 1979)

It must therefore be assumed that, as part of the unspecified residual, all public roads other than post roads and roads in Federal Territories are the responsibility of the State governments. In practice, the Federal Government has never constructed any post roads.

The State governments have, to a large extent, delegated their roads responsibilities to local government authorities. The extent of this is shown in Table VI.1. The State governments' central concerns are with the heavily trafficked interregional and interstate routes.

In aggregate, State governments control only 22 per cent of rural roads and 13 per cent of municipal roads (20 per cent of all roads) while local authorities control 71 per cent of rural roads and 87 per cent of municipal roads (74 per cent of all public roads).

## **THE FEDERAL GOVERNMENT ROLE**

As mentioned earlier the Federal Government has only limited constitutional roads responsibilities and directly controls only 6 per cent of the road network, most of this being in national parks and on Federal Government installations. It has, however, accepted a much wider role in the development and funding of the road system.

### **Federal Government departments involved with roads**

Several Federal departments have responsibilities in the roads area. In most cases these are ancillary to the principal objectives of the departments, although two departments, Transportation and the Interior, do have direct roads responsibilities. The Department of Transportation's involvement with roads occurs via the Federal Highway Administration (FHWA) while that of the Department of the Interior is via the National Park service.

### **Federal Highway Administration**

The FHWA is the successor to the Office of Road Inquiry and Bureau of Public Roads. It became a component part of the Department of Transportation following the Department's establishment in 1966, and is responsible for carrying out the highway program role of the Department.

The work of the FHWA encompasses highway transportation in its broadest sense, seeking to co-ordinate highway and other transport modes to achieve the most effective balance of transport systems under Federal control. The main functions and activities of the FHWA include:

- administration of the Highway Trust Fund (HTF) and the Federal Aid Highway Program of financial assistance to the States for highway construction;
- approval and review (at key stages) of those projects on which Federal Aid Highway funds are to be used;
- co-ordination and funding of a wide-ranging research and development program directed toward the problems of traffic congestion, street and highway safety, effective design and reduced construction and maintenance costs and the social, economic and environmental impact of highways;
- ensuring that the States follow a system-oriented planning process; and
- development and administration of the National Highway Institute training programs for State and local employees engaging in Federal Aid Highway work.

### **National Park Service**

The National Park Service was established in 1916 to administer the extensive system of national parks, monuments, historic sites and recreation areas. It implements park management plans which include the construction and maintenance of roads and transport facilities generally. Almost all work on roads in national parks and on historic sites is carried out by the FHWA for the National Park Service.

### **Federal Government legislation relating to roads**

The first Federal roads legislation was enacted in 1916 when US\$75 million was allotted to the States on an area/population/road length formula, provided they establish either a Highways or Transport Department to administer the funds and accept matching

quotas. In 1921 the States were required by the Federal Government to designate 7 per cent of their existing roads as primary highways and separate Federal allocations were made for these highways.

The *Federal Aid Highway Act* of 1944 established three separate funding categories: Primary Highways, Urban Extensions and Secondary Highways. These received 45, 25 and 20 per cent of the allocation respectively with the remaining 10 per cent being a discretionary allocation. The *Federal Aid Highway Act* of 1952 authorised the first specific Federal funds for the Interstate and Defense Highway System, and provided that construction of this system would be financed on a 50/50 Federal/State basis<sup>1</sup>.

In 1956 two Acts, the *Federal Aid Highway Act* and the *Highway Revenue Act* revolutionised Federal road funding by establishing the Highway Trust Fund (HTF).

The *Department of Transportation Act* of 1966 established the Federal Highway Administration and gave it the authority to administer the HTF. Since 1970 there have been four main Federal Acts related to roads. Each has had the effect of expanding the uses to which HTF revenues may be put and extending the life of the HTF.

### The Highway Trust Fund (HTF)

Prior to 1956, all revenues collected from Federal road related taxes were paid into general funds and were not hypothecated to road purposes. In 1956 the Eisenhower administration introduced the *Federal Aid Highway Act* which initiated a major new program of Federal assistance for highway construction (especially the Interstate and Defense Highways System). This increase in Federal assistance required the raising of extra Federal taxes to finance the program, but these increased taxes were opposed by Congress unless they were to be hypothecated to roadworks.

The result of this Congressional opposition was the establishment of the Highways Trust Fund (HTF) under the *Highway Revenue Act* of 1956 as 'a closed, assured mechanism of highway assistance' (Wheeler 1978, pxi). The HTF is under the direct control of the FHWA. Although it was used for most Federal highway programs<sup>2</sup>, its main thrust was aimed at the speedy completion of the Interstate and Defense Highway System, and it was intended that the HTF would cease and the taxes which feed it revert to previous levels on the completion of that system.

The HTF was originally conceived as a mechanism for establishing a national highway system. Revenues placed in the HTF were intended solely for this purpose. Maintenance was considered to be a State financial responsibility.

In the face of State budgetary shortages, however, the Federal Government was forced to assume greater responsibility to protect its investment. This change has been so great that, under 1978 legislation, maintenance of the interstate, primary and secondary systems became a permanent feature of HTF funding programs. At the same time, bridge repair programs were initiated.

In addition, funding of mass transit was included (both in its own right and as a substitute for highway projects) as an HTF program in the early 1970s. This is discussed later in this Appendix.

### HTF revenues

Essentially the HTF is a holding device for dedicated funds. The funds are the revenues derived from a number of taxes specified in the *Highway Revenue Act* of 1956 and subsequent amending legislation.

Of the taxes which feed the Fund, most existed prior to 1956 and were simply channelled into the HTF (and in some cases increased). Since 1956 the tax rates and the overall number of taxes credited to the HTF have increased. Table VI.3 shows the

1. The Federal share was increased to 60 per cent in 1954 and 90 per cent in 1956.

2. Since 1958 over 90 per cent of Federal highway programs have been funded from the HTF, the main exception being forest highways.

TABLE VI.3—USA: FEDERAL HIGHWAY-RELATED TAX LEVELS, 1956-84

		1956-pre Highway Trust Fund <sup>a</sup>	1957-under Highway Revenue Act 1956	1961-under Federal Aid Highways Act 1961	1975-under Surface Transportation Assistance Act 1975	1 Oct 1984 on cessation of HTF
Motor fuel						
Gasoline	cents per gallon	2	3	4	4	1.5
Diesel	cents per gallon	2	3	4	4	1.5
Other special	cents per gallon	2	3	4	4	1.5
Lubricating oil	cents per gallon	d	d	d	6	6
Rubber						
Tyres	cents per pound	5	8 <sup>b</sup>	10	10	5
Tubes	cents per pound	9	9	10	10	9
Treadrubber	cents per pound	—	3	5	5	—
Trucks, buses and trailers	per cent of wholesale price	8	10 <sup>c</sup>	10 <sup>c</sup>	10 <sup>c</sup>	5
Truck and bus parts	per cent of manufacturer's wholesale price	d	d	d	8	5
Annual Heavy Vehicle Use Tax	per 1000 pounds if weight exceeds 26 000 pounds (\$)	—	1.50	3.00	3.00	—

a. Before the Highway Trust Fund these taxes were deposited in the general fund.

b. Only 3/8 accrued to the Highway Trust Fund in 1956-1957 but 100 per cent thereafter.

c. Only 1/5 accrued to the Highway Trust Fund in 1956-1957, 1/2 in 1957-1958 to 1965-1966 and 100 per cent thereafter.

d. Taxes on parts and accessories and lubricating oil were levied but were not put into the Highway Trust Fund until 1966.

Source: Wheeler (1978, p17 and p36).

taxes credited to the HTF and the levels applicable in 1957, 1961 and 1978 as well as the levels which will prevail if the HTF is disbanded in October 1984, as specified under current legislation<sup>1</sup>.

Table VI.4 presents information on the revenues paid into the HTF from 1970-71 to 1977-78. Fuel taxes constitute by far the largest single component of HTF revenues, accounting for 60 to 70 per cent of HTF revenues.

TABLE VI.4—USA: NET REVENUES TO THE FEDERAL HIGHWAY TRUST FUND, FISCAL YEARS 1970-71 TO 1977-78

(US\$ million)

Item	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78
Motor fuel	3 934	3 893	4 159	4 301	4 340	4 219	4 707	4 722
Lubricating oil	52	73	80	94	84	56	76	80
Tyres	576	632	721	838	744	546	758	762
Innertubes	23	24	29	33	33	25	30	31
Tread rubber	30	27	31	24	20	23	25	25
Trucks, buses and trailers	693	436	380	614	602	219	708	851
Parts and acces- sories	85	87	104	131	143	116	165	188
Federal heavy vehicle usage	148	150	161	225	222	209	240	246
<b>TOTAL</b>	<b>5 541</b>	<b>5 322</b>	<b>5 665</b>	<b>6 260</b>	<b>6 188</b>	<b>5 413</b>	<b>6 709</b>	<b>6 905</b>

a. Until 1975-76 year ended 30 June; thereafter, year ended 30 September.

Source: Federal Highway Administration (1979a, p58).

Of the new taxes introduced in 1956, the annual heavy-vehicle use tax is of most significance. It was introduced because taxation equity between classes of highway users was a stated goal of the *Highway Revenue Act*. The tax, which consists of a flat rate per 1000 pound of the gross weight of vehicles over 26000 pound, was intended to establish a more equitable relationship between user charges and highway construction costs for various highway user classes.

### HTF expenditures

Under the 1956 legislation establishing the HTF it was stipulated that receipts and expenditures should balance - presumably over the medium to long term. Except where otherwise specified, HTF revenues are provided for construction and reconstruction purposes only. The main exception is the Resurfacing, Restoration and Rehabilitation Program (RRR) program (see below) which was established to maintain the Interstate System. Between 1956-57 and 1969-70 the balance in the HTF fluctuated but remained below US\$2000 million. Since then, however, and despite the 1956 stipulation that expenditures should equal revenues in the medium to long term, the annual balance in the Fund has grown rapidly. This is the result of the anti-inflationary fiscal policies of successive United States administrations which have called for restraint in Government spending.

Table VI.5 shows for the years 1968-69 to 1977-78 the annual receipts and expenditures of the HTF, the annual balance of the HTF, together with the level of general fund highway expenditures (ie, financed from sources other than the HTF) and total Federal highway expenditures. Except for an excess of expenditure over revenue in 1975-76 and an abnormally low level of revenue in 1971-72 (due to the fuel shortage) HTF revenues have exceeded HTF expenditures by over US\$1000 million per annum since 1970. This had led to a cumulative balance in the Fund which totalled US\$11 673 million at the end of 1977-78, almost double the HTF expenditures made in that year.

1. Whether the HTF will actually be disbanded then is rather uncertain in view of a Senate vote on 21 August 1978, which was 75-10 against discontinuing the HTF.

TABLE VI.5 - USA: RECEIPTS, EXPENDITURES AND ANNUAL BALANCES OF THE HIGHWAY TRUST FUND, FISCAL YEARS 1968-69 TO 1977-78

(US\$ million)

	1968-69	1969-70	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	Transition quarter <sup>a</sup>	1976-77	1977-78
Annual receipts	4 690	5 469	5 725	5 528 <sup>b</sup>	5 912	6 675	6 774	6 000	1 690	7 302	7 567
Annual expenditures											
Interstate	3 148	3 286	3 454	3 467	3 394	3 017	2 902	3 435	856	2 950	2 763
Non-interstate	1 003	1 092	1 231	1 223	1 417	1 582	1 941	3 086	902	3 197	3 295
Total	4 151	4 378	4 685	4 690	4 811	4 599	4 843	6 521	1 758	6 147	6 058
Excess receipts	539	1 091	1 040	838	1 101	2 076	1 931	-521	-68	1 155	1 509
Balance in fund (year ended)	1 521	2 612	3 652	4 490	5 591	7 667	9 598	9 077	9 009	10 164	11 673
Interstate as a percentage of total expenditure	75.8	75.1	73.7	73.9	70.5	65.6	59.9	52.7	48.7	48.0	45.6
General fund programs	382	434	481	548	528	528	572	589	155	615	421
Total federal highway expenditure	4 533	4 812	5 166	5 238	5 339	5 127	5 415	7 110	1 913	6 762	6 479

a. Until 1975-76 year ended 30 June; thereafter, year ended 30 September.

b. Receipts from fuel oil tax were down in 1972 due to severe fuel shortages.

Source: Wheeler (1978, p17 and p36).



The other important factor brought out in Table VI.5 is the declining importance of Interstate Highway expenditures in total expenditures from the HTF. In 1968-69 Interstate Highway expenditures made up 75.8 per cent of total HTF expenditures. Over the next 9 years this percentage declined steadily until Interstate Highway expenditures represented 45.6 per cent of total HTF expenditures in 1978. This relative decline in importance is the result of the cumulative impact of three factors:

- impoundment of revenues by successive administrations in the early 1970s;
- lower authorisations since 1974; and
- the broadening base of programs to be funded by the HTF.

A more detailed breakdown of expenditures by type of expenditure for calendar years 1977 and 1978 is presented in Table VI.6<sup>1</sup>. From this Table the relative importance of each highway category to the total funding program can be seen.

TABLE VI.6—USA: FEDERAL HIGHWAY EXPENDITURE BY HIGHWAY CATEGORY FOR CALENDAR YEARS 1977 AND 1978

	1977		1978	
	(US\$m)	(per cent)	(US\$m)	(per cent)
Highway Trust Fund				
Interstate	2 739	48	2 764	47
Primary	1 111	20	1 305	22
Secondary	349	6	383	7
Urban	696	12	680	11
Planning and research	95	2	117	2
Highway Safety	391	7	427	7
Other	272	5	207	4
Total	5 653	100	5 883	100
General and other funds	284		421	
TOTAL	5 937		6 304	

Source: Federal Highway Administration (1978 and 1979).

### Federal highway assistance programs

Decisions on the aggregate level of highway finance and its allocation between programs are made by Congress in consultation with the President and the Department of Transportation and contained in relevant legislation. Since 1956 the duration of the appropriate legislation has varied from two to four years. Funds are made available to the States on completion of projects.

Under the *Federal Aid Highway Act 1956* Federal assistance to the States for highway construction was provided under eight programs, two funded from the HTF and the remaining six from general funds. Since that time the number of programs, the funding source and the type of projects eligible for Federal funding has altered greatly. The *Federal Aid Highway Act 1976*, for example, provided funds for 34 separate programs (many minor), most being funded from the HTF. This number of programs has been reduced somewhat in the current legislation, the *Surface Transportation Assistance Act 1978*, which consolidated a number of program categories to allow the States greater flexibility in the use of the funds supplied.

The type of roadworks eligible for Federal funding (from both the HTF and general funds) has increased with the number of Federal programs. In 1956 Federal funds could only be used for highway construction. Since then Federal funds have become available for planning and research, urban streets, mass transit (urban public transport) and highway maintenance projects. The use of HTF funds has also

1. As Table VI.5 is in fiscal years and Table VI.6 is in calendar years, the figures presented are not directly comparable.

diversified. In 1956 HTF funds were limited to highway construction. Since then, however, use of the HTF has been extended until, today, almost all highway and highway-related programs (eg mass transit programs) except for a number of minor programs (mainly related to forest highways development and off-system highways and highway beautification) are at least partially funded by the HTF. The HTF financed 94 per cent of total Federal highway expenditure in 1977-78 (Table VI.5) compared with 88 per cent in 1956-57.

Due to the large number of Federal highway programs currently in effect only the major programs will be discussed here. A more detailed account can be found in Wheeler (1978) and the Congressional Quarterly Almanac (1978). The major highway-related programs are:

- the Interstate and Defense Highway Program;
- the ABCD Program;
- the Resurfacing, Restoration and Rehabilitation (RRR) Program;
- mass transit programs; and
- highway safety programs.

#### **The Interstate and Defense Highway Program**

The system was announced in 1944, designated as a system (of 41 000 miles) in 1947, and received its first specific funding authorisation on a 50-50 Federal/State basis in 1952. In 1954 the Federal share was increased to 60 per cent.

In 1956 the system was singled out for accelerated completion over a 13 year period. To achieve this, funding levels were greatly increased to cover the expected completion cost (as of 1956) of US\$27 billion, and the Federal Government's contribution was increased to 90 per cent (US\$25 billion).

Annual appropriations between the States were determined according to the estimated completion cost of the system in each State.

Since 1956 the estimated completion date for the system has been extended many times, but the system is now over 90 per cent complete. The current completion date is October 1990 with a requirement that all remaining projects must be under contract by 30 September 1986. The main reasons for the deferral of completion are:

- changes in design standards and associated cost increases;
- extension of the system by 1500 miles in 1968;
- the effect of inflation on available funds;
- broadening the uses of the HTF;
- impoundment of HTF funds under the Nixon and subsequent administrations;
- lowering of authorisations since 1974; and
- use of part of the authorisation for maintenance purposes since 1978.

#### **The ABCD Program**

In 1956 this was the only other program funded by the HTF. Initially known as the ABC Program, it funded three highway systems:

- the primary highway system;
- the secondary highway system; and
- the urban extensions to the primary highway system.

Between 1956 and 1970 these three systems were funded on a 50-50 Federal/State basis with primary highways receiving 45 per cent, secondary highways 30 per cent and urban extensions 20 per cent of total ABC Program allocations. The remaining 5 per cent could be allocated at the FHWA's discretion.

Appropriations between States were made 1/3 on area, 1/3 on population and 1/3 on road length.

In 1970 the *Federal Aid Highways Act* added urban arterial roads to the Program which then became known as the ABCD Program. Allocation of the funds between the

systems became: primary 45 per cent; secondary 25 per cent; urban extensions 20 per cent; and urban arterials 10 per cent. Further, as of September 1974 all ABCD Programs became 70/30 Federal/State funded. In 1978 the Federal share was increased to 75 per cent.

While A, B and C project funds are still appropriated between the States on a basis similar to that set down in 1956, D project funds are appropriated in accordance with the percentage of urban to total population in each State.

Since 1970 transfers of up to 20 per cent of funds allocated to A, B, C and D programs have been allowed between categories. In 1973 this transfer allowance was increased to 40 per cent.

Since 1976 non-Interstate projects have become eligible substitutes for unwanted segments of the Interstate system. The funding level for these substitutions does, however, revert to the lower funding level.

### **Resurfacing, Restoration and Rehabilitation Program**

As mentioned earlier HTF funds were originally intended for use on road construction with maintenance remaining a State responsibility. However, increasing State budgetary shortages have forced the Federal Government to allow HTF funds to be used for maintenance to protect the large investment already made. Under the *Federal Aid Highways Act 1976* US\$175 million annually was made available for RRR programs on the Interstate system for segments over five years old. A similar provision was made for non-Interstate highways.

This was achieved through redefinition of the term 'construction'. Hence, no extra funds were allocated for this purpose.

The Interstate RRR program was extended in 1978 with allocations being increased to US\$275 million for each of 1980-81 and 1981-82. Under the *Surface Transportation Assistance Act 1978* each State is currently required to spend at least 20 per cent of its primary and secondary system authorisations on RRR type projects.

### **Mass transit programs**

The first instance of Federal assistance to mass transit was in 1970. Approval was given for the use of Federal highway aid for the construction of exclusive bus lanes and various other facilities to serve bus passengers, contingent on the avoidance of highway construction and the provision of equivalent capacity.

In 1973 approval was given for the substitution of mass transit projects for non-essential segments of the Interstate system. This required approval of the Secretary for Transportation and funding of mass transit projects was from general funds not the HTF. These allocations were in addition to Urban Mass Transportation Administration (UMTA) allocations which were also made from general fund.

Under the 1978 legislation most mass transit programs are now 80 per cent Federally funded. Those substituted for Interstate highway segments are, however, 85 per cent Federally funded.

### **Highway safety programs**

The first instance of Federal assistance for highway safety occurred with the *Highway Safety Act 1966* with funds being provided from general funds. A separate general fund authorisation was made for Federal research and development programs. In 1966 a national safety agency was established and States which did not institute a safety program were penalised 10 per cent of their Federal aid funds.

In 1978, legislation was passed authorising the payment of US\$175 million in both 1980-81 and 1981-82 to be funded from the HTF to pay for safety programs carried out by the National Highway Traffic Safety Administration (NHTSA) subject to States enforcing a maximum 55 mph speed limit.

### **General fund programs**

Of the general fund programs the two most important ones are the Appalachian Regional Development Highways Program and the Forest Development Roads and Trails Program. Under the former, the Appalachian region was singled out in 1965 for special development assistance through the construction of a 2350 mile (3780 km) Development Highway System and 1000 miles (1600 km) of access roads. Financing was via a lump sum payment of US\$849 million from general funds to cover the Federal Government's 70 per cent share in the project.

In 1967 the program was increased by 1000 miles and in 1971 payment was converted to annual authorisations, similar to other programs. Since its inception this has been one of the largest general fund highway programs. By 1979-80 annual obligations for this program were in the range US\$150-200 million.

The Forest Development Roads and Trails Program is a permanent program funded from general funds within annual appropriations at a level equal to 10 per cent of revenues received from national forest activities.

### **The evaluation and priority programming of road projects**

To encourage proper and efficient use of the funds it provides, the Federal Government supervises those road programs on which Federal aid highways funds are spent. As part of this supervision process each State is required to develop a systematic means for considering the social, economic and environmental effects of proposed highway projects. To aid the States in doing this, the FHWA developed the Highway Investment Analysis Package (HIAP) in the mid-1970s. It is not, however, compulsory and each State is free to use this package or to develop its own systematic analysis package.

The HIAP package is a computerised cost-benefit and cost-effectiveness analysis consisting basically of two modules, project evaluation and program development.

The project evaluation module uses microeconomic theory to analyse alternative road improvements and to estimate user performance (travel time, vehicle operating costs and accidents etc) and public performance measures (emission and noise levels) for both the improved road and non-improved road alternatives over a 10-15 year period. Key parameters such as the value of travel time and the discount rate are specified in the package to develop consistent economic measures.

The program development module uses the aggregate measures calculated for project alternatives at all sites to develop candidate investment programs using marginal analysis to allocate a budget among sites to achieve the best program possible under the funding limitation. If desired, minimum funding levels for different functional classifications of road may also be included.

The resulting evaluation measures for alternative programs may then be combined by the decision-maker with other social and environmental considerations not suited to cost-benefit analysis.

It was not possible to determine how representative the HIAP package is of the general level of roads evaluations undertaken by the States. It is known, however, that some States employ considerably less sophisticated methods.

### **Federal control over grants to the States**

As in Australia, the Federal Government exercises differing degrees of control over the use of the funds which it provides to States and local authorities depending on the category of road on which the funds are to be used.

The Interstate System was originally designated by the Federal Government in 1947 and incorporated into the Primary Highway System and its urban extensions. Although originally planned for completion by 1969 the current schedule is due for completion by 1990. All aspects of design and engineering standards together with general alignment are prescribed by the Federal Government in a manner similar to that of the

Federal Government in Australia with regard to the National Highway network. In the USA, however, the States do have some degree of flexibility in that they can choose to have certain sections of road or proposed road removed from the system and have the funds that would have been spent on these sections allocated to other programs. These decisions must, however, be made by the end of 1982. The Federal Government supervises and approves individual projects in the Interstate Highway system, for which it provides 90 per cent of the funds. Funds are allocated between the States according to the length of the designated system remaining to be completed in each State. However, given that the system is 90 per cent complete and standards and alignment already established there is now little flexibility for either Federal or State government.

For all roads other than Interstate Highways, considerably less Federal supervision and control of the use of funds is exercised. Although the Federal Government allocates funds to individual categories of road, it is the responsibility of the State authorities to evaluate the alternative and competing demands and develop program and funding levels for each expenditure category. The principal concerns of the Federal Government with regard to roads other than Interstate Highways are that funds should be efficiently allocated and competing uses properly evaluated, that a 'systems planning' rather than 'project planning' process be followed, and that the required State/local matching quotas are met. Up to 40 per cent of Federal funds allocated to individual ABCD program categories may be transferred to other program categories with Federal approval, and supervision of the use of Federal funds at other than the Interstate Highway level is largely accomplished by FHWA staff attached to the individual State road authorities.

### **THE STATE GOVERNMENT ROLE**

Since 1916, each State has been required to have its own department of transport or highways to be eligible for Federal highway assistance. These departments act as the main channel for Federal/State highway relations.

As shown in Table VI.2, State governments have direct financial and administrative responsibilities for approximately 20 per cent of the public roads in the USA. They also financially assist local authorities (which control approximately 74 per cent of the road system) and act as an intermediary between Federal and local authorities.

#### **State Government revenues used for road purposes**

The State governments use revenue obtained from three main sources to fund the road systems under their control. These sources, in descending order of importance, are:

- State taxes and other revenues;
- Federal government grants; and
- payments from local authorities.

Details of the revenue obtained from each source between 1974 and 1978 are presented in Table VI.7.

State highway user taxes account for 50-60 per cent of State road-related receipts annually while Federal Government grants account for 20-30 per cent. State highway user taxes consists of fuel taxes, motor vehicle registration fees and drivers' licence fees.

#### **Fuel taxes**

Each State levies taxes on motor fuels in addition to the Federal fuel taxes. In 1970 State taxes on petrol (motor spirit) ranged from US 5 to 12 per cents per US gallon, with the majority of States charging US 8.5 cents or more per gallon.

All States except Vermont and Wyoming also levy taxes on diesel (automotive distillate) and by 1979 some States were also applying a higher tax on diesel. The

reason for this is to tax more heavily large commercial vehicles which cause more damage to roads than cars. Five States do not levy taxes on LPG while in eight States a tax is levied but is lower than that applying to motor spirit.

TABLE VI.7—USA: STATE GOVERNMENT RECEIPTS APPLIED TO ROAD EXPENDITURE, 1974-78

	(US\$ million)				
	1974	1975	1976	1977	1978
<b>State funds</b>					
State Highway-user tax revenues	11 217	11 325	12 172	12 715	13 529
Net road and crossing tolls	966	1 053	1 116	1 175	1 237
Other State General Fund imposts	508	572	677	837	1 055
Miscellaneous income	550	539	513	547	742
<b>Total</b>	<b>13 241</b>	<b>13 489</b>	<b>14 478</b>	<b>15 274</b>	<b>16 563</b>
<b>Federal funds</b>					
FHWA	4 912	5 727	6 221	5 799	6 280
Other agencies	156	237	259	341	399
<b>Total</b>	<b>5 068</b>	<b>5 964</b>	<b>6 480</b>	<b>6 140</b>	<b>6 679</b>
Local government transfers	217	203	218	221	260
Bond proceeds	841	1 410	1 459	1 184	923
<b>TOTAL RECEIPTS</b>	<b>19 367</b>	<b>21 066</b>	<b>22 635</b>	<b>22 819</b>	<b>24 425</b>

Source: Federal Highway Administration (1974-1979).

In most States, non-highway petrol use is taxed but refundable, whereas non-highway use of other funds is not taxed at all.

Between 1974 and 1978 State net receipts from motor fuel taxes grew from US\$8154 million to US\$9791 million. The revenues were disbursed as shown in Table VI.8.

TABLE VI.8—USA: DISBURSEMENT OF STATE MOTOR FUEL TAX RECEIPTS, 1974-78

	(US\$ million)				
	1974	1975	1976	1977	1978
Costs of collection	65	78	na	91	88
State administered highways	5 263	5 255	na	5 710	5 925
Local roads and streets	2 468	2 547	na	2 872	3 127
Mass transportation projects	68	149	na	315	326
Non-road purposes	290	312	na	320	325
<b>TOTAL</b>	<b>8 154</b>	<b>8 341</b>	<b>na</b>	<b>9 308</b>	<b>9 791</b>

na not available.

Source: Federal Highway Administration (1974-1979).

### Heavy vehicle taxes

Approximately half the States levy charges on large goods and passenger vehicles. These take one of three forms: taxes on gross receipts of for hire carriers (at rates of 0.5 to 3 per cent); mileage taxes (per ton-mile, axle-mile, or vehicle mile), or fuel surtaxes<sup>1</sup>.

### Motor vehicle registrations

Each State requires that vehicles using public roads be registered, and imposes registration taxes. There is a great diversity of taxes and fees collected, and the

1. For example, in 1965 Kentucky and Virginia levied taxes of US 2 cents per gallon on trucks with 3 or more axles (US Department of Transportation, 1968, p12). Unfortunately, more up to date information was not readily available.

registration practices for commercial vehicles differ greatly between States. Legal and administrative provisions governing the disbursement of these revenues vary from State to State and no generalisation regarding their use could be drawn from the available information.

### **Drivers' licences**

Every State requires that motor vehicle drivers be licensed and pass an examination before a licence is issued. The cost and term of these licences vary greatly from State to State.

### **Payments by local authorities**

Local authorities are in some cases required to contribute to road projects which overlap the responsibilities of both levels of government. In 1976-77, State receipts from local authorities totalled US\$114 million.

### **State highway-related expenditures**

State highways or transport departments make both direct and indirect road expenditures. They make direct expenditures on the State-administered highway system and make financial grants-in-aid to local authorities.

Details of State road expenditures between 1974 and 1978 are presented in Table VI.9. Construction expenditure has decreased from 51 to 46 per cent of total road expenditure, due mainly to a decrease in real expenditure on the Interstate system. The other main change is the increasing importance of maintenance and traffic services.

The above expenditure levels include expenditure sourced from Federal grants made to the State authorities. Capital expenditure on the Federal Aid highway system has dropped from 44 per cent to 40 per cent of total annual highway expenditures by the States between 1974 and 1978. Also, approximately 15 per cent of the State expenditures are in the form of grants-in-aid to local authorities to assist them with their road programs.

## **LOCAL GOVERNMENT ROLE**

By far the largest proportion (74 per cent) of the public road system in the USA is administered by local government authorities.

### **Local government revenues used for road purposes**

Local authorities in the USA have several sources of revenue which they use to fund road works. These include own-sourced income, grants from senior levels of government and borrowings.

Local own-sourced revenue is of two types, road-related and general purpose. Local road-related revenues include:

- road and crossing tolls;
- parking charges;
- traffic fines; and
- other local road user imposts.

In addition part of the following general revenues raised by local authorities are also applied to roads:

- property taxes and special assessments; and
- general fund appropriations.

This latter group of revenues is not raised specifically to fund roads but may in part be used for that purpose.

TABLE VI.9—USA: STATE GOVERNMENT HIGHWAY EXPENDITURES, 1974-78

	1974		1975		1976		1977		1978	
	(US\$m)	(per cent)	(US\$m)	(per cent)	(US\$m)	(per cent)	(US\$m)	(per cent)	(US\$m)	(per cent)
Construction										
Interstate highways	3 736	19	3 773	18	3 748	18	3 223	15	3 411	14
Other federal aid roads	4 981	25	5 798	27	5 572	26	5 332	25	6 160	26
Other roads and streets	1 355	7	1 440	7	1 260	6	1 136	5	1 434	6
Total	10 072	51	11 011	52	10 580	50	9 691	45	11 005	46
Maintenance and traffic services	2 701	14	2 987	14	3 165	15	3 515	17	4 095	17
Administration and highway police	2 263	12	2 462	12	2 661	12	2 928	14	3 216	14
Bond interest	824	4	855	4	917	4	938	4	994	4
Grants-in-aid to local governments	2 983	15	2 941	14	3 169	15	3 423	16	3 616	15
Bond retirement	859	4	874	4	899	4	944	4	954	4
<b>TOTAL</b>	<b>19 702</b>	<b>100</b>	<b>21 131</b>	<b>100</b>	<b>21 391</b>	<b>100</b>	<b>21 440</b>	<b>100</b>	<b>23 880</b>	<b>100</b>

Source: Federal Highway Administration (1975-1979).



As well as the above the local authorities also receive road grants from the State governments and from the Federal Government passed on by the States, and may also make both long and short term borrowings for road purposes.

Details of the revenue obtained from each of these sources for the years 1976 and 1977 are presented in Table VI.10. Own-sourced revenues account for 53-54 per cent of the total local authority road-related revenues and grants-in-aid from the State and Federal governments account for approximately 36 per cent. Borrowings account for approximately 10 per cent.

TABLE VI.10—USA: LOCAL GOVERNMENT REVENUES APPLIED TO ROADS, 1976 AND 1977

	1976		1977	
	(US\$m)	(per cent)	(US\$m)	(per cent)
Local revenues				
Property taxes etc	1 762	16	1 836	15
General fund appropriations	2 954	27	3 161	27
Local highway imposts	216	2	223	2
Other local imposts	231	2	273	2
Road and crossing tolls	240	2	246	2
Traffic fines	208	2	228	2
Miscellaneous	352	3	355	3
Total	5 963	54	6 322	53
State and Federal grants				
State	3 240	29	3 365	28
Federal	716	7	964	8
Total	3 956	36	4 329	36
Borrowings	1 091	10	1 307	11
TOTAL	11 010	100	11 958	100

Source: Federal Highway Administration (1977 and 1978).

### Local government road expenditures

Local government road expenditures for the years 1976 and 1977 are presented in Table VI.11. Capital expenditures account for 25-27 per cent of local government road expenditures, while maintenance expenditures account for 41-43 per cent. Actual road and bridge construction accounts for 22-24 per cent of all expenditures while road and bridge maintenance accounts for approximately 35 per cent.

### DISTRIBUTION OF FINANCIAL RESPONSIBILITY FOR ROADS IN THE USA

The financial responsibility of each level of government for roads differs greatly between road categories. In aggregate, the Federal Government provided approximately 26 per cent of total road expenditure in 1978, State governments 43.7 per cent and local authorities 30.3 per cent.

The situation is, however, very different when individual categories of road are examined. Of the National (Interstate and Defense) Highway system the Federal Government in 1978 covered over 86 per cent of expenditure, the State governments covering the remaining 14 per cent. At the arterial road level the Federal Government provided 25.5 per cent of finance, the State governments 72.1 per cent and local authorities 2.4 per cent. At the local road and street level the Federal Government provided 8.5 per cent of the finance, the State governments 29.5 per cent and local authorities 62 per cent.

TABLE VI.11—USA: LOCAL GOVERNMENT AUTHORITY ROAD EXPENDITURES, 1976 AND 1977

	1976		1977	
	(US\$m)	(per cent)	(US\$m)	(per cent)
Capital expenditure				
Construction	2 622	24	2 614	22
Other	350	3	358	3
Total	2 972	27	2 972	25
Maintenance expenditure				
Roads and bridges	3 834	35	4 259	36
Snow removal	347	3	426	4
Traffic services	290	3	318	3
Total	4 471	41	5 003	43
Administrative services				
Administration	645	6	705	6
Traffic police	1 209	11	1 301	11
Other	67	1	72	1
Total	1 921	18	2 078	18
Interest	338	3	355	3
Debt retirement	924	8	989	9
Payments to other government	277	3	276	2
<b>TOTAL</b>	<b>10 903</b>	<b>100</b>	<b>11 673</b>	<b>100</b>

Source: Federal Highway Administration (1977 and 1978).

## REFERENCES

## AUSTRALIA

Australian Bureau of Statistics (ABS) (1976). *Survey of Motor Vehicle Usage, Commercial Vehicle Usage, 12 Months ended 30 September 1976*, Cat. No. 9209.0, ABS, Canberra.

\_\_\_\_\_ (1977), (1978), (1979a), (1980), *Yearbook of Australia*, AGPS, Canberra.

\_\_\_\_\_ (1979b), *Taxation Revenue, Australia 1978-79*. Cat. No. 5506.4, ABS, Canberra.

\_\_\_\_\_ (1981), *Australian National Accounts. National Income and Expenditure, 1978-79*, Cat. No. 5204.0, ABS, Canberra.

Bureau of Transport Economics (BTE) (1979), *An Assessment of the Australian Road System: 1979*, AGPS, Canberra.

\_\_\_\_\_ (1981), *Road Grants Legislation in Australia: Commonwealth Government Involvement 1900-1981*, BTE Occasional Paper No. 48, AGPS, Canberra.

\_\_\_\_\_ (1981a), *Australian Road Financing Statistics: 1970-71 to 1979-80*, BTE Reference Paper No. 17, Canberra.

Burke, R.H. (1977), *History of Commonwealth Government Legislation Relating to Roads and Road Transport 1900-1972*, BTE Occasional Paper No. 8, AGPS, Canberra.

Commonwealth Bureau of Roads (CBR) (1975), *Report on Roads in Australia*, Commonwealth Bureau of Roads, Melbourne.

\_\_\_\_\_ (1973), *Report on Roads in Australia*, Commonwealth Bureau of Roads, Melbourne.

Commonwealth Government (1937), *Report of the Committee Appointed to Investigate Transport in Great Britain*, Commonwealth Government Printer, Canberra.

\_\_\_\_\_ (1972)-(1979) *Budget Speech, 1972-73 to 1979-80*, AGPS, Canberra.

\_\_\_\_\_ (1973a)-(1980a), *Budget Paper No. 7, Payments to or for the States and Local Government, 1973-74 to 1980-81*, AGPS, Canberra.

Warden, G. (1975)-(1980) (annual), *Oil and Australia*, Australian Institute of Petroleum Ltd, Melbourne.

## CANADA

Canadian Transport Commission (1979), *Transport Review*, Canadian Transport Commission, Ottawa.

Dutz, H.G. (1979), *Interurban Roads and Motorways*, Paper presented to the 16th World Congress of the Permanent International Association of Road Congresses, Vienna.

Hayes, J.A. (1977), *Provincial and Local Taxation in Canada* in Mathews, R.L. (Ed.) *State and Local Taxation*, A.N.U. Press, Canberra, pp145-174.

Haritos, Z. (1973), *Rational Road Pricing Policies in Canada*, Canadian Transport Commission, Ottawa.

Langford, J.W. (1976), *Transport in Transition - The Reorganisation of the Federal Transport Portfolio*, McGill-Queen's University Press, Montreal.

- Statistics Canada. (1977), *Canada Handbook*, 46th Edition. Statistics Canada, Ottawa.
- \_\_\_\_\_ (1970a)-(1973a), *Road and Street Mileage and Expenditure* (annual), Cat. No. 53.201, S.C., Ottawa.
- \_\_\_\_\_ (1974a)-(1976a), *Road and Street Length and Financing* (annual), Cat. No. 53.201, S.C., Ottawa.
- \_\_\_\_\_ (1970b)-(1978b), *The Motor Vehicle Part II - Motive Fuel Sales* (annual), Cat. No. 53.218, S.C., Ottawa.
- \_\_\_\_\_ (1978a). *Principal Taxes in Canada, 1978*, Cat. No. 68.201E, S.C., Ottawa.
- Transport Canada (1978), *Highway Expenditures and Trends in Canada During the 1970s*, Unpublished Paper.
- Transport Development Agency—Transport Canada (1976), *Highway Systems in Canada*, Ministry of Supply and Services, Ottawa.

### FEDERAL REPUBLIC OF GERMANY

- Ministry of Transport (1977)-(1980), *Information on the Public Roads in the Federal Republic of Germany*, Unpublished.
- Romer, K. (Ed.) (1979), *Facts About Germany*, Lexikon-Verlag, Bertelsmann.
- Spahn, P.B. (1977a), *Tax Sharing in Australia and West Germany* in *Journal of Public Administration*, Vol. 136, No. 2, June 1977, pp122-132.
- Spahn, P.B. (1977b), *The Pattern of State and Local Taxation in the Federal Republic of Germany* in Mathews, R.L. 1977 (Ed.), *State and Local Taxation*, A.N.U. Press, Canberra.
- Statistisches Bundesamt (1973)-(1979), *Statistisches Jahrbuch für die Bundesrepublik Deutschland*, SB, Wiesbaden.

### GREAT BRITAIN

- British Road Federation (1973)-(1979), *Basic Road Statistics* (annual), British Road Federation, London.
- Central Office of Information (1971a)-(1980a), *Britain - An Official Handbook*, HMSO, London.
- \_\_\_\_\_ (1975b), *Town Traffic in Britain*, HMSO, London.
- \_\_\_\_\_ (1975c), *Freight Transport*, HMSO, London.
- \_\_\_\_\_ (1979b). *Inland Transport in Britain*, HMSO, London.
- \_\_\_\_\_ (1979c), *Freight Transport*, HMSO, London.
- \_\_\_\_\_ (1979d), *Fact Sheets on Britain*, FSB/E6, C.O.I., London.
- \_\_\_\_\_ (1978)-(1980), *Annual Abstract of Statistics*, HMSO, London.
- Department of the Environment (1973a)-(1976a), *Highway Statistics*, HMSO, London.
- \_\_\_\_\_ (1976b), *Transport Policy - A Consultation Document*, Volumes 1 and 2, HMSO, London.
- Department of Transport (1973a)-(1978a), *Transport Statistics - Great Britain*, HMSO, London.
- \_\_\_\_\_ (1970), *Roads for the Future: The New Inter-Urban Plan for England*, Cmnd 4369, HMSO, London.
- \_\_\_\_\_ (1977b), *Transport Policy*, Cmnd 6838, HMSO, London.

- \_\_\_\_\_ (1977c), *Report of the Advisory Committee on Trunk Road Assessment*, Leitch Committee, HMSO, London.
- \_\_\_\_\_ (1978b), *Policy for Roads: England 1978*, Cmnd 7132, HMSO, London.
- \_\_\_\_\_ (1980), *Policy for Roads: England 1980*, Cmnd 7908, HMSO, London.
- Levin, P.H. (1979), *Highway Inquiries: A Study of Governmental Responsiveness in Public Administration* Vol. 57, Spring 1979, pp21-49.
- The Treasury (1980), *The Budget 1980, Economic Progress Report No. 120*, HMSO, London.

## NEW ZEALAND

- Allen, P.B. (1970), *Roads to Resources*, Paper presented to 6th World Meeting of the International Road Federation, 1970, Montreal.
- Department of Statistics (1975)-(1980), *New Zealand Official Yearbook*, Government Printer, Wellington.
- Farley, P.J. (1979), *Contribution of Road User Charges Towards Road Costs*, Paper presented at the 1979 Roading Symposium, Auckland.
- Gresham, B.P. (1979), *Motor Vehicle Taxation*, Paper presented at the 1979 Roading Symposium, Auckland.
- Kenniard, A.R. (1979), *Road User Charges: Matching the Fees to the Costs*, Paper presented at the 1979 Roading Symposium, Auckland.
- Ministry of Transport (1979), *Report of the Working Party on Road User Charges*, Government Printer, Wellington.
- National Roads Board (1973a)-(1980a), *(Annual) Report of the National Roads Board*, (various issues), Government Printer, Wellington.
- \_\_\_\_\_ (1973b)-(1980b), *Roading Statistics*, (various issues), National Roads Board, Wellington.
- New Zealand Government (1964), *National Roads Act 1953*, (as amended to December 1964), Government Printer, Wellington.
- \_\_\_\_\_ (1978a), *The Transport Act 1962*, (as amended to 1 July 1975), Government Printer, Wellington.
- \_\_\_\_\_ (1978b), *The Motor Spirits Duty Refund Regulations, 1978*, Government Printer, Wellington.
- \_\_\_\_\_ (1979), *Road User Charges Act 1977*, as amended to July 1979, Government Printer, Wellington.
- New Zealand Motor Trade Federation (1979), *The Motor Industry Yearbook* (annual), New Zealand Motor Trade Federation, Wellington.
- Stacey, A.F. (1978), *Recent Changes in the Funding of the National Roads Board*, Paper presented at the 1978 Australasian Congress of the International Road Federation.

## UNITED STATES

- Adams, B. (1978a), *Statement by the Secretary of Transportation at the Hearing of the House of Representatives Committee on Ways and Means into the Administration's Proposed Extension of the Highway Trust Fund*, 8 February 1978, US Government Printing Office, Washington, pp3-10.
- \_\_\_\_\_ (1978b), *Statement of Secretary of Transportation at the Hearing of the House of Representatives Subcommittee on Surface Transportation into Highway/Transit Proposals*, 1 February 1978, US Government Printing Office, Washington, pp94-99.

Anonymous (1978), *Carter Signs \$54 Billion Highway Bill*, in *Congressional Quarterly Almanac*, Vol. XXXIV, 95th Congress, 2nd Session, 1978, Congressional Quarterly Inc., Washington, pp536-543.

Batchelder, J.H. (1979), *Applications of the Highway Investment Analysis Package in Transportation Research Record No. 698*, Transportation Research Board Washington, pp1-4.

Department of Transportation (1979), *National Transport Statistics, Annual Report 1979*, US Government Printing Office, Washington.

\_\_\_\_\_(1968), *The Role of Third Structure Taxes in the Highway User Tax Family*, Department of Transportation, Washington.

\_\_\_\_\_(1980), *12th Annual Report, Fiscal Year 1980*, US Government Printing Office, Washington.

Federal Highway Administration (1973)-(1979), *Highway Statistics* (annual), US Government Printing Office, Washington.

Jones, D.W. (Jnr) (1979), *Urban Highway Investment and Political Economy of Fiscal Retirement* in Altshuler A. (Ed) 1979, *Current Issues in Transportation Policy*, Lexington Books, Lexington, Mass., pp65-82.

Maxwell, J.A. (1977), *The State and Local Government Tax Structure in the United States*, in Mathews, R.L. *States and Local Taxation*, A.N.U. Press, Canberra, pp175-189.

Mead, K.C. (1973), *Resource Allocation and the System Planning Process in Highway Research Record No. 467*, Washington.

Office of the Federal Register (1979), *United States Government Manual 1978/79*, National Archives and Records Office, Washington.

Rae, J.B. (1971), *The Road and the Car in American Life*, M.I.T. Press, Cambridge, Mass.

Runke, J.F. (1979), *Transportation* in The Council of State Governments, *The Book of the States, 1978-79*, Vol. 22, The Council of State Governments, Lexington, pp367-387.

Sherman, L. (1978), *State and Federal Issues in Financing Highway Programs in Transportation Research Record, No. 680*, Transportation Research Board, Washington, pp22-27.

Smith, Wilbur B. (1980), *Future Highway Financing in Traffic Quarterly Vol. 34, No. 1, January 1980*, pp21-32.

Wheeler, P.K. (1978), *Highway Assistance Programs: A Historical Perspective in Congressional Quarterly Almanac*, US Government Printing Office, Washington.

## GENERAL

Goldsack, P. (Ed.) (1980), *Jane's World Railways and Rapid Transit Systems 1979-80*, Netherwood Dalton and Co Ltd, Huddersfield.

Organisation for Economic Co-operation and Development (OECD), (1980), *National Accounts of OECD Countries - Volume 1, Main Aggregates*, OECD, Paris.

Paxton, J. (Ed.) (1979), *The Statesman's Yearbook 1978-79*, Macmillan Press Ltd, London.

*The Europa Yearbook - A World Survey* (1979)-(1980), Europa Publications, London.