

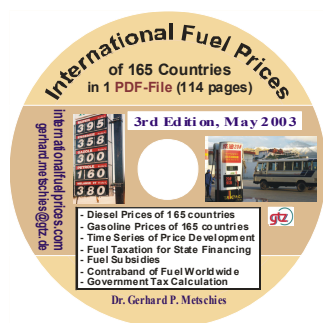


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- May 2003 -

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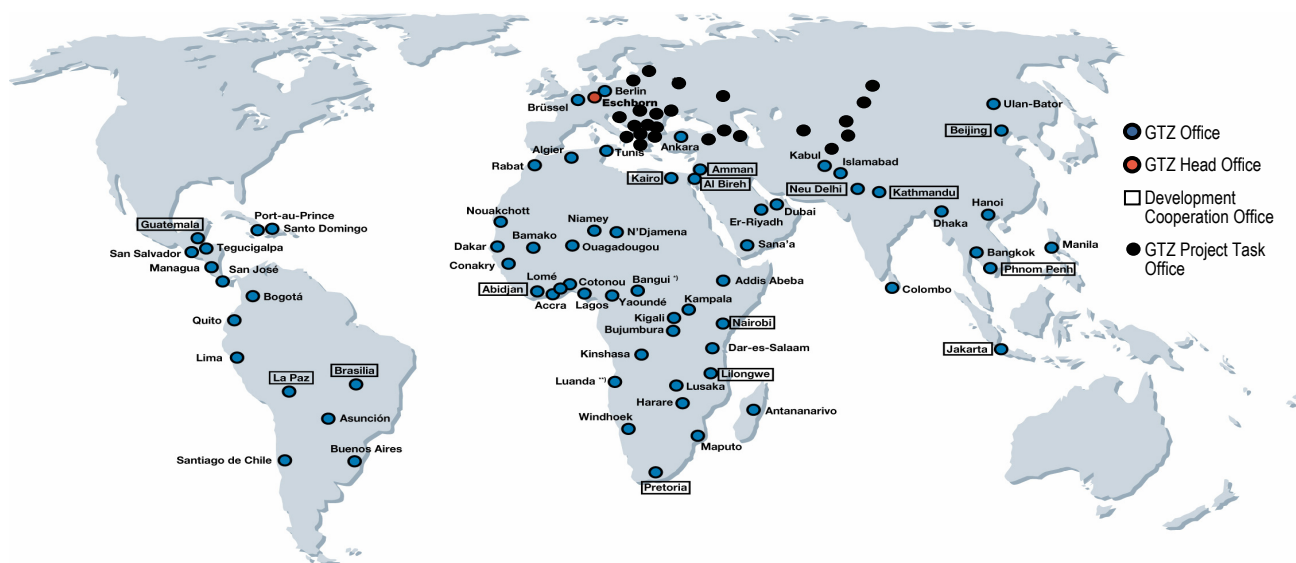
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Contents:

- Diesel Prices of 165 countries
- Gasoline Prices of 165 countries
- Time Series of Price Development
- Fuel Taxation for State Financing
- Fuel Subsidies
- Fuel Prices and Purchasing Power
- Contraband of Fuel Worldwide
- Government Tax Calculation

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Table of Contents

1. Executive Summary	5
2. Preface and Acknowledgement	8
3. International Fuel Prices	9
3.1 Fuel Prices in Africa (map)	10
3.1.1 Comparison of Fuel Prices	11
3.1.2 Time Series of Fuel Prices	12
3.1.3 Detailed Time Series of Fuel Prices	13
3.2 Fuel Prices in America (map)	23
3.2.1 Comparison of Fuel Prices	24
3.2.2 Time Series of Fuel Prices	25
3.2.3 Detailed Time Series of Fuel Prices	26
3.3 Fuel Prices in Asia (map)	32
3.3.1 Comparison of Fuel Prices	33
3.3.2 Time Series of Fuel Prices	34
3.3.3 Detailed Time Series of Fuel Prices	35
3.4 Fuel Prices in Europe (map)	45
3.4.1 Comparison of Fuel Prices	46
3.4.2 Time Series of Fuel Prices	47
3.4.3 Detailed Time Series of Fuel Prices	48
3.5 Fuel Prices Worldwide	57
3.5.1 Diesel Prices (in 165 Countries)	58
3.5.2 Super Gasoline Prices (in 165 Countries)	59
3.6 Basic Parameters of the Survey Data	60
3.7 From Crude Oil Price to “Normal Sales Price”	62
3.7.1 Crude Oil Price	62
3.7.2 “Normal Sales Price”	63

4. Fuel Taxation and State Financing	64
4.1 Taxation Policies for Petroleum Products	65
4.2 Fuel Price Policies	66
4.2.1 Country-Specific Fuel Subsidies	66
4.2.2 Transport Sector Policy and Fuel Prices	66
4.2.3 Long-Term Effects of Fuel Price Policies	68
4.2.4 Fuel Shortages in Oil Producing Countries	68
4.3 Fuel Taxation as Part of Total Tax Revenues	69
4.3.1 Fuel Tax Contribution to Total Tax Revenues (in 105 Countries)	70
4.3.2 Fuel Taxation Revenues in Africa (map)	71
4.3.3 Fuel Taxation Revenues in America (map)	72
4.3.4 Fuel Taxation Revenues in Asia (map)	73
4.3.5 Fuel Taxation Revenues in Europe (map)	74
4.3.6 History of European Fuel Taxation Levels	75
4.3.7 "Windfall Profits" of Oil Producing Countries	75
5. Loss of Fuel Revenues	76
5.1 Legal Fuel Taxation Exemptions	77
5.2 Tax Evasion due to Lack of Government Control	78
5.3 Fuel Contraband	80
5.4 Need for Fuel Price Harmonisation	82
6. Social Sustainability of Fuel Price Policies	84
6.1 Fuel Price Increases and the General Public	85
6.2 Fuel Prices and Purchasing Power (Egg Index)	86
6.3 Diesel Prices in Egg Equivalents (of 100 Countries)	87
6.4 Alternatives to Fuel Taxation	88
7. State Expenditure on the Transport Sector out of Fuel Taxation	89
8. Annex	94
8.1 Estimation of Fuel Taxation Revenue (of 157 Countries)	95
8.2 Estimation of Fuel Taxation Revenue, Example: Germany	99
8.3 Total Government Tax Revenue	103
8.4 Fuel Prices in Local Currency	109
8.6 Bibliography	111

"update: 09.Dec.2003" on a page means that wrong figures have been corrected there on 09.Dec.2003. Very important at this update are **corrections of the figures concerning Argentina, Ecuador, Guatemala, Nicaragua and Peru.**

This publication draws on **data from 165 countries** – developing, newly industrialising and industrialised – to arrive at the following conclusions:

1. The **globalisation** of world trade has levelled **motor VEHICLE prices** all over the world to such an extent that the **price ratio** for equivalent vehicles no longer exceeds about **1 to 2** between any two countries. Transport **FUEL prices**, however, differ on a scale of as much as **1 to 100**.
Thus **the relative fuel price difference is 50 times greater than the relative motor vehicle price difference**.
2. The issue of appropriate fuel pricing needs **urgent clarification**, not only from the point of view of the world economy, but of **environmental policy** also.
This international issue of the “right” fuel price may even be **more urgent** in the general context of widespread general **ENERGY SUBSIDIES** worldwide which are considered to be **5 times** higher than all international **development aid**. (*see page 66*)
3. The **METHOD** applied by the GTZ transport division is a **comprehensive worldwide-survey** to clarify the fuel price issue. It has now monitored fuel price policies by time series for more than 6 years since the first edition of this fuel price book. Data used for the current edition was taken on 10 December 2002 based on a crude oil price (Brent) of US\$ 26 per barrel.
According to the results of the GTZ investigations, the **fuel policies** of all countries in the world can be assigned to one of **4 CATEGORIES** (*see pages 57-59*):

Category I contains the high-price countries – as Japan and the EU – where the tax on diesel ranges from 30 to 90 US cents per litre and the tax on gasoline amounts to between 40 and 110 US cents per litre.

Category II contains countries in the intermediate zone between low-price and high-price policies (between 49 and 63 US cents per litre diesel).

Category III contains countries – like the USA – which pursue a low-price policy and therefore only levy an average tax of approximately 10 US cents per litre on diesel and gasoline (with diesel selling for 48 US cents per litre or less).

Category IV contains countries subsidising fuel prices, where fuel is sold at prices below the world market reference price, i.e. without fuel taxation. Prices start at 1 US cent per litre for diesel fuel. (In the case of oil producing countries in this category, prices – even if nominally taxed – are indirectly subsidised at the expense of the oil sector of that country.) Gasoline prices in **Turkmenistan (2 US cents per litre)** and **Venezuela (5 US cents per litre)** are the lowest in the world.
4. Fuel Taxation may become even a major source of **STATE FINANCING**. The main finding of this third edition of the GTZ fuel price report is, that in countries like **Albania, Madagascar and Bulgaria** fuel taxation accounts for **more than 30% of all national tax revenues**. (*see page 70*)
5. On the other hand **fuel SUBSIDISATION**, as practised in **Venezuela, Iran, Indonesia, and Zimbabwe** may become a major cause of **STATE BANKRUPTCY**. (The additional burden of subsidised cooking oil (kerosene) - not handled in the report - may even aggravate the situation) (*see page 70*)

6. **A change in fuel price policy** may even substantially contribute to **avoiding the financial collapse** of a state administration. Nowadays **TURKEY**, which **doubled** diesel and gasoline consumer prices in the period 1995-2002, is a good example of this. (On 1 January 2003 all **vehicle taxes** in Turkey were also doubled).
But other **endangered countries** especially in Africa (*see pages 13-22*) and South America (*see pages 26-31*) – as demonstrated by the time series of fuel prices in this report – have not taken the **opportunity to radically change policies**.
7. The fuel tax policies of the governments of **CHINA, INDIA** and **INDONESIA**, which together account for over 2.5 billion people (nearly half the world population), deserve special attention:
INDIA has continuously increased prices and revenues from gasoline (consumer price now 66 US cents per litre) and diesel (now 41 US cents per litre) over the last 7 years and can serve – also due to its parallel economic growth rate - as a **benchmark for many Less Developed Countries (LDC)**. (*see page 37*)
Within the former Eastern Bloc and its low-price Asian countries **CHINA**, accompanied by the highest economic growth in Asia, **is leading the way** to higher fuel prices well ahead of countries such as Russia, Mongolia, the Central Asian Republics and Vietnam. Recently it **lowered the diesel price**, but counterbalanced this modification with the highest **Annual Vehicle Taxes** in the world.) (*see page 36*)
INDONESIA however (with its 200 million inhabitants) still **subsidises gasoline and diesel**, even though **diesel prices have tripled** over the last 2 years. (*see page 37*)
8. **RISING INFLATION in Algeria, Angola, Tunisia and Uruguay** during the last 4 to 6 years has led to fuel prices dropping by half, accompanied with general economic problems and falling exchange rates. However **CUBA has found a convincing solution** by asking all its citizens to pay at gasoline stations **in US Dollars** – regardless of the source. (*see pages 13, 21, 26-31*)
9. This report shows that countries like the Kyrgyz Republic, Yemen, Georgia could **increase their overall government tax receipts by about 20%** with a fuel price rise of only 10 US cents per litre (*see page 73*); but it also shows the limits of price rises due to increased cross-border contraband. (*see pages 80-81*)
Therefore the report calls for an international fuel price harmonisation, at least among neighbouring countries, and identifies seven countries for international action: **NIGERIA, ANGOLA, INDONESIA** and **RUSSIA** being the most urgent cases, but **VENEZUELA** also requires action. (*see page 83*)
10. Exemptions from fuel taxes for special groups and its misuse by farmers, fishermen, military etc.; the lack of government control over fuel transit transports; the influence of profiteers in the management of refineries and fuel companies are cited in this report with examples. They lead to the conclusion that **exemptions from fuel taxation should generally be abolished**, as there are other ways and means to help the needy. (*see pages 77-79*)
11. The need for appropriate government action was also identified for **European countries** :
The lack of government control of truck tank sizes at **POLAND's** eastern border counteracted its government's efforts to finance roads in the year 2002 (*see page 78*). But also within the EU, a harmonisation of fuel prices between **LUXEMBOURG** and its EU neighbours is overdue, this would stop local "fuel tourism" and cut the country's official fuel consumption figures by two thirds (*see page 82*).

12. The **argument of SOCIAL SUSTAINABILITY** and the psychological effects of fuel price increases is often cited. The danger of **fuel price riots** is real and could be curbed technically by a step-by-step approach, **avoiding price surges in excess of 10 %** in real terms at one time (see page 85).
Arguments of reduced **PURCHASING POWER** caused by paying higher fuel prices are also common. This report measures local purchasing power in various countries in a way understandable to the General Public: with the **EGG INDEX**, i.e. the number of average eggs equal to 1 litre of gasoline.
In low price countries such as **Venezuela, Egypt, Nigeria or Ghana** 1 litre of diesel costs the equivalent of **less than 2 eggs**, while in other countries like **China, Germany, India, and Uganda**, 1 litre of diesel costs as much as **7 to 10 chicken eggs**. Thus international prices in US cents can also be cross-checked in local terms.
(see pages 86-87)
13. The chapter on **GOVERNMENT EXPENDITURES OUT OF FUEL TAXATION** draws on the GTZ's experience world-wide and comes to the conclusion, that for the **maintenance of all the roads** in a country a maximum of **10 US cents** per litre fuel would be sufficient, out of which **2 US cents** per litre should be used to preserve **rural roads**, a top priority for poverty alleviation in many developing countries. (see pages 90-93)
14. This report, now in its 3rd edition, may serve as a compendium for practical action, including for oil producing countries, since in most cases even their own existing **oil resources** are **no substitute for** internationally oriented **fuel price policies**. (see page 75)

2. Preface and Acknowledgement

Despite the internationally agreed basic requirement for **sustainable transport and energy policies**, the general knowledge of national fuel prices, data and facts remains remarkably rudimentary.

This can mainly be attributed to the **weakness of statistical organisations** in most developing countries. Even the international data pooling points of organisations, such as the International Energy Agency, the World Bank or Germany's Federal Statistical Office cannot overcome this problem.

Consequently, the **German Technical Cooperation GTZ (Deutsche Gesellschaft für Technische Zusammenarbeit GmbH)**, with its global network of projects in **135 countries**, its regional offices and **representations in 64 developing countries**, has decided to publish a comprehensive database for the global fuel sector.

At the same time this fuel price survey advocates reviewing the price policies and use of existing fuel energy - being a precondition for the introduction of new forms of energy.

The comments and conclusions drawn in this report, however, reflect the author's experience and views, not those of GTZ. This paper is intended to serve as an initial impetus to encourage the competent ministries in developing countries to start their own deliberations on how to achieve **sustainable long and medium-term fuel price policies**.

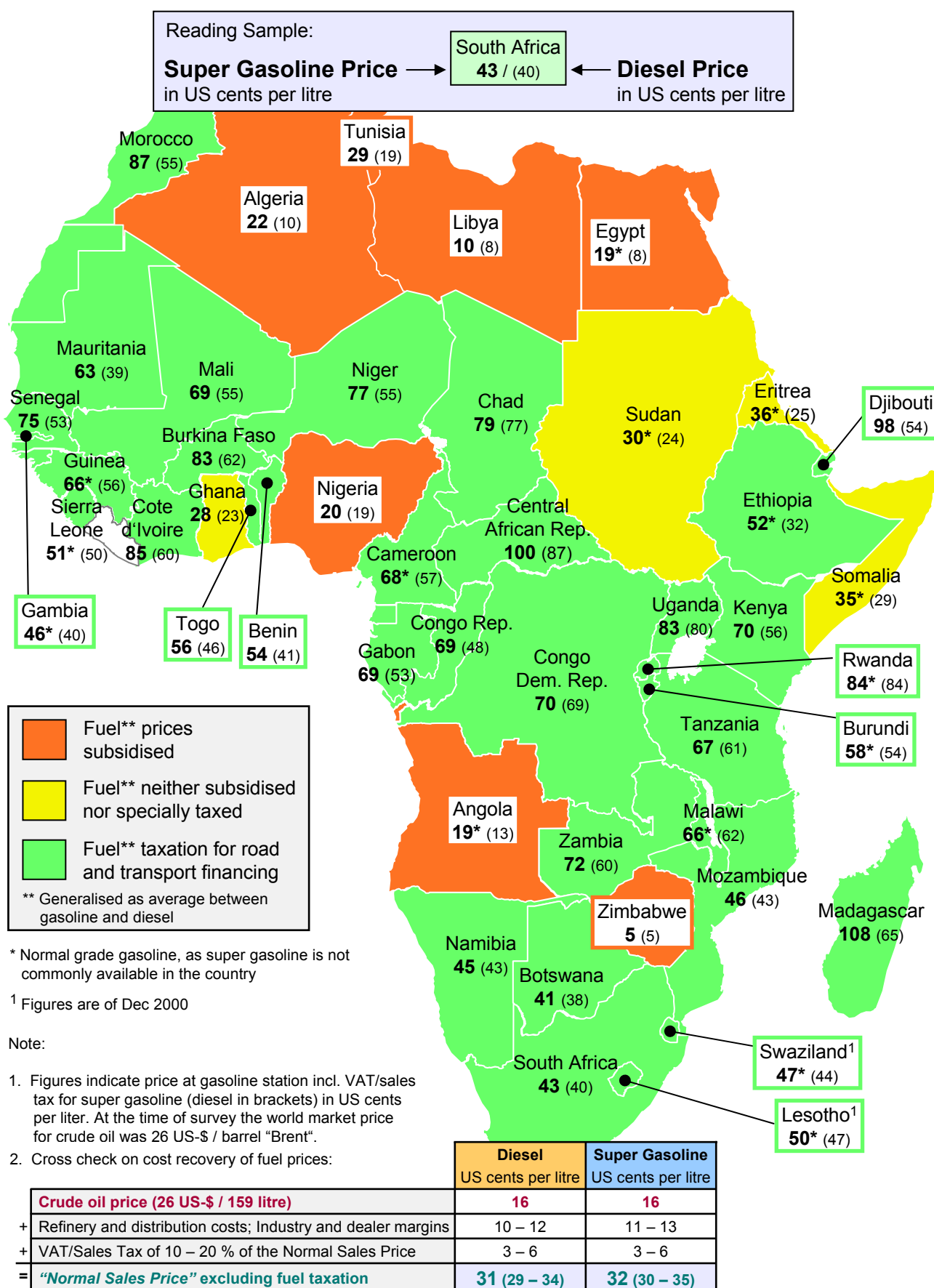
For the transport sector, this current book on fuel prices will be complemented by a separate survey of vehicle taxes to be published soon. ("International Vehicle Taxation, with a special section on Tolls and Taxes for Heavy Vehicles")

The survey was executed within the framework of sector project P.N. 97.2042.6 and was financed by the German Federal Ministry for Economic Cooperation and Development.

The author wishes to express his special gratitude to all those who have contributed to this database, in particular the GTZ offices (primarily in Africa and Asia), and the **German Federal Foreign Office** (for such individual countries as North Korea, Turkmenistan, Cuba and Myanmar), the German Automobile Association **ADAC** (for the European countries), the former GTZ/EU project **OLADE** in its capacity as energy agency for South America as well as **EU Delegations** and the **World Bank** (www.worldbank.org).

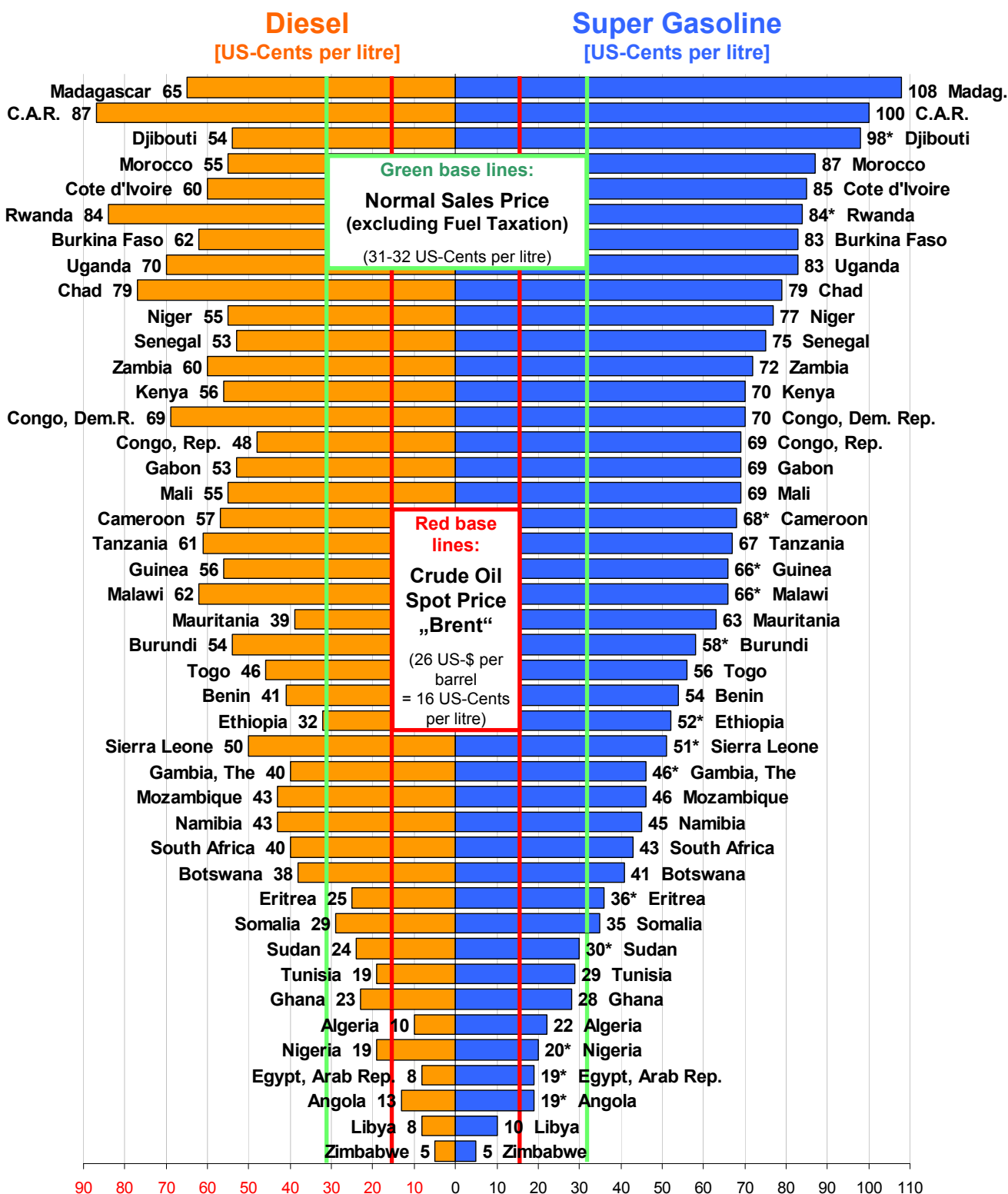
- Africa
- America
- Asia and Australia
- Europe
- **World Survey of 165 Countries**
- Basic Parameters
- Crude Oil Spot Price
and “*Normal Sales Price*”
as benchmarks

3.1 Fuel Prices in Africa as of 10 December 2002



[Source: Metschies, gtz survey Dec. 2002]

3.1.1 Comparison of Fuel Prices in Africa as of 10 December 2002



* Normal grade gasoline, as super gasoline is not commonly available in the country

Note: The “Red Base Line” represents the world market price for crude oil (North Sea Brent) at Rotterdam port on 10th December 2002. This price was by chance roughly the average crude oil price during the year 2002.

The “Green Base Line” represents the hypothetical sales price for refined and distributed PETROLEUM FUEL, if it were sold as a normal commercial commodity e.g. MINERAL WATER. Therefore the green line marks the border between fuel subsidy & taxation. This green line also applies to **oil producing countries**: assuming that the oil production could have been sold abroad, fuel prices are effectively subsidised at the expense of the country's energy sector.

[Source: Metschies, gtz survey Dec. 2002]

3.1.2 Time Series of Fuel Prices in Africa

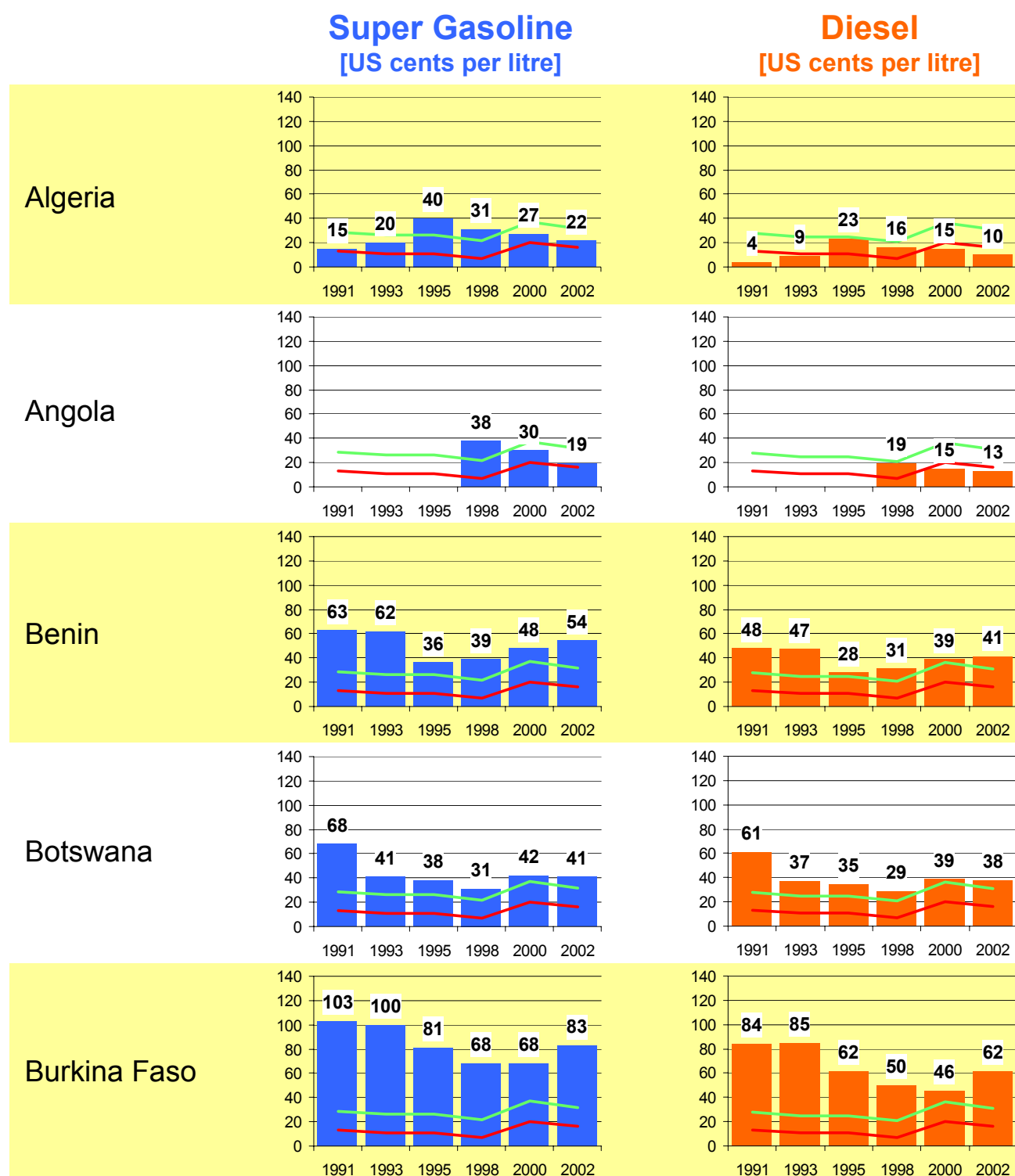
Survey Table 1991 - 2002

Fuel Prices in US Cents per Litre (actual prices paid)													
	Diesel						Super Gasoline						
	1991	1993	1995	1998	2000	2002	1991	1993	1995	1998	2000	2002	
Red Base Line	13*	11*	11*	7	20	16	13*	11*	11*	7	20	16	
World Market Crude Oil**													
Green Base Line	28	25	25	21	36	31	29	26	26	22	37	32	
Normal Sales Price													
Country	1991	1993	1995	1998	2000	2002	1991	1993	1995	1998	2000	2002	Source & Date of 2002 Data
Algeria	4	9	23	16	15	10	15	20	40	31	27	22	GTZ / ADAC Dec 2002
Angola				19	15	13				38	30	19	GTZ Dec 2002
Benin	48	47	28	31	39	41	63	62	36	39	48	54	GTZ Dec 2002
Botswana	61	37	35	29	39	38	68	41	38	31	42	41	GTZ Dec 2002
Burkina Faso	84	85	62	50	46	62	103	100	81	68	68	83	GTZ Dec 2002
Burundi	61	54	48	66	71	54	63	59	52	72	101	58	GTZ Dec 2002
Cameroon	58	58	50	48	47	57	68	69	68	64	56	68	GTZ Dec 2002
Cape Verde	40			43	39		68			81	59		
Central African Republic	99	98	64	65		87	133	128	82	81		100	GTZ Dec 2002
Chad	97	95	70	61	60	77	105	102	80	70	68	79	GTZ Dec 2002
Congo, Dem. Rep.	73	67	70	50	93	69	81	74	73	50	100	70	GTZ Dec 2002
Congo, Rep.	71			40	30	48	105			72	53	69	GTZ Dec 2002
Cote d'Ivoire	115	86	56	45	51	60	124	123	83	74	76	85	GTZ Dec 2002
Djibouti	38	56	40	40	53	54	77	61	93	91	105	98	GTZ Dec 2002
Egypt, Arab Rep.	7	9	12	12	10	8	29	30	29	29	26	19	GTZ Dec 2002
Eritrea		29	19	23	33	25		50	40	37	56	36	Embassy Dec 2002
Ethiopia	14	19	24	25	27	32	27	26	32	36	46	52	GTZ Dec 2002
Gabon	83	70		39	37	53	118	116		63	53	69	GTZ Dec 2002
Gambia, The	52	48		63	47	40	73	67		83	64	46	GTZ Dec 2002
Ghana	43	45	33	30	19	23	53	53	38	32	20	28	GTZ Dec 2002
Guinea	61	56		56	69	56	67	61		68	85	66	GTZ Dec 2002
Guinea-Bissau	61	56					30	27					
Kenya	37	33	43	54	60	56	53	40	56	70	71	70	GTZ Dec 2002
Lesotho				38	47					39	50		
Liberia													
Libya				17	16	8				22	25	10	ADAC / Embassy Dec 2002
Madagascar	25	31	32	33	45	65	43	54	47	47	76	108	GTZ Dec 2002
Malawi	56	67	55	45	68	62	64	71	65	51	69	66	GTZ Dec 2002
Mali	74	74	57	48	43	55	112	114	82	77	70	69	GTZ Dec 2002
Mauritania	53	43		31	40	39	86	85		59	67	63	GTZ Dec 2002
Morocco	45	41	47	47	53	55	82	75	94	79	82	87	GTZ Dec 2002
Mozambique	26	21	32	41	54	43	74	48	53	55	56	46	GTZ Dec 2002
Namibia	41	38		36	44	43	46	42		38	47	45	GTZ Dec 2002
Niger	81	60	55	52	48	55	94	92	79	76	68	77	GTZ Dec 2002
Nigeria	4	1	3	10	27	19	5	2	13	13	27	20	GTZ Dec 2002
Rwanda	79	88		72	84	84	81	93		72	89	84	GTZ Dec 2002
Senegal	74	88	62	48	52	53	119	123	94	71	73	75	GTZ Dec 2002
Sierra Leone	43	44		53		50	45	49		61		51	GTZ Dec 2002
Somalia	15					29	21					35	EU Delegation Dec 2002
South Africa		52	46	39	50	40		52	51	43	50	43	GTZ Dec 2002
Sudan	6	58	25	26	24	24	7	58	50	33	28	30	Embassy Dec 2002
Swaziland	41	40		36	44		46	43		37	47		
Tanzania	25	30	44	57	73	61	42	43	56	63	75	67	GTZ Dec 2002
Togo	66	63	40	37	40	46	81	72	47	42	48	56	GTZ Dec 2002
Tunisia	33	31	44	33	29	19	58	52	64	60	49	29	GTZ Dec 2002
Uganda	55	71	85	68	75	70	69	79	98	86	86	83	GTZ Dec 2002
Zambia	24	66	57	49		60	40	72	60	53		72	GTZ Dec 2002
Zimbabwe	37	28	29	22	72	5	68	47	38	26	85	5	GTZ Dec 2002

* Annual average crude oil price used ** Crude oil prices are noted in US cents per litre in the above table. Crude oil prices per barrel: US-\$ 20 (1991), US-\$ 17 (1993 & 1995), US-\$ 11 (1998), US-\$ 31 (2000), US-\$ 26 (2002)

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002]

3.1.3 Detailed Time Series of Fuel Prices in Africa 1991 – 2002 (from Algeria to Burkina Faso)

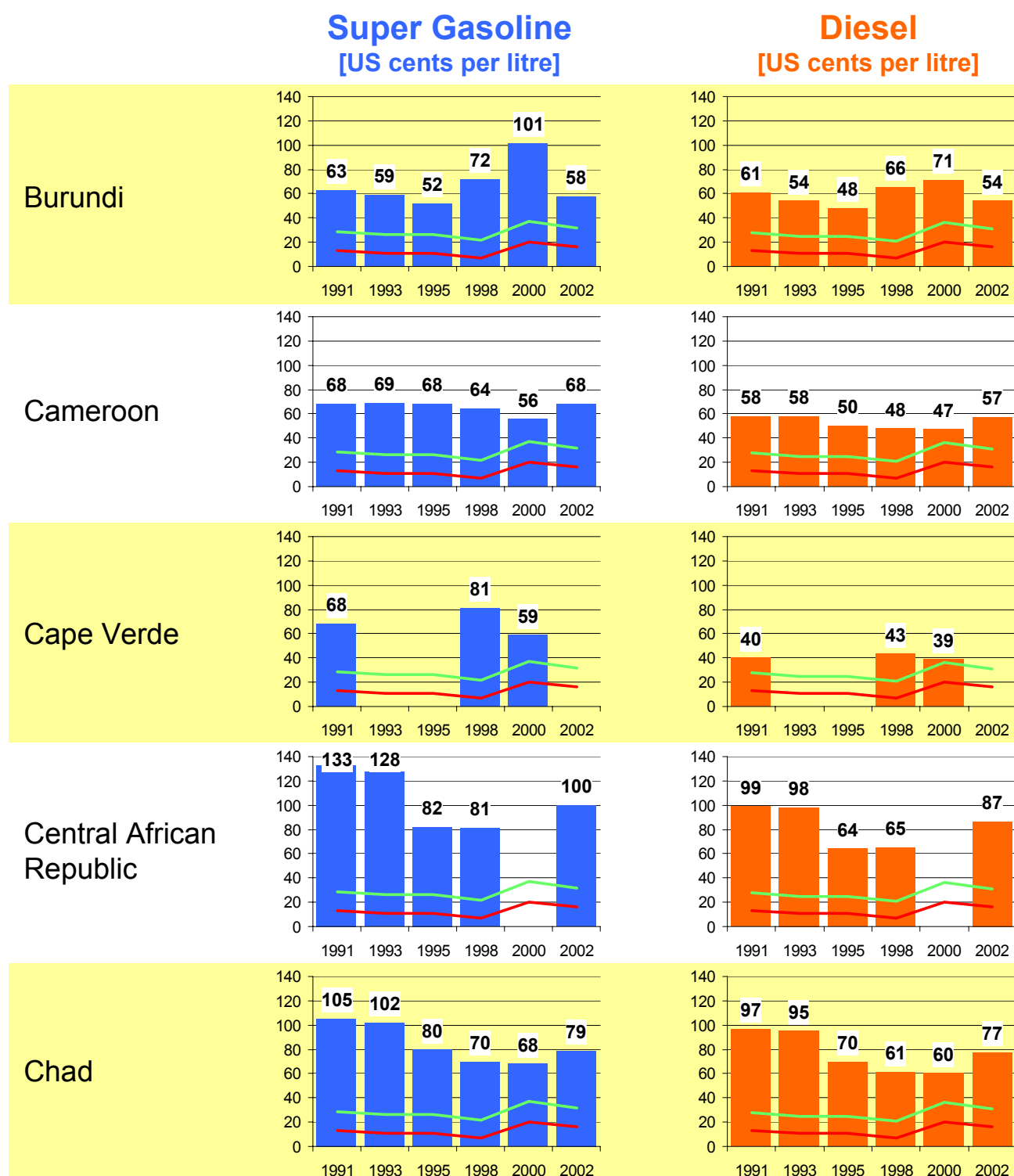


- The **"Red Base Line"** represents the world market price for crude oil (North Sea Brent) at Rotterdam port at time of survey.
- The **"Green Base Line"** represents the hypothetical sales price for refined and distributed PETROLEUM FUEL, if it were sold as a normal commercial commodity e.g. MINERAL WATER. Therefore the green line marks the border between fuel subsidy & taxation. This green line also applies to **oil producing countries**: assuming that the oil production could have been sold abroad, fuel prices are effectively subsidised at the expense of the country's energy sector.

Note: The graphs above show actual prices paid

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002]

3.1.3 Detailed Time Series of Fuel Prices in Africa 1991 – 2002 (from Burundi to Chad)

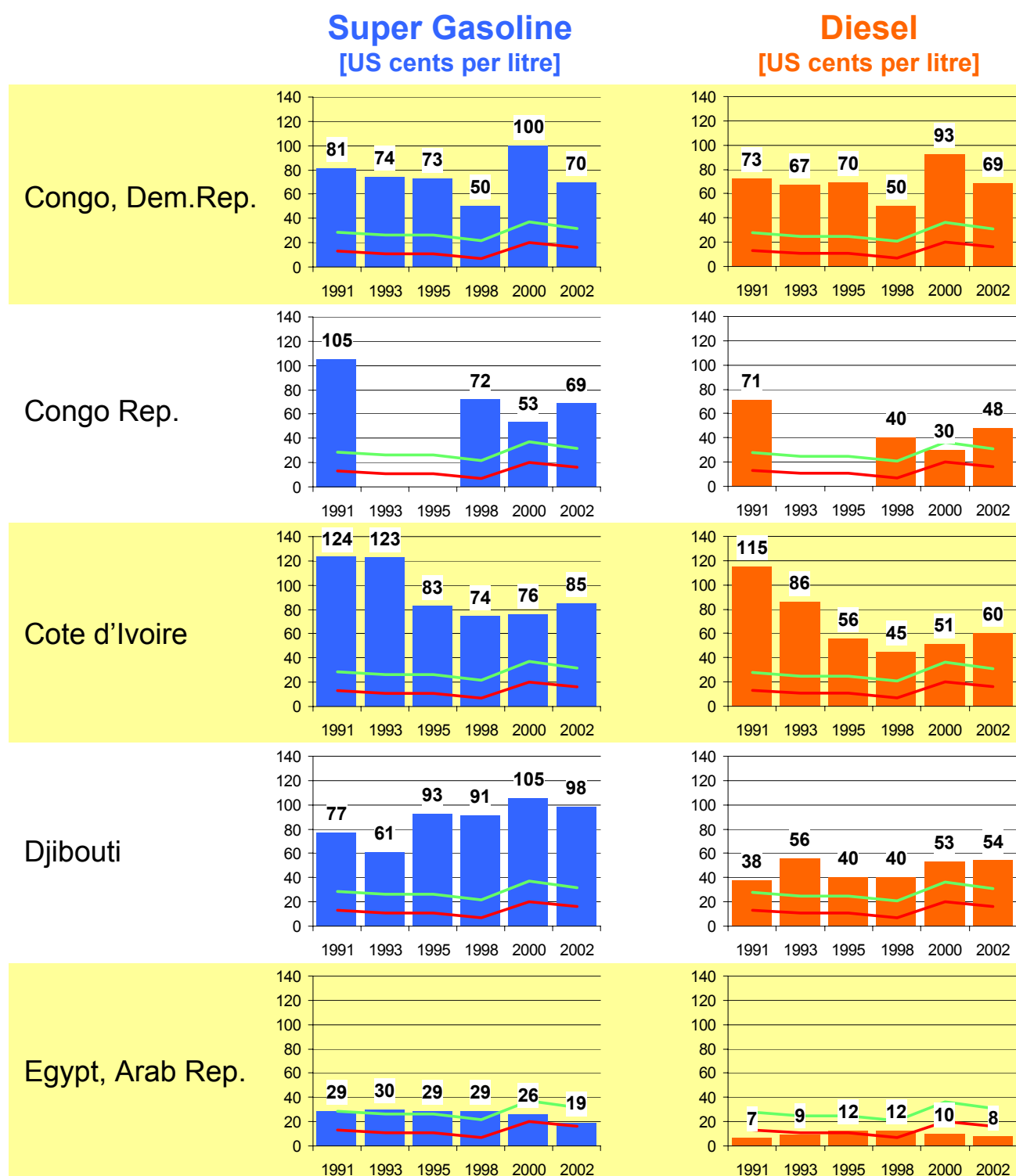


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Note: The graphs above show actual prices paid

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002]

3.1.3 Detailed Time Series of Fuel Prices in Africa 1991 – 2002 (from Congo to Egypt)

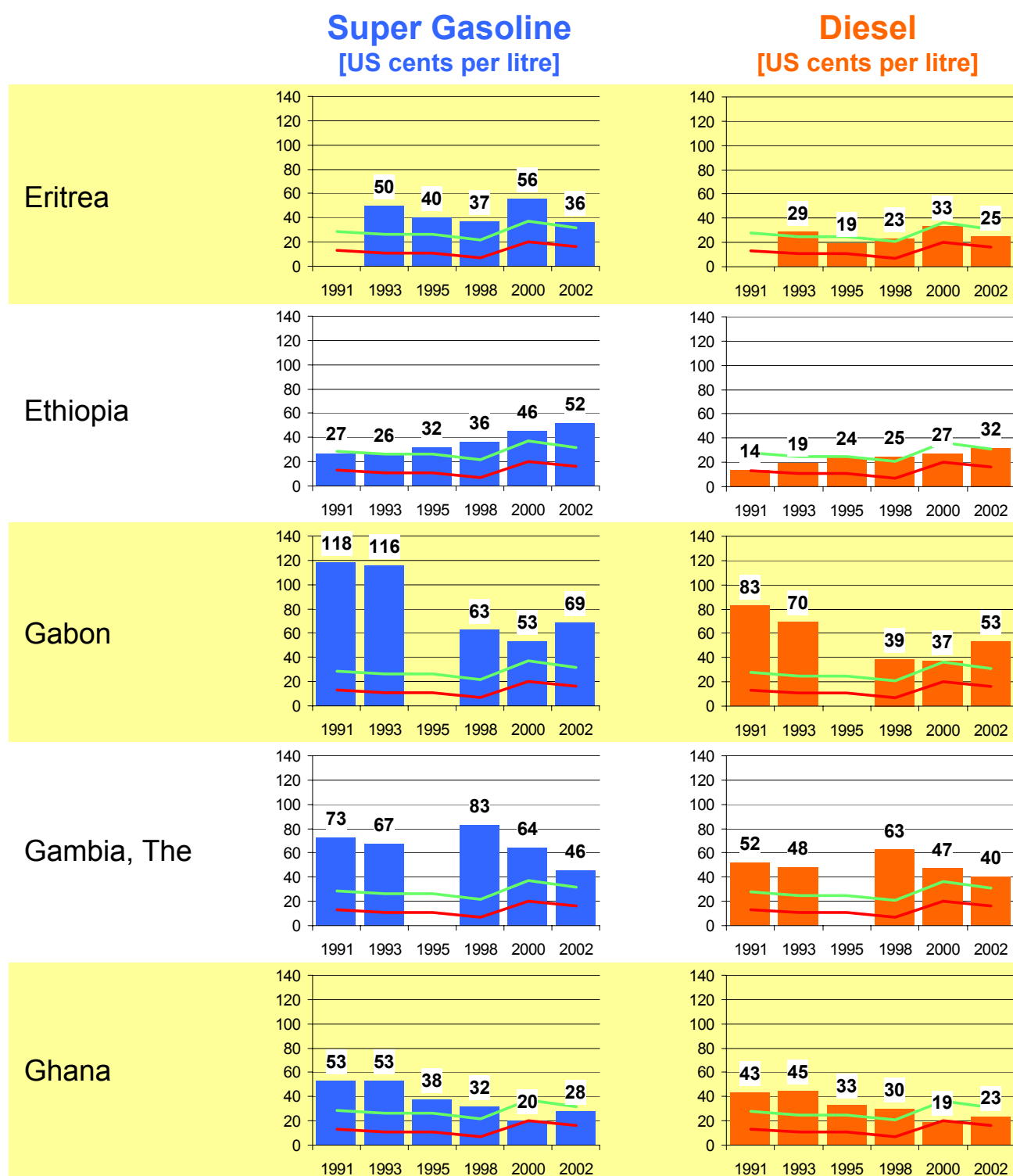


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Note: The graphs above show actual prices paid

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002]

3.1.3 Detailed Time Series of Fuel Prices in Africa 1991 – 2002 (from Eritrea to Ghana)

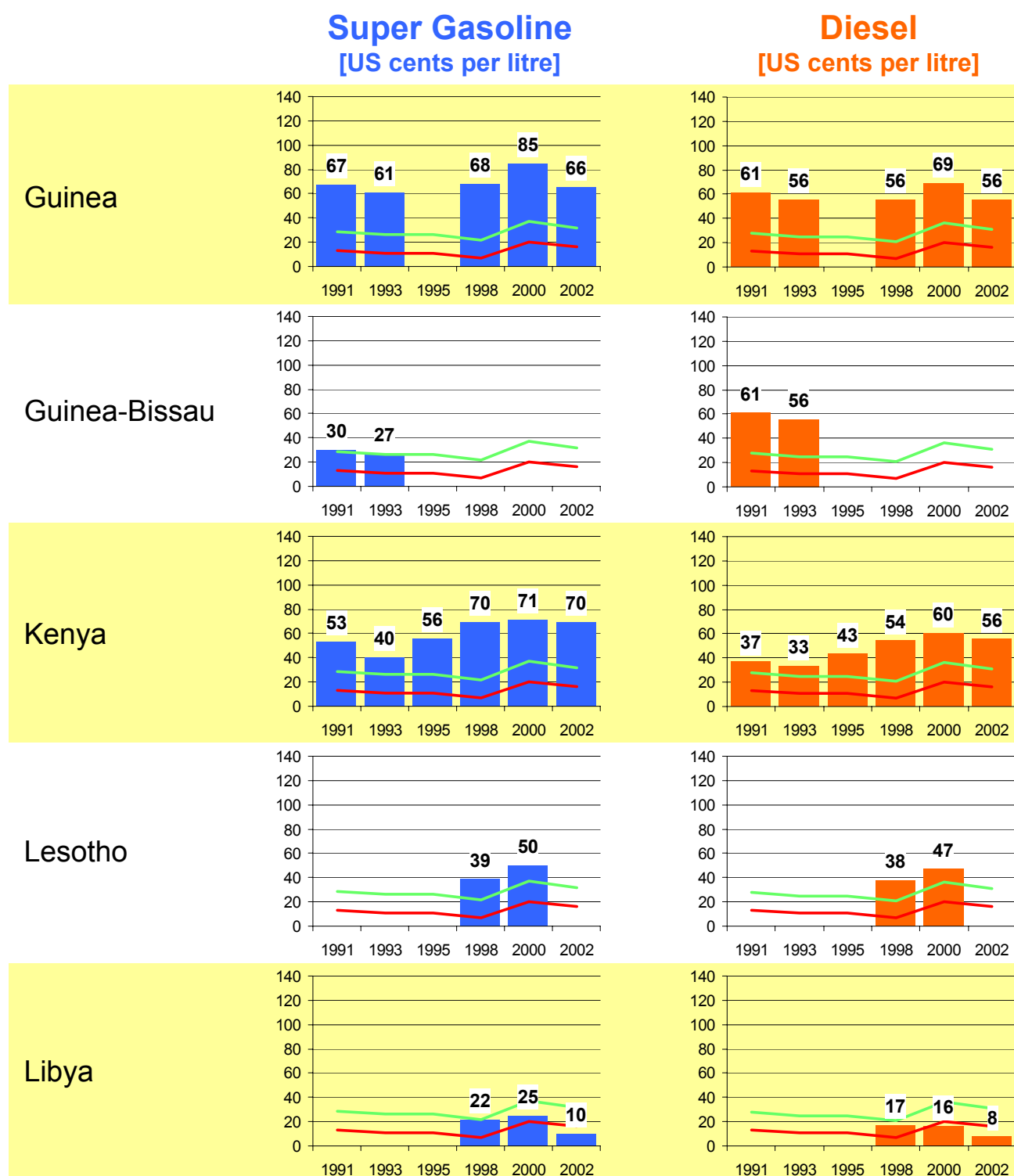


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3.1.3 Detailed Time Series of Fuel Prices in Africa 1991 – 2002 (from Guinea to Libya)

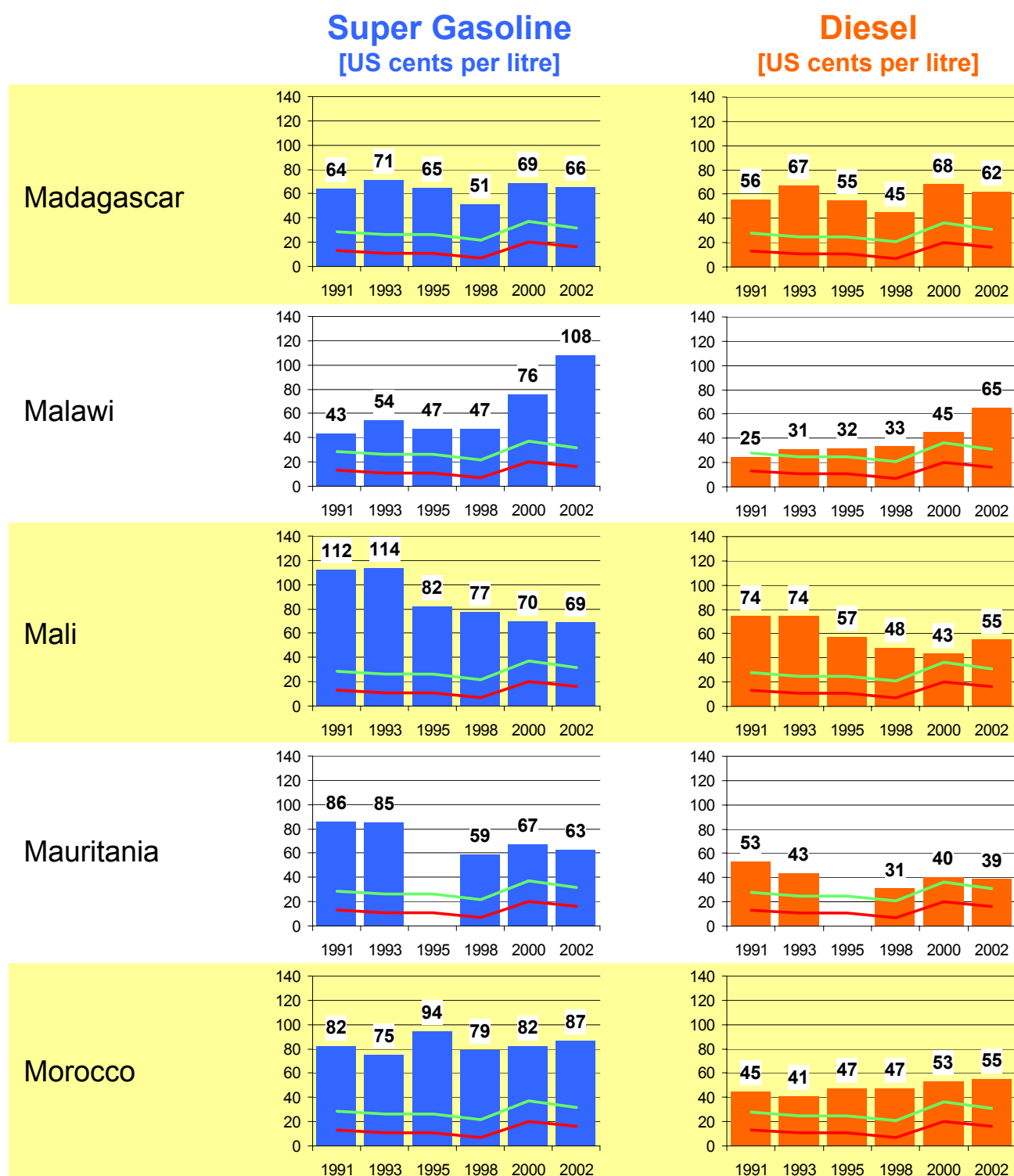


- The **"Red Base Line"** represents the world market price for crude oil (North Sea Brent) at Rotterdam port at time of survey.
- The **"Green Base Line"** represents the hypothetical sales price for refined and distributed PETROLEUM FUEL, if it were sold as a normal commercial commodity e.g. MINERAL WATER. Therefore the green line marks the border between fuel subsidy & taxation. This green line also applies to **oil producing countries**: assuming that the oil production could have been sold abroad, fuel prices are effectively subsidised at the expense of the country's energy sector.

Note: The graphs above show actual prices paid

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002]

3.1.3 Detailed Time Series of Fuel Prices in Africa 1991 – 2002 (from Madagascar to Morocco)

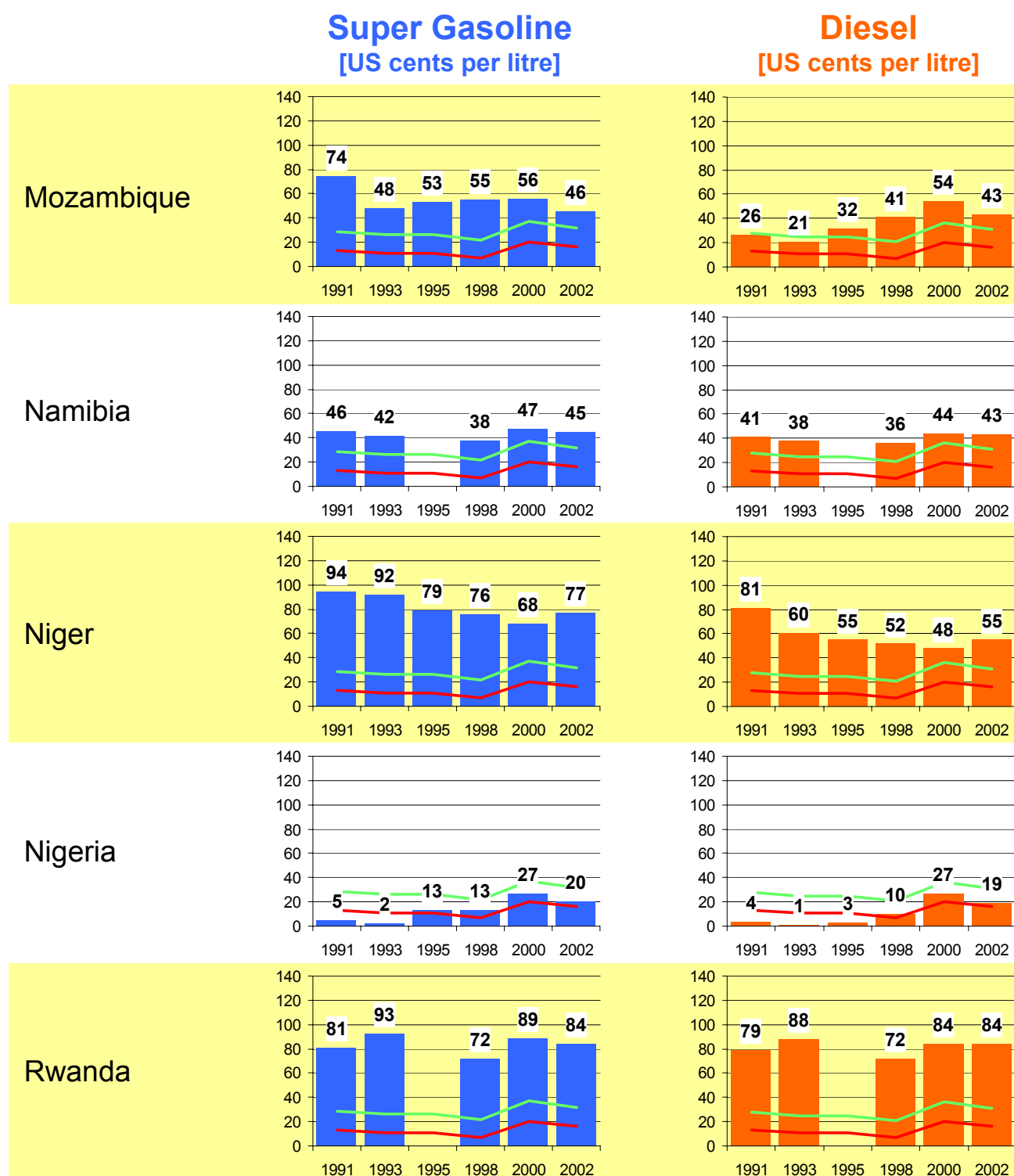


- The **"Red Base Line"** represents the world market price for crude oil (North Sea Brent) at Rotterdam port at time of survey.
- The **"Green Base Line"** represents the hypothetical sales price for refined and distributed PETROLEUM FUEL, if it were sold as a normal commercial commodity e.g. MINERAL WATER. Therefore the green line marks the border between fuel subsidy & taxation. This green line also applies to **oil producing countries**: assuming that the oil production could have been sold abroad, fuel prices are effectively subsidised at the expense of the country's energy sector.

Note: The graphs above show actual prices paid

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002]

3.1.3 Detailed Time Series of Fuel Prices in Africa 1991 – 2002 (from Mozambique to Rwanda)

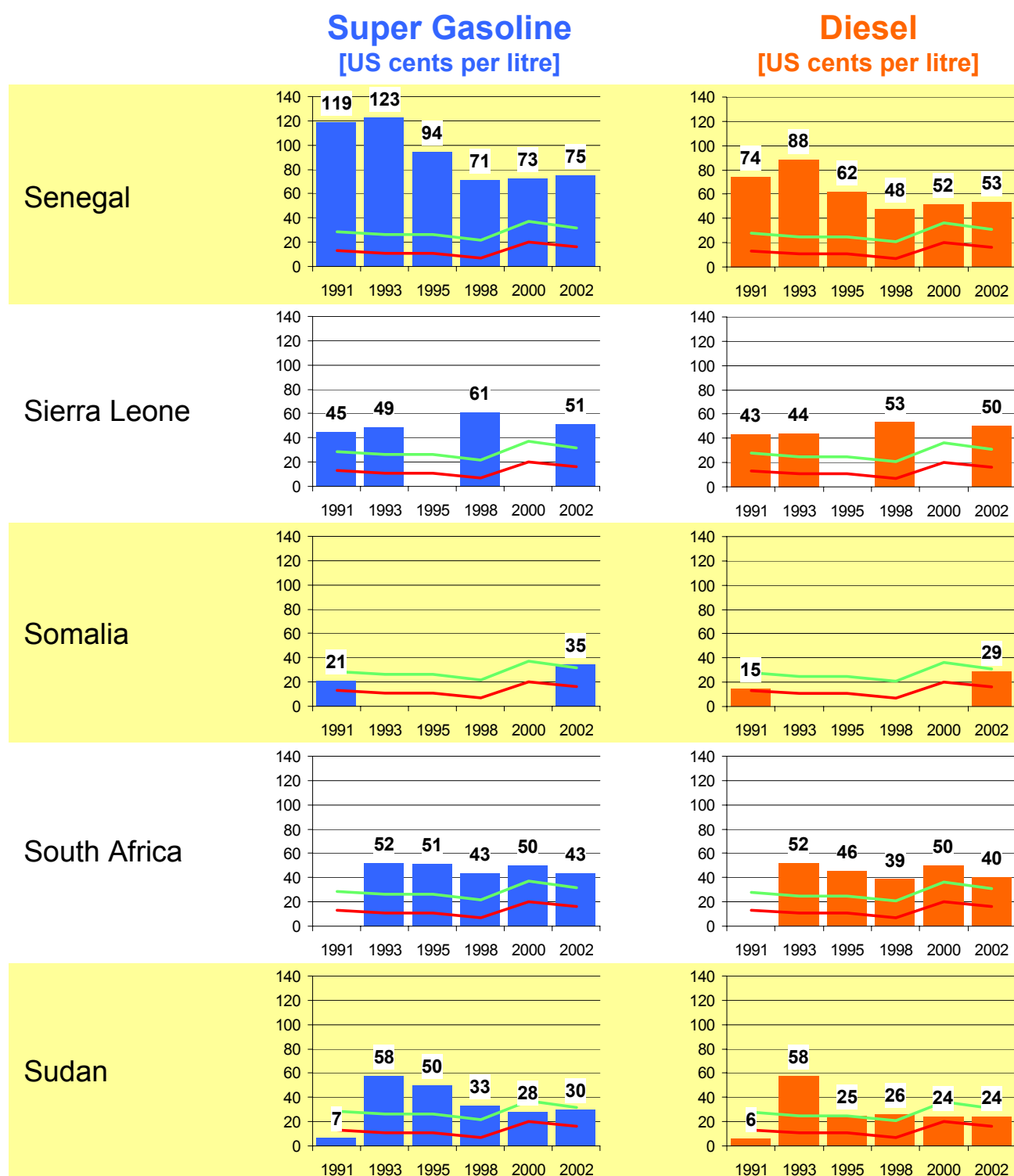


- The **“Red Base Line”** represents the world market price for crude oil (North Sea Brent) at Rotterdam port at time of survey.
- The **“Green Base Line”** represents the hypothetical sales price for refined and distributed PETROLEUM FUEL, if it were sold as a normal commercial commodity e.g. MINERAL WATER. Therefore the green line marks the border between fuel subsidy & taxation. This green line also applies to **oil producing countries**: assuming that the oil production could have been sold abroad, fuel prices are effectively subsidised at the expense of the country's energy sector.

Note: The graphs above show actual prices paid

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002]

3.1.3 Detailed Time Series of Fuel Prices in Africa 1991 – 2002 (from Senegal to Sudan)

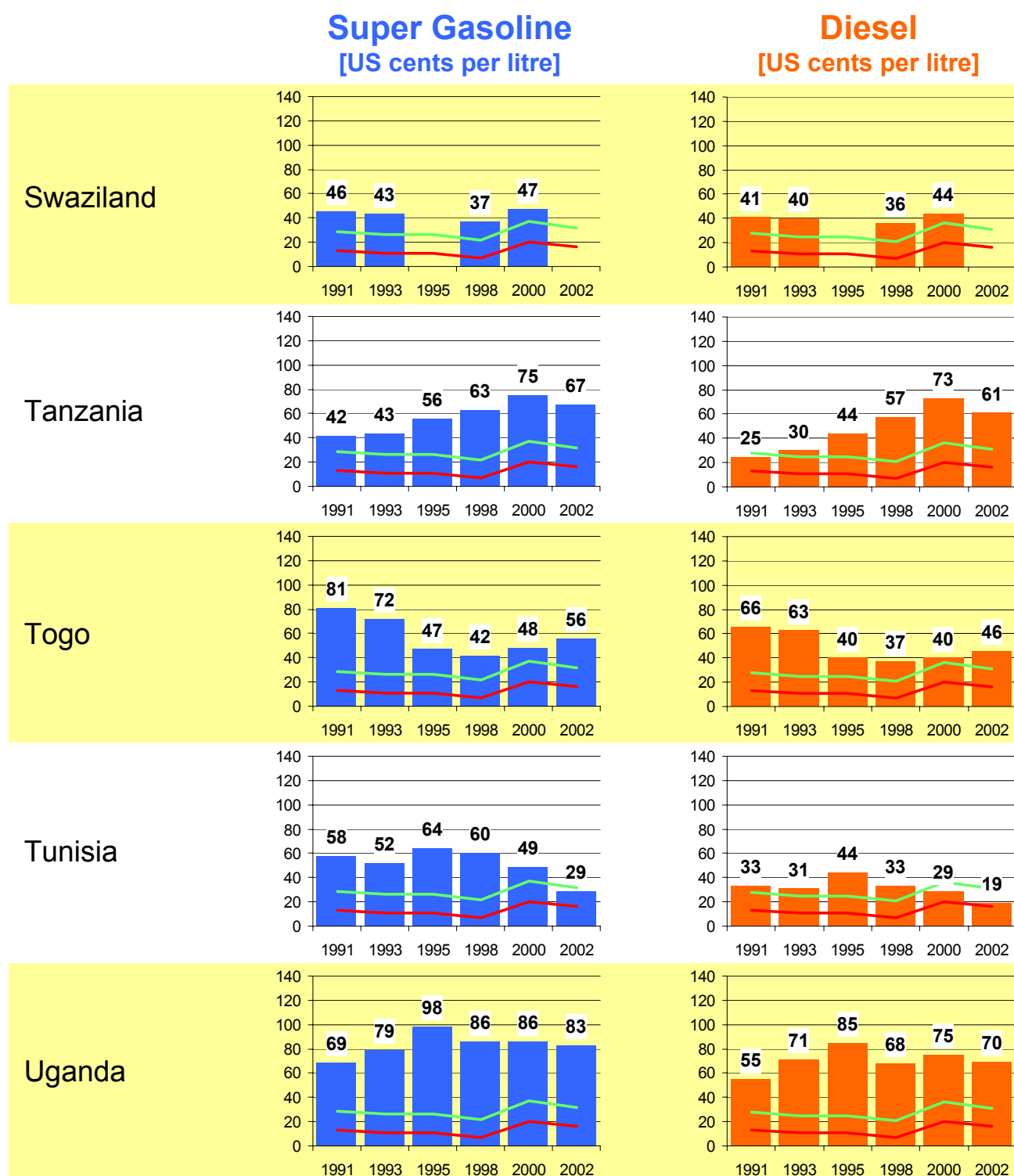


- The **“Red Base Line”** represents the world market price for crude oil (North Sea Brent) at Rotterdam port at time of survey.
- The **“Green Base Line”** represents the hypothetical sales price for refined and distributed PETROLEUM FUEL, if it were sold as a normal commercial commodity e.g. MINERAL WATER. Therefore the green line marks the border between fuel subsidy & taxation. This green line also applies to **oil producing countries**: assuming that the oil production could have been sold abroad, fuel prices are effectively subsidised at the expense of the country's energy sector.

Note: The graphs above show actual prices paid

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002]

3.1.3 Detailed Time Series of Fuel Prices in Africa 1991 – 2002 (from Swaziland to Uganda)

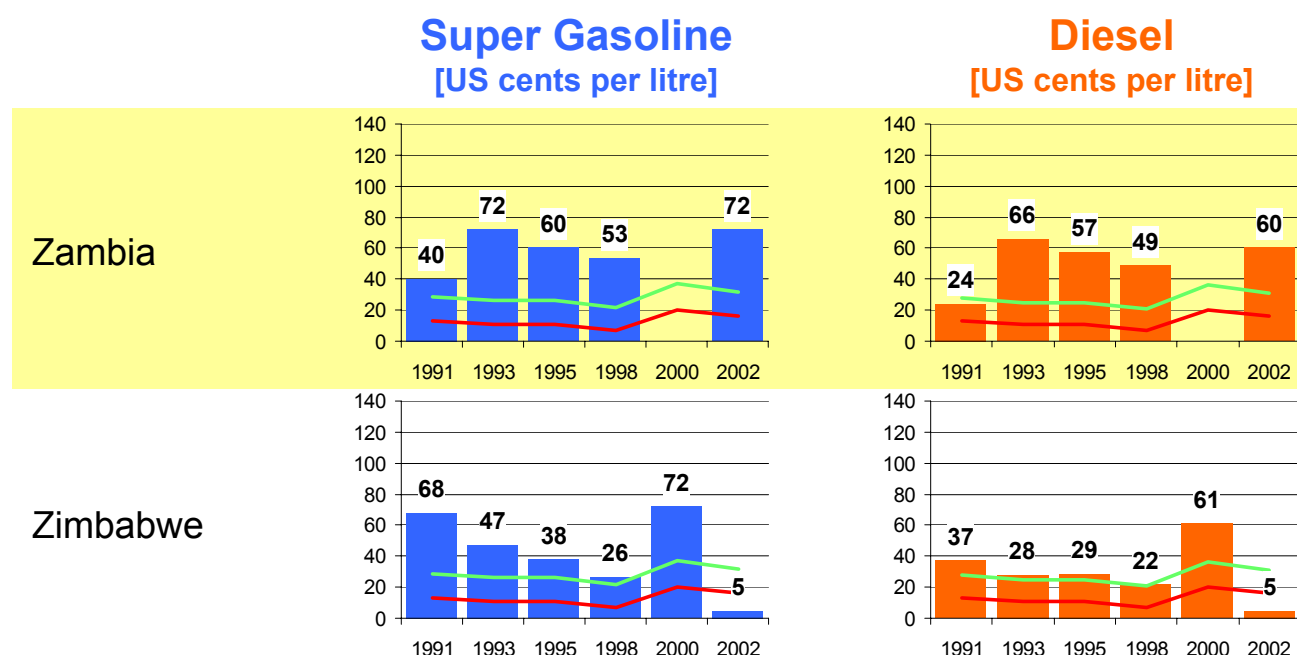


- The **“Red Base Line”** represents the world market price for crude oil (North Sea Brent) at Rotterdam port at time of survey.
- The **“Green Base Line”** represents the hypothetical sales price for refined and distributed PETROLEUM FUEL, if it were sold as a normal commercial commodity e.g. MINERAL WATER. Therefore the green line marks the border between fuel subsidy & taxation. This green line also applies to **oil producing countries**: assuming that the oil production could have been sold abroad, fuel prices are effectively subsidised at the expense of the country's energy sector.

Note: The graphs above show actual prices paid

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002]

3.1.3 Detailed Time Series of Fuel Prices in Africa 1991 – 2002 (from Zambia to Zimbabwe)

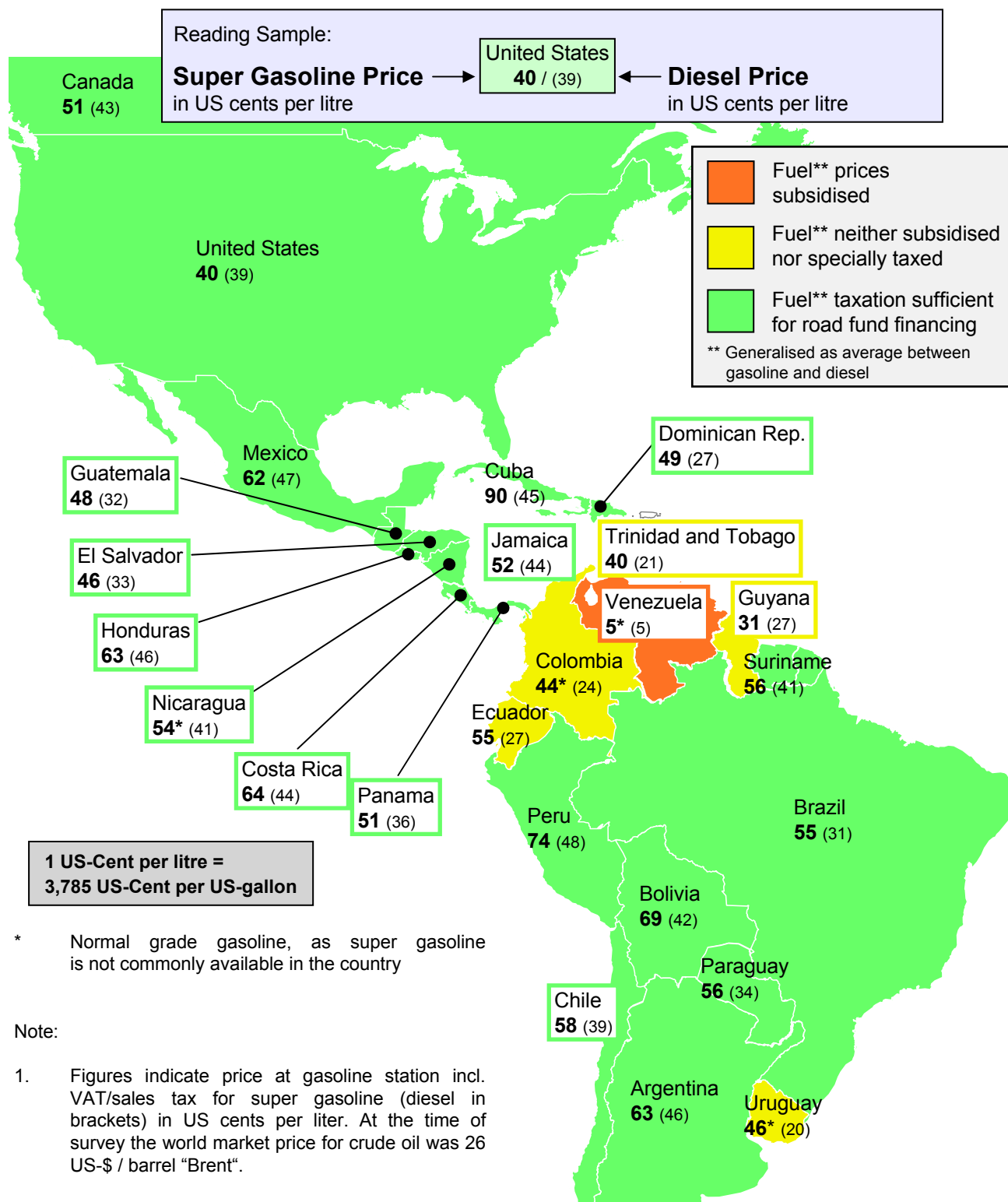


- The “Red Base Line” represents the world market price for crude oil (North Sea Brent) at Rotterdam port at time of survey.
- The “Green Base Line” represents the hypothetical sales price for refined and distributed PETROLEUM FUEL, if it were sold as a normal commercial commodity e.g. MINERAL WATER. Therefore the green line marks the border between fuel subsidy & taxation. This green line also applies to **oil producing countries**: assuming that the oil production could have been sold abroad, fuel prices are effectively subsidised at the expense of the country’s energy sector.

Note: The graphs above show actual prices paid

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002]

3.2 Fuel Prices in America as of 10 December 2002



Note:

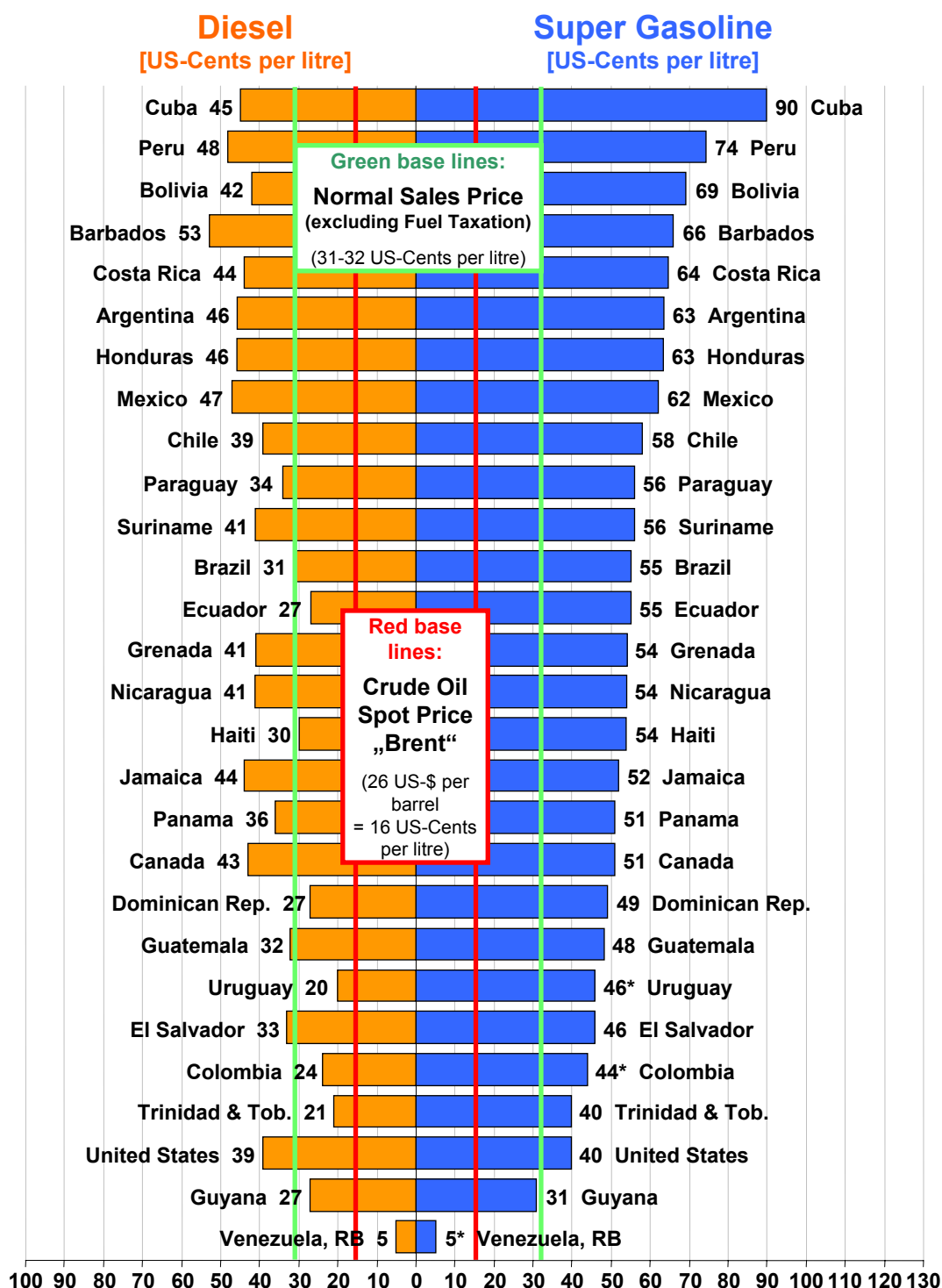
- Figures indicate price at gasoline station incl. VAT/sales tax for super gasoline (diesel in brackets) in US cents per liter. At the time of survey the world market price for crude oil was 26 US-\$ / barrel "Brent".
- Cross check on cost recovery of fuel prices:

	Diesel US cents per litre	Super Gasoline US cents per litre
Crude oil price (US\$ 26 / 159 litre)	16	16
+ Refinery and distribution costs; Industry and dealer margins	10 – 12	11 – 13
+ VAT/Sales Tax of 10 – 20 % of the Normal Sales Price	3 – 6	3 – 6
= "Normal Sales Price" excluding fuel taxation	31 (29 – 34)	32 (30 – 35)

[Source: Metschies, gtz survey Dec. 2002 / Dec. 2003]

update: 09.Dec.2003

3.2.1 Comparison of Fuel Prices in America as of 10 December 2002



1 US-Cent per litre =
3,785 US-Cent per US-gallon

* Normal grade gasoline, as super gasoline is not commonly available in the country

Note: The **“Red Base Line”** represents the world market price for crude oil (North Sea Brent) at Rotterdam port on 10th December 2002. This price was by chance roughly the average crude oil price during the year 2002.

The **“Green Base Line”** represents the hypothetical sales price for refined and distributed PETROLEUM FUEL, if it were sold as a normal commercial commodity e.g. MINERAL WATER. Therefore the green line marks the border between fuel subsidy & taxation. This green line also applies to **oil producing countries**: assuming that the oil production could have been sold abroad, fuel prices are effectively subsidised at the expense of the country's energy sector.

[Source: Metschies, gtz survey Dec. 2002 / Dec. 2003]

update: 09.Dec.2003

3.2.2 Time Series of Fuel Prices in America

Survey Table 1991 - 2002

Fuel Prices in US-Cents per Litre (actual prices paid)													
	Diesel						Super Gasoline						
	1991	1993	1995	1998	2000	2002	1991	1993	1995	1998	2000	2002	
Red Base Line World Market Crude Oil**	13*	11*	11*	7	20	16	13*	11*	11*	7	20	16	
Green Base Line Normal Sales Price	28	25	25	21	36	31	29	26	26	22	37	32	
Country	1991	1993	1995	1998	2000	2002	1991	1993	1995	1998	2000	2002	Source & Date of 2002
													Source Date
Antigua and Barbuda					56						56		
Argentina		29	28	42	52	46***		79	60	94	107	63***	GTZ Dec 2003
Barbados				62	75	53				72	95	66	OLADE Jun 2002
Bolivia		35	31	35	50	42		43	38	53	80	69	GTZ Dec 2002
Brazil		38	39	34	34	31		53	63	80	92	55	GTZ Dec 2002
Canada		39	36	39	47	43		47	45	41	58	51	ADAC Dec 2002
Chile		31	33	29	47	39		43	53	49	64	58	GTZ Dec 2002
Colombia		19	27	20	35	24		23	35	24	49	44	GTZ Dec 2002
Costa Rica						44						64	GTZ Dec 2002
Cuba				18		45				50		90	Embassy Dec 2002
Dominican Republic			28	22	39	27			40	40	71	49	GTZ Dec 2002
Ecuador		19	28	24	18	27***		31	33	38	31	55***	GTZ Dec 2003
El Salvador				30	40	33				54	67	46	GTZ Dec 2002
Fiji				37						50			
Grenada				41	41	41				54	54	54	OLADE Jun 2002
Guatemala		25	28	32	42	32		32	39	41	53	48	OLADE Jul 2002
Guyana				27	37	27				30	37	31	OLADE Jun 2002
Haiti				36	35	30				59	64	54	OLADE Jun 2002
Honduras		26	25	30	46	46		41	35	50	62	63	GTZ Dec 2002
Jamaica				33	49	44				37	62	52	OLADE Jun 2002
Mexico		28	25	28	45	47		39	32	36	61	62	GTZ Dec 2002
Nicaragua		30	31	35	54	41		69	62	47	62	54	OLADE Jul 2002
Panama		30		28	41	36		43		41	53	51	GTZ Dec 2002
Paraguay		27	28	24	34	34		43	44	47	72	56	GTZ Dec 2002
Peru		32	43	33	54	48***		56	68	55	80	74***	GTZ Dec 2003
Puerto Rico				32						34			
Sao Tomé and Príncipe					71						90		
Suriname				41	41	41				56	56	56	OLADE Jun 2002
Trinidad and Tobago				20	20	21				39	39	40	Embassy Dec 2002
United States		28	33	27	48	39		32	34	32	47	40	ADAC Dec 2002
Uruguay			38	42	53	20			89	90	119	46	ADAC Dec 2002
Venezuela, RB			1	8	6	5			3	14	12	5	GTZ Dec 2002

* Annual average crude oil price used

** Crude oil prices are noted in US cents per litre in the above table. Crude oil prices per barrel:
US-\$ 20 (1991), US-\$ 17 (1993 & 1995), US-\$ 11 (1998), US-\$ 31 (2000), US-\$ 26 (2002)

*** 2003

1 US-Cent per litre =
3,785 US-Cent per US-gallon

update: 09.Dec.2003

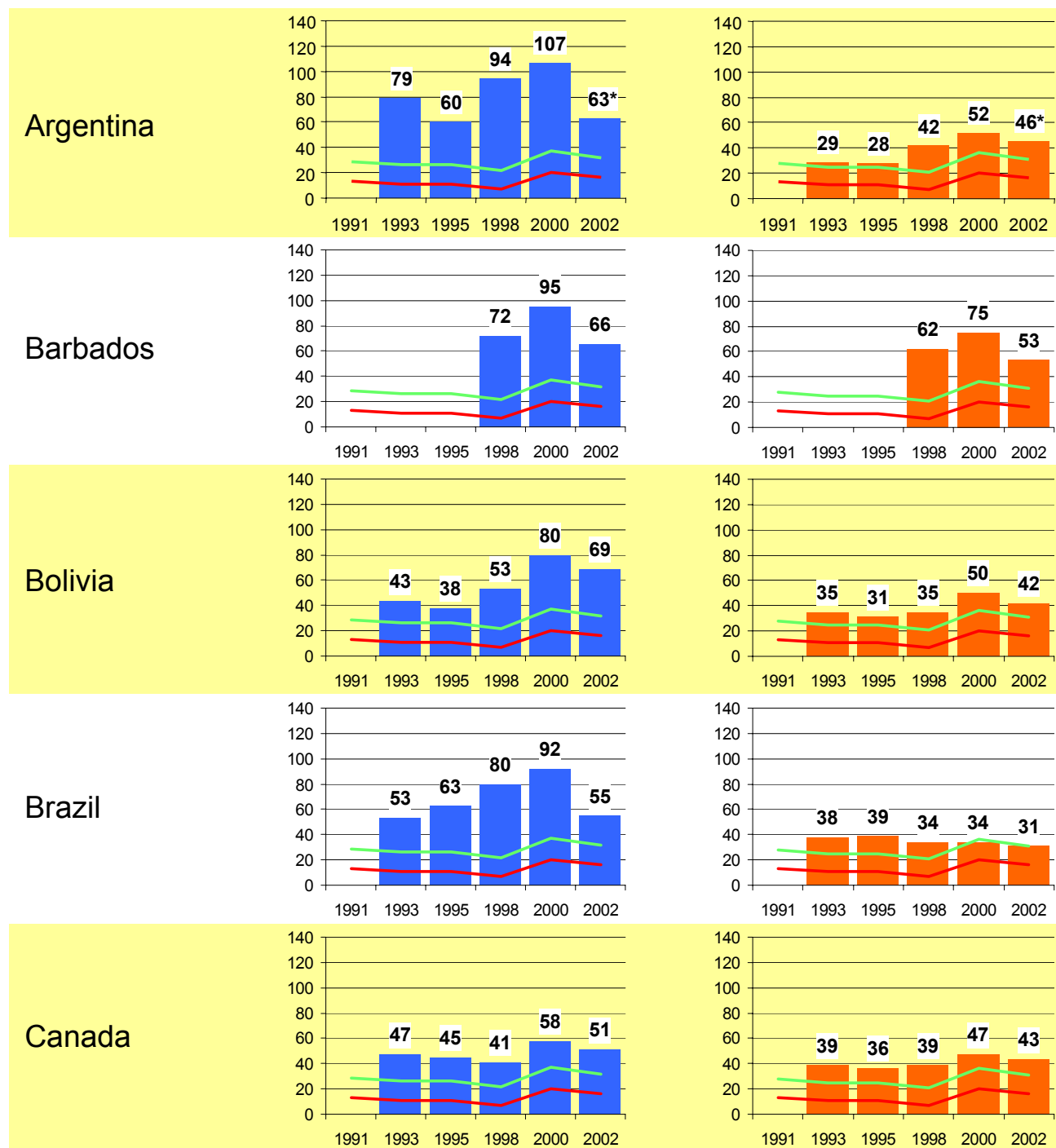
[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002, 2003]

3.2.3 Detailed Time Series of Fuel Prices in America 1991 – 2002 (from Argentina to Canada)

1 US-Cent per litre =
3,785 US-Cent per US-gallon

Super Gasoline [US cents per litre]

Diesel [US cents per litre]



- The **Red Base Line** represents the world market price for crude oil (North Sea Brent) at Rotterdam port at time of survey.
- The **Green Base Line** represents the hypothetical sales price for refined and distributed PETROLEUM FUEL, if it were sold as a normal commercial commodity e.g. MINERAL WATER. Therefore the green line marks the border between fuel subsidy & taxation. This green line also applies to **oil producing countries**: assuming that the oil production could have been sold abroad, fuel prices are effectively subsidised at the expense of the country's energy sector.

* 2003

Note: The graphs above show actual prices paid

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002, 2003]

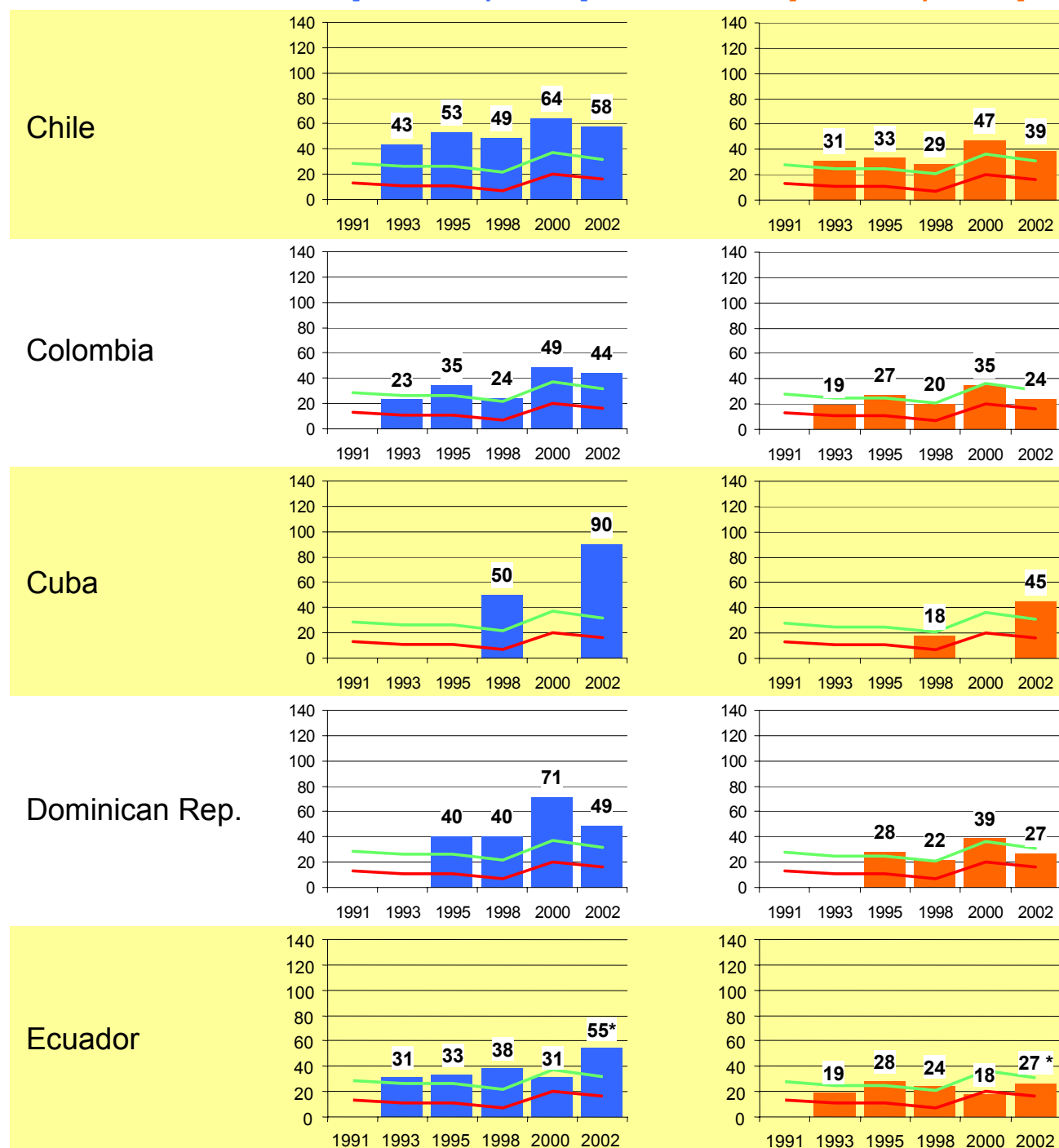
update: 09.Dec.2003

3.2.3 Detailed Time Series of Fuel Prices in America 1991 – 2002 (from Chile to Ecuador)

1 US-Cent per litre =
3,785 US-Cent per US-gallon

Super Gasoline [US-Cents per litre]

Diesel [US-Cents per litre]



— The “Red Base Line” represents the world market price for crude oil (North Sea Brent) at Rotterdam port at time of survey.

— The “Green Base Line” represents the hypothetical sales price for refined and distributed PETROLEUM FUEL, if it were sold as a normal commercial commodity e.g. MINERAL WATER. Therefore the green line marks the border between fuel subsidy & taxation. This green line also applies to **oil producing countries**: assuming that the oil production could have been sold abroad, fuel prices are effectively subsidised at the expense of the country's energy sector.

* 2003

Note: The graphs above show actual prices paid

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002, 2003]

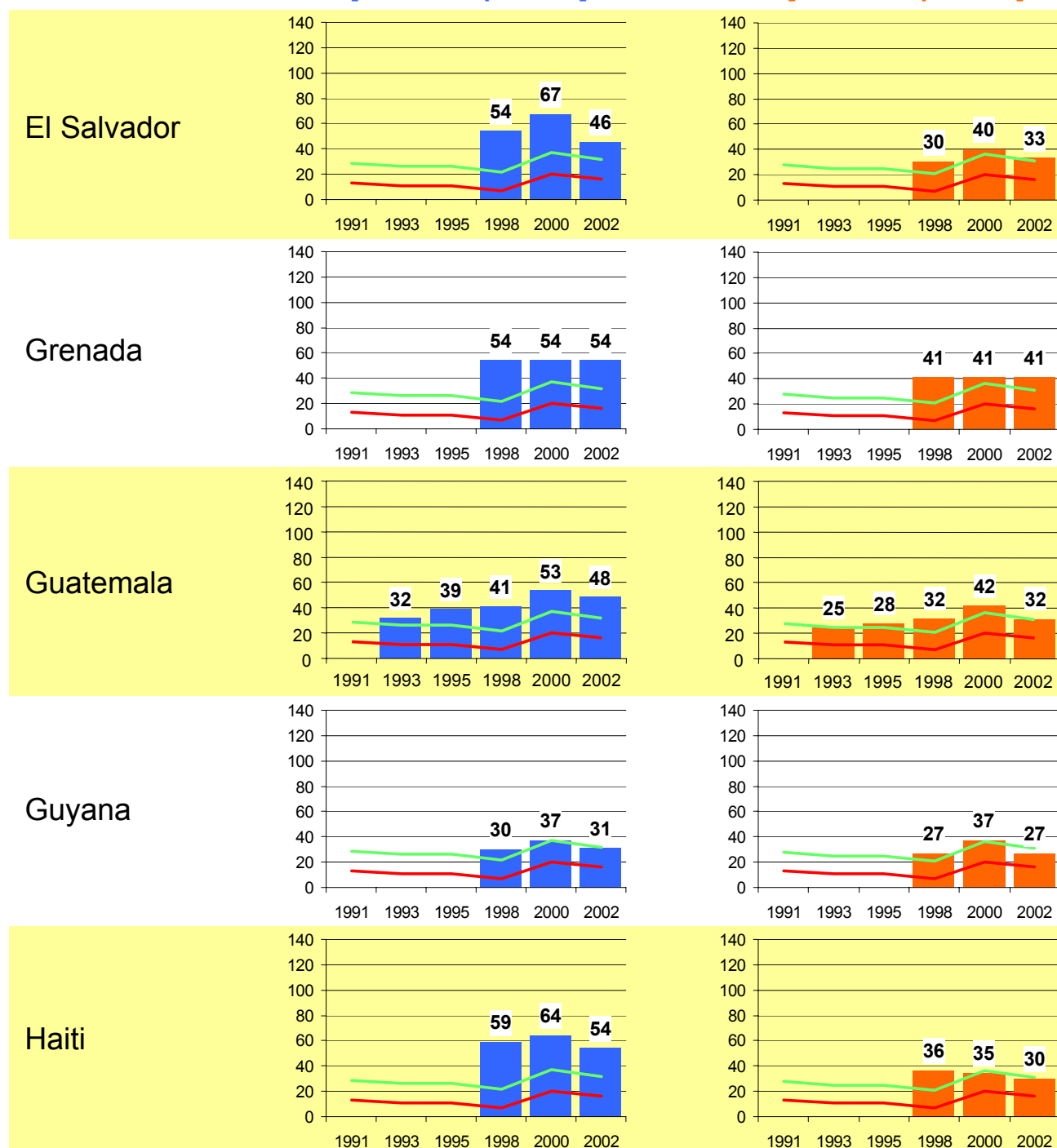
update: 09.Dec.2003

3.2.3 Detailed Time Series of Fuel Prices in America 1991 – 2002 (from El Salvador to Haiti)

1 US-Cent per litre =
3,785 US-Cent per US-gallon

Super Gasoline [US-Cents per litre]

Diesel [US-Cents per litre]



- The **Red Base Line** represents the world market price for crude oil (North Sea Brent) at Rotterdam port at time of survey.
- The **Green Base Line** represents the hypothetical sales price for refined and distributed PETROLEUM FUEL, if it were sold as a normal commercial commodity e.g. MINERAL WATER. Therefore the green line marks the border between fuel subsidy & taxation. This green line also applies to **oil producing countries**: assuming that the oil production could have been sold abroad, fuel prices are effectively subsidised at the expense of the country's energy sector.

Note: The graphs above show actual prices paid

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002]

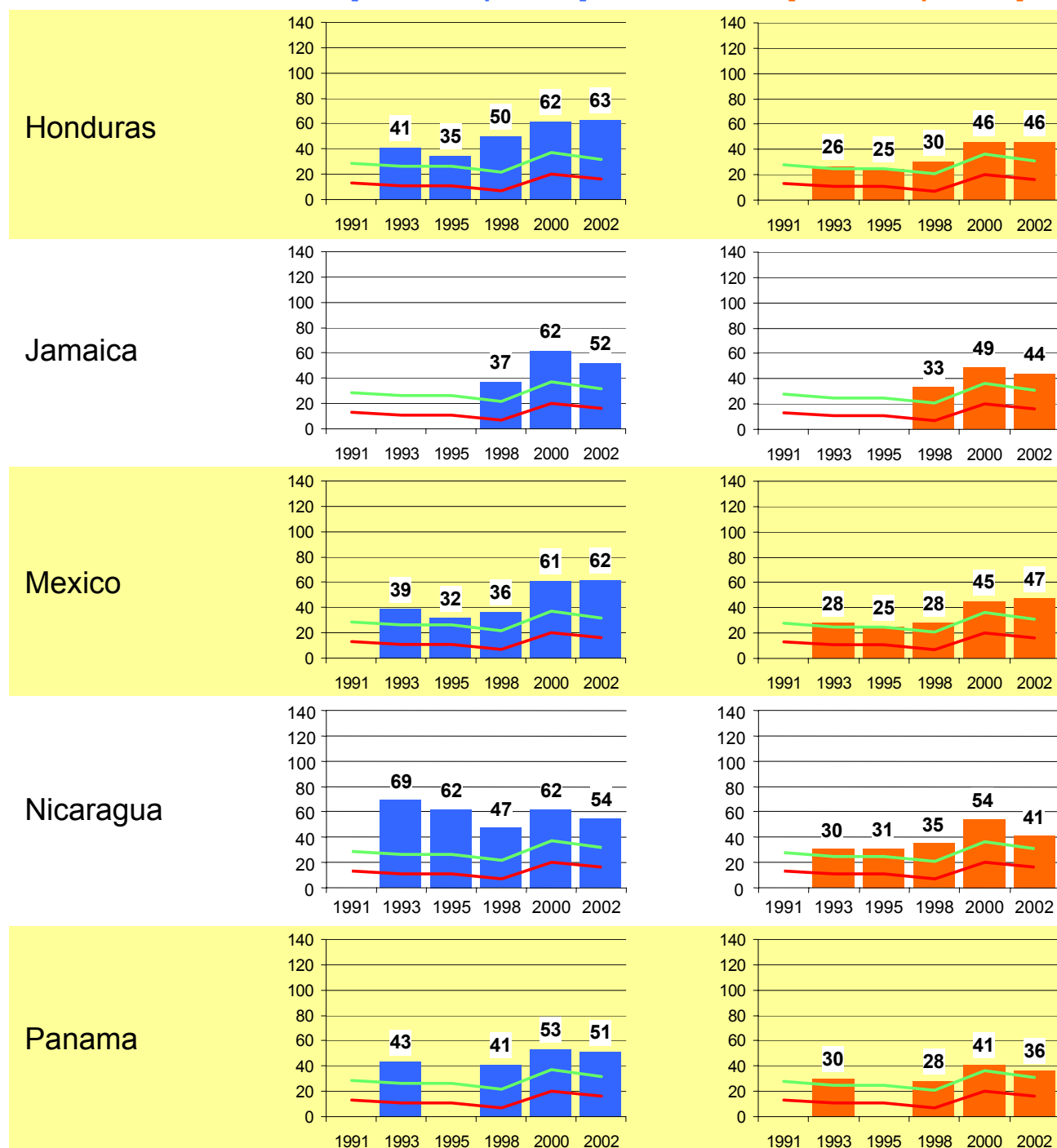
update: 09.Dec.2003

3.2.3 Detailed Time Series of Fuel Prices in America 1991 – 2002 (from Honduras to Panama)

1 US-Cent per litre =
3,785 US-Cent per US-gallon

Super Gasoline [US-Cents per litre]

Diesel [US-Cents per litre]



- The "Red Base Line" represents the world market price for crude oil (North Sea Brent) at Rotterdam port at time of survey.
- The "Green Base Line" represents the hypothetical sales price for refined and distributed PETROLEUM FUEL, if it were sold as a normal commercial commodity e.g. MINERAL WATER. Therefore the green line marks the border between fuel subsidy & taxation. This green line also applies to **oil producing countries**: assuming that the oil production could have been sold abroad, fuel prices are effectively subsidised at the expense of the country's energy sector.

Note: The graphs above show actual prices paid

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002]

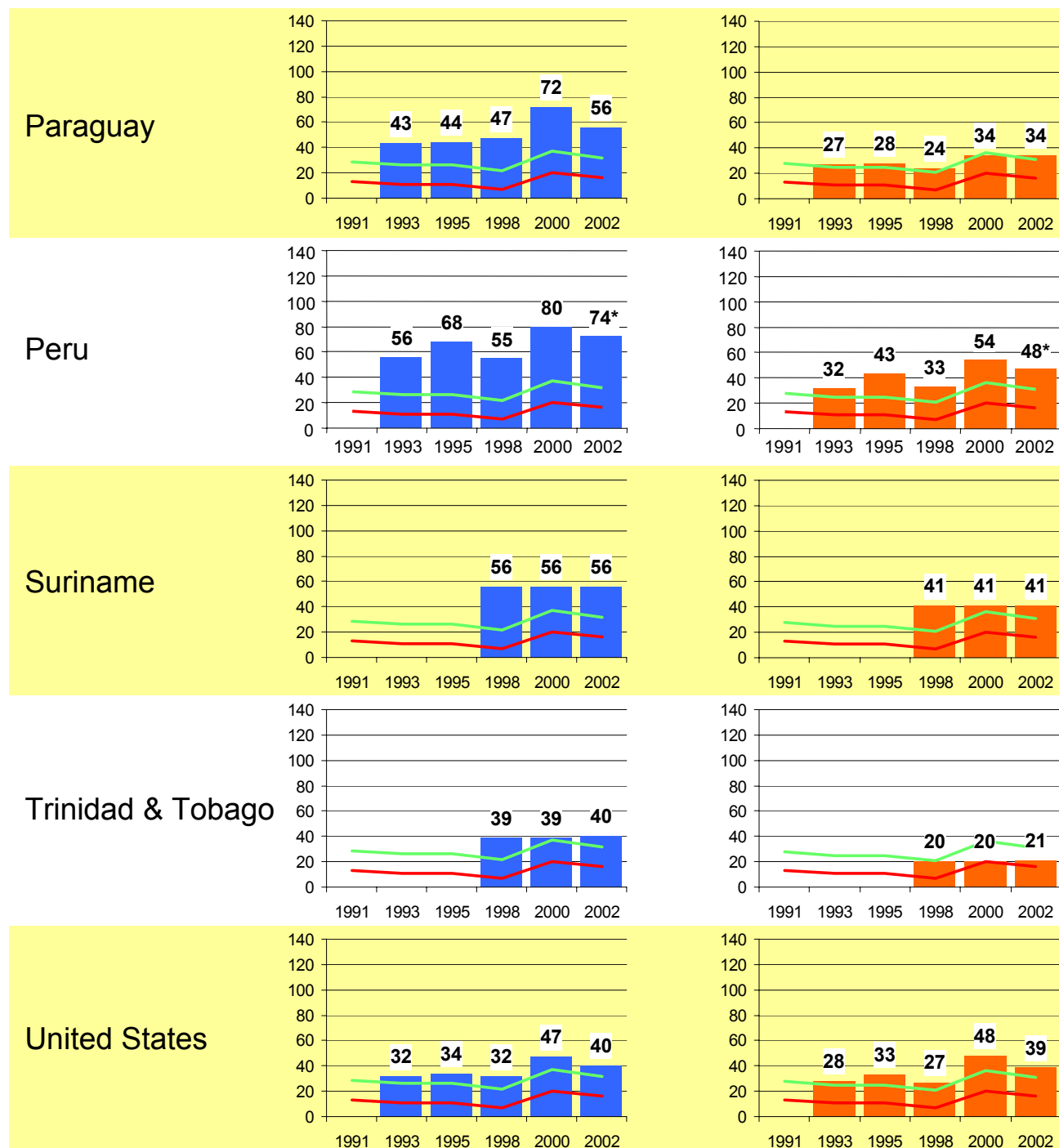
update: 09.Dec.2003

3.2.3 Detailed Time Series of Fuel Prices in America 1991 – 2002 (from Paraguay to United States)

1 US-Cent per litre =
3,785 US-Cent per US-gallon

Super Gasoline [US-Cents per litre]

Diesel [US-Cents per litre]



— The “Red Base Line” represents the world market price for crude oil (North Sea Brent) at Rotterdam port at time of survey.

— The “Green Base Line” represents the hypothetical sales price for refined and distributed PETROLEUM FUEL, if it were sold as a normal commercial commodity e.g. MINERAL WATER. Therefore the green line marks the border between fuel subsidy & taxation. This green line also applies to **oil producing countries**: assuming that the oil production could have been sold abroad, fuel prices are effectively subsidised at the expense of the country's energy sector.

* 2003

Note: The graphs above show actual prices paid

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002, 2003]

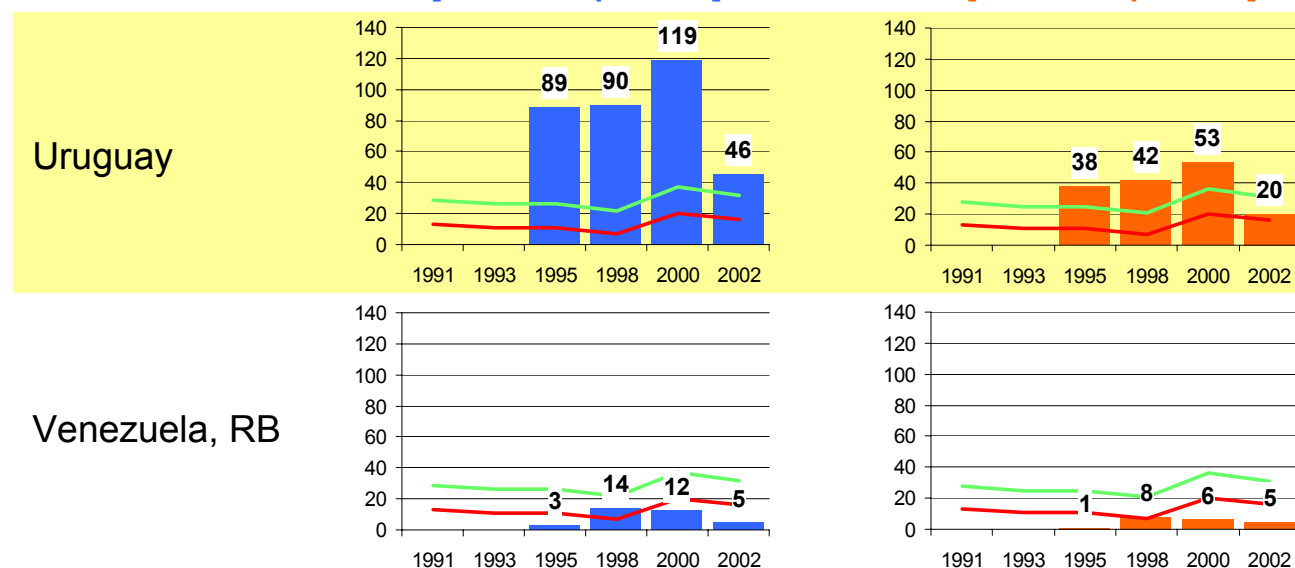
update: 09.Dec.2003

3.2.3 Detailed Time Series of Fuel Prices in America 1991 – 2002 (from Uruguay to Venezuela)

1 US-Cent per litre =
3,785 US-Cent per US-gallon

Super Gasoline [US-Cents per litre]

Diesel [US-Cents per litre]

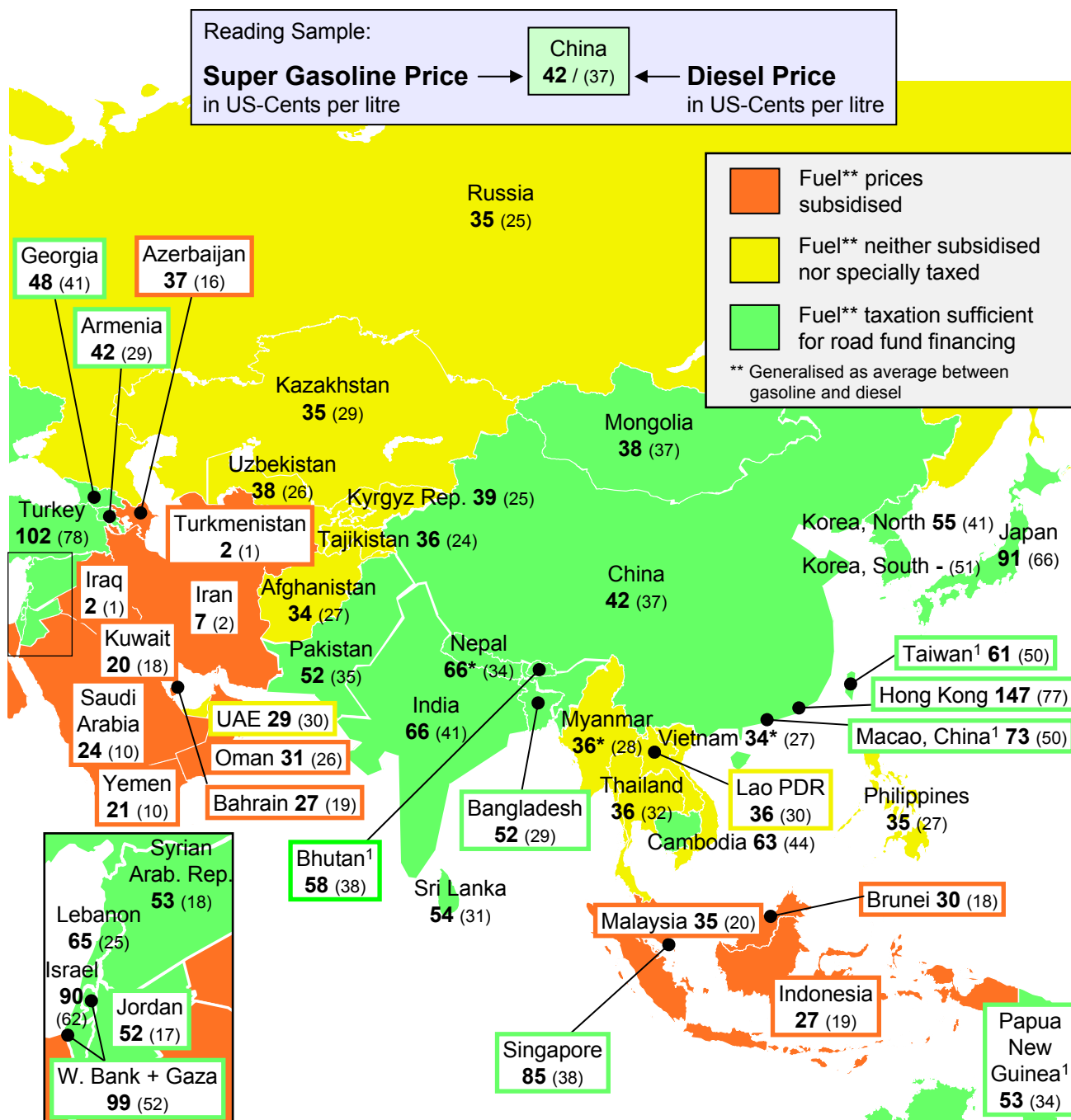


- The “Red Base Line” represents the world market price for crude oil (North Sea Brent) at Rotterdam port at time of survey.
- The “Green Base Line” represents the hypothetical sales price for refined and distributed PETROLEUM FUEL, if it were sold as a normal commercial commodity e.g. MINERAL WATER. Therefore the green line marks the border between fuel subsidy & taxation. This green line also applies to **oil producing countries**: assuming that the oil production could have been sold abroad, fuel prices are effectively subsidised at the expense of the country's energy sector.

Note: The graphs above show actual prices paid

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002]

3.3 Fuel Prices in Asia as of 10 December 2002



* Normal grade gasoline, as super gasoline is not commonly available in the country

¹ Figures are of 2000

Note:

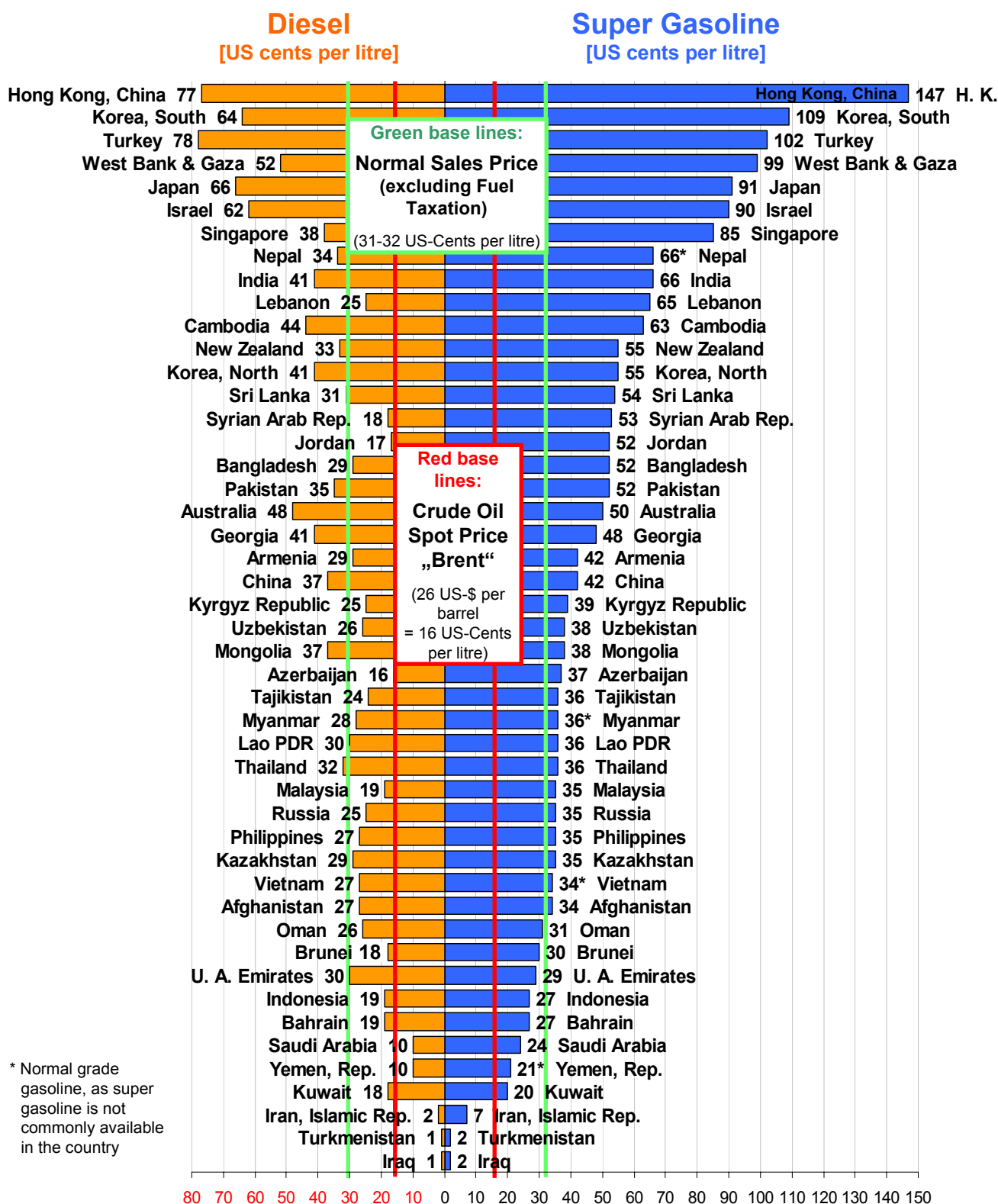
- Figures indicate price at gasoline station incl. VAT/sales tax for super gasoline (diesel in brackets) in US cents per liter. At the time of survey the world market price for crude oil was 26 US-\$ / barrel "Brent".

- Cross check on cost recovery of fuel prices:

	Diesel US cents per litre	Super Gasoline US cents per litre
Crude oil price (26 US-\$ / 159 litre)	16	16
+ Refinery and distribution costs; Industry and dealer margins	10 – 12	11 – 13
+ VAT/Sales Tax of 10 – 20 % of the Normal Sales Price	3 – 6	3 – 6
= "Normal Sales Price" excluding fuel taxation	31 (29 – 34)	32 (30 – 35)

[Source: Metschies, gtz survey Dec. 2002]

3.3.1 Comparison of Fuel Prices in Asia as of 10 December 2002



Note: The "Red Base Line" represents the world market price for crude oil (North Sea Brent) at Rotterdam port on 10th December 2002. This price was by chance roughly the average crude oil price during the year 2002.

The "Green Base Line" represents the hypothetical sales price for refined and distributed PETROLEUM FUEL, if it were sold as a normal commercial commodity e.g. MINERAL WATER. Therefore the green line marks the border between fuel subsidy & taxation. This green line also applies to oil producing countries: assuming that the oil production could have been sold abroad, fuel prices are effectively subsidised at the expense of the country's energy sector.

[Source: Metschies, gtz survey Dec. 2002]

3.3.2 Time Series of Fuel Prices in Asia

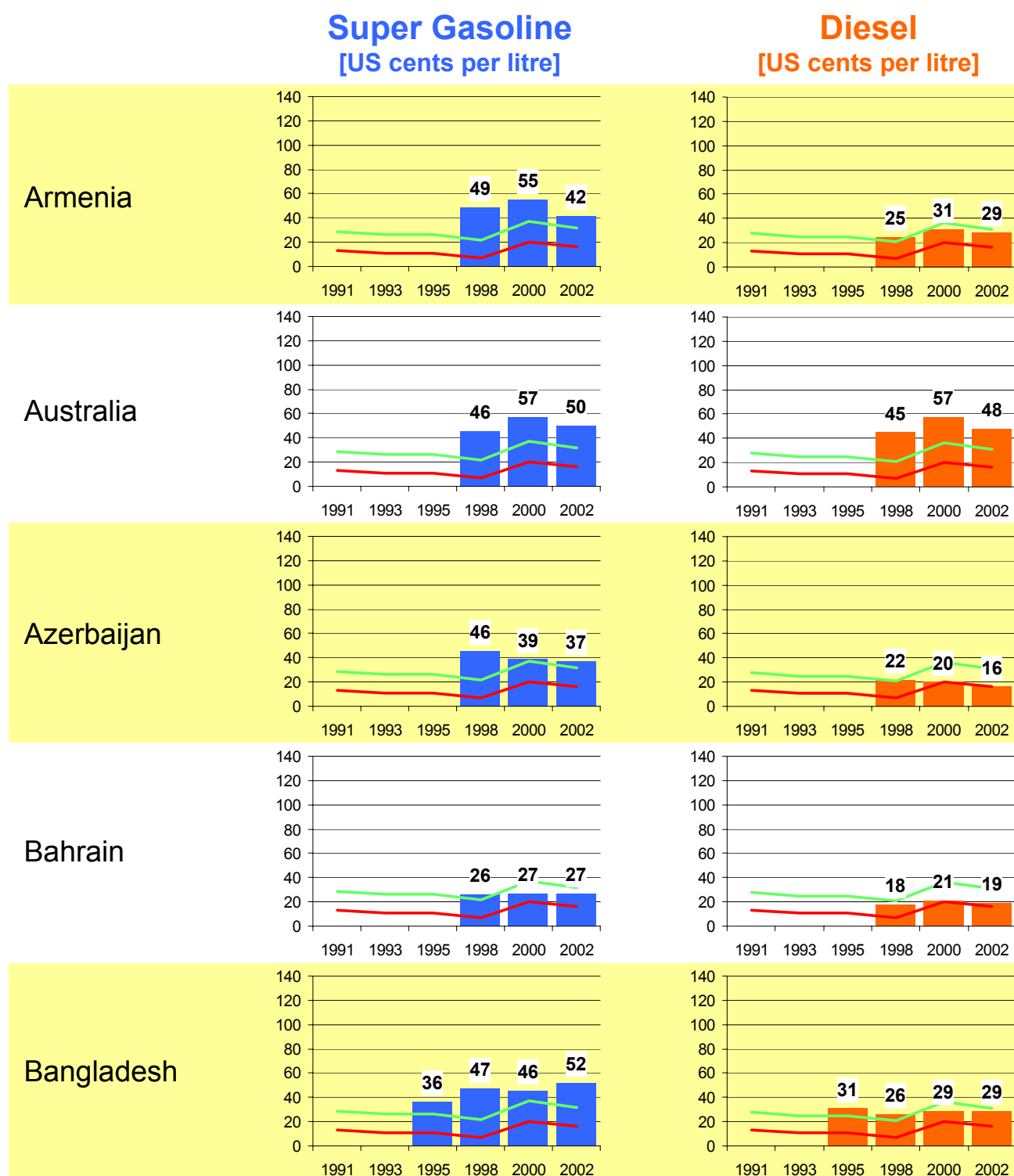
Survey Table 1991 - 2002

Fuel Prices in US Cents per Litre (actual prices paid)													
	Diesel						Super Gasoline						
	1991	1993	1995	1998	2000	2002	1991	1993	1995	1998	2000	2002	
Red Base Line	13*	11*	11*	7	20	16	13*	11*	11*	7	20	16	
World Market Crude Oil**													
Green Base Line	28	25	25	21	36	31	29	26	26	22	37	32	
Normal Sales Price													
Country	1991	1993	1995	1998	2000	2002	1991	1993	1995	1998	2000	2002	Source & Date of 2002 Data
													Source Date
Afghanistan						27						34	GTZ Dec 2002
Armenia				25	31	29				49	55	42	GTZ Dec 2002
Australia				45	57	48				46	57	50	ADAC Dec 2002
Azerbaijan				22	20	16				46	39	37	Embassy Dec 2002
Bahrain				18	21	19				26	27	27	Embassy Dec 2002
Bangladesh			31	26	29	29			36	47	46	52	GTZ Dec 2002
Bhutan				26	38					59	58		
Brunei				18	18	18				34	31	30	Embassy Dec 2002
Cambodia				28	44	44				47	61	63	GTZ Dec 2002
China			24	25	45	37			27	28	40	42	GTZ Dec 2002
Georgia				25		41				46		48	GTZ Dec 2002
Hong Kong, China			74	85	80	77			119	136	146	147	Embassy/ADAC Dec 2002
India			19	21	39	41			48	56	60	66	GTZ Dec 2002
Indonesia			20	7	6	19			44	16	17	27	GTZ Dec 2002
Iran, Islamic Rep.				1	2	2				8	5	7	Embassy Dec 2002
Iraq				1	3	1				1	3	2	GTZ Dec 2002
Israel			31	31	64	62			73	86	114	90	ADAC Dec 2002
Japan			75	69	76	66			125	102	106	91	ADAC Dec 2002
Jordan			15	15	15	17			40	42	45	52	GTZ Dec 2002
Kazakhstan				24	29	29				30	36	35	GTZ Dec 2002
Korea, North				41	35	41				73	55	55	Embassy Dec 2002
Korea, South			33	41	66	64			79	93	92	109	Embassy Dec 2002
Kuwait				13	18	18				17	21	20	GTZ Dec 2002
Kyrgyz Republic				27	33	25				47	44	39	GTZ Dec 2002
Lao PDR				24	32	30				31	41	36	GTZ Dec 2002
Lebanon				22	31	25				35	53	65	GTZ Dec 2002
Macao, China				51	50					74	73		
Malaysia			26	17	16	19			42	28	28	35	GTZ Dec 2002
Mongolia				22	38	37				23	38	38	GTZ Dec 2002
Myanmar				12	12	28				13	33	36	Embassy Dec 2002
Nepal			22	24	37	34			52	59	63	66	GTZ Dec 2002
New Zealand			32	39	34	33			61	64	48	55	ADAC Dec 2002
Oman				26	29	26				31	31	31	Embassy Dec 2002
Pakistan			20	19	27	35			47	46	53	52	GTZ Dec 2002
Papua New Guinea				28	34					41	53		
Philippines			27	22	28	27			34	34	37	35	GTZ Dec 2002
Qatar				15						16			
Russian Federation			28	18	29	25			35	28	33	35	ADAC Dec 2002
Saudi Arabia			9	10	10	10			16	16	24	24	GTZ Dec 2002
Singapore				36	38	38				72	84	85	ADAC Dec 2002
Sri Lanka			23	30	27	31			75	84	66	54	GTZ Dec 2002
Syrian Arab Republic				14	13	18				45	44	53	ADAC Dec 2002
Taiwan			38	41	50				59	57	61		
Tajikistan				13	55	24				26	45	36	GTZ Dec 2002
Thailand			30	27	35	32			34	30	39	36	GTZ Dec 2002
Turkey			37	47	66	78			56	78	88	102	ADAC Dec 2002
Turkmenistan				5	2	1				9	2	2	Embassy Dec 2002
United Arab Emirates				15	26	30				23	25	29	GTZ Dec 2002
Uzbekistan			31	9	9	26			32	11	14	38	GTZ Dec 2002
Vietnam			25	26	27	27			34	35	38	34	GTZ Dec 2002
West Bank and Gaza				31	61	52				86	108	99	GTZ Dec 2002
Yemen, Rep.				7	6	10				26	21	21	GTZ Dec 2002

* Annual average crude oil price used ** Crude oil prices are noted in US cents per litre in the above table. Crude oil prices per barrel: US-\$ 20 (1991), US-\$ 17 (1993 & 1995), US-\$ 11 (1998), US-\$ 31 (2000), US-\$ 26 (2002)

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002]

3.3.3 Detailed Time Series of Fuel Prices in Asia 1991 – 2002 (from Armenia to Bangladesh)

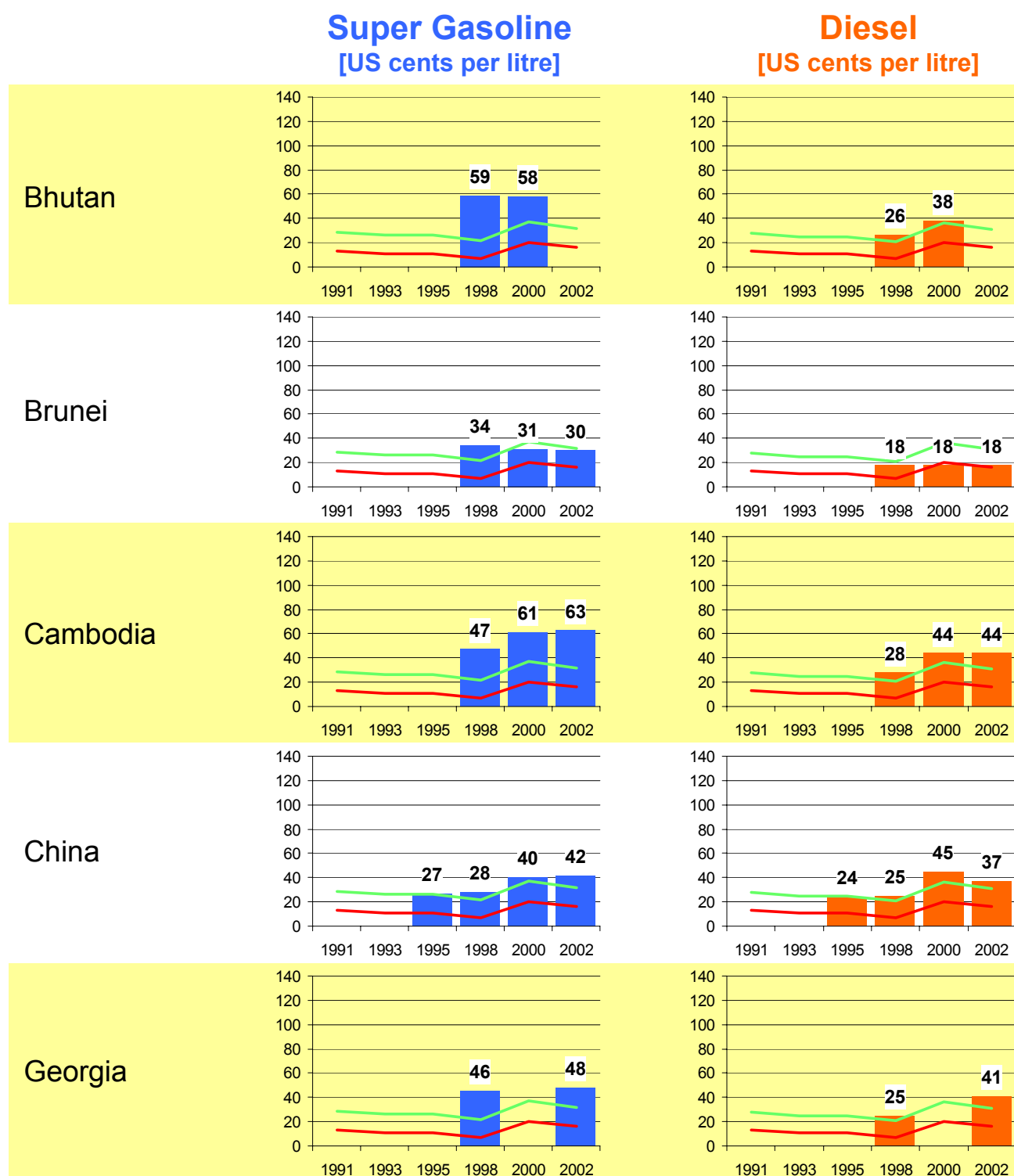


- The **“Red Base Line”** represents the world market price for crude oil (North Sea Brent) at Rotterdam port at time of survey.
- The **“Green Base Line”** represents the hypothetical sales price for refined and distributed PETROLEUM FUEL, if it were sold as a normal commercial commodity e.g. MINERAL WATER. Therefore the green line marks the border between fuel subsidy & taxation. This green line also applies to **oil producing countries**: assuming that the oil production could have been sold abroad, fuel prices are effectively subsidised at the expense of the country's energy sector.

Note: The graphs above show actual prices paid

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002]

3.3.3 Detailed Time Series of Fuel Prices in Asia 1991 – 2002 (from Bhutan to Georgia)

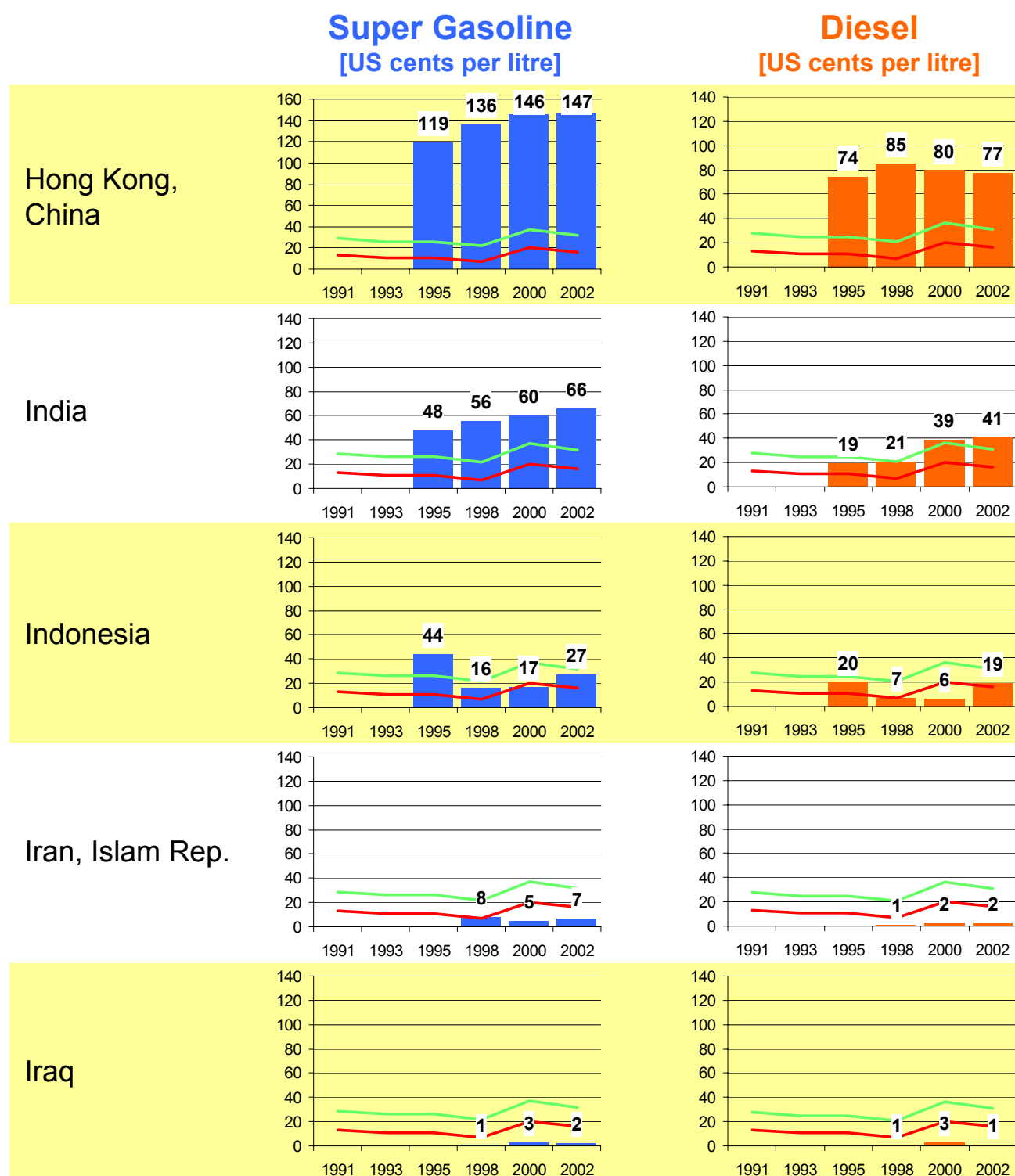


- The **“Red Base Line”** represents the world market price for crude oil (North Sea Brent) at Rotterdam port at time of survey.
- The **“Green Base Line”** represents the hypothetical sales price for refined and distributed PETROLEUM FUEL, if it were sold as a normal commercial commodity e.g. MINERAL WATER. Therefore the green line marks the border between fuel subsidy & taxation. This green line also applies to **oil producing countries**: assuming that the oil production could have been sold abroad, fuel prices are effectively subsidised at the expense of the country's energy sector.

Note: The graphs above show actual prices paid

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002]

3.3.3 Detailed Time Series of Fuel Prices in Asia 1991 – 2002 (from Hong Kong to Iraq)

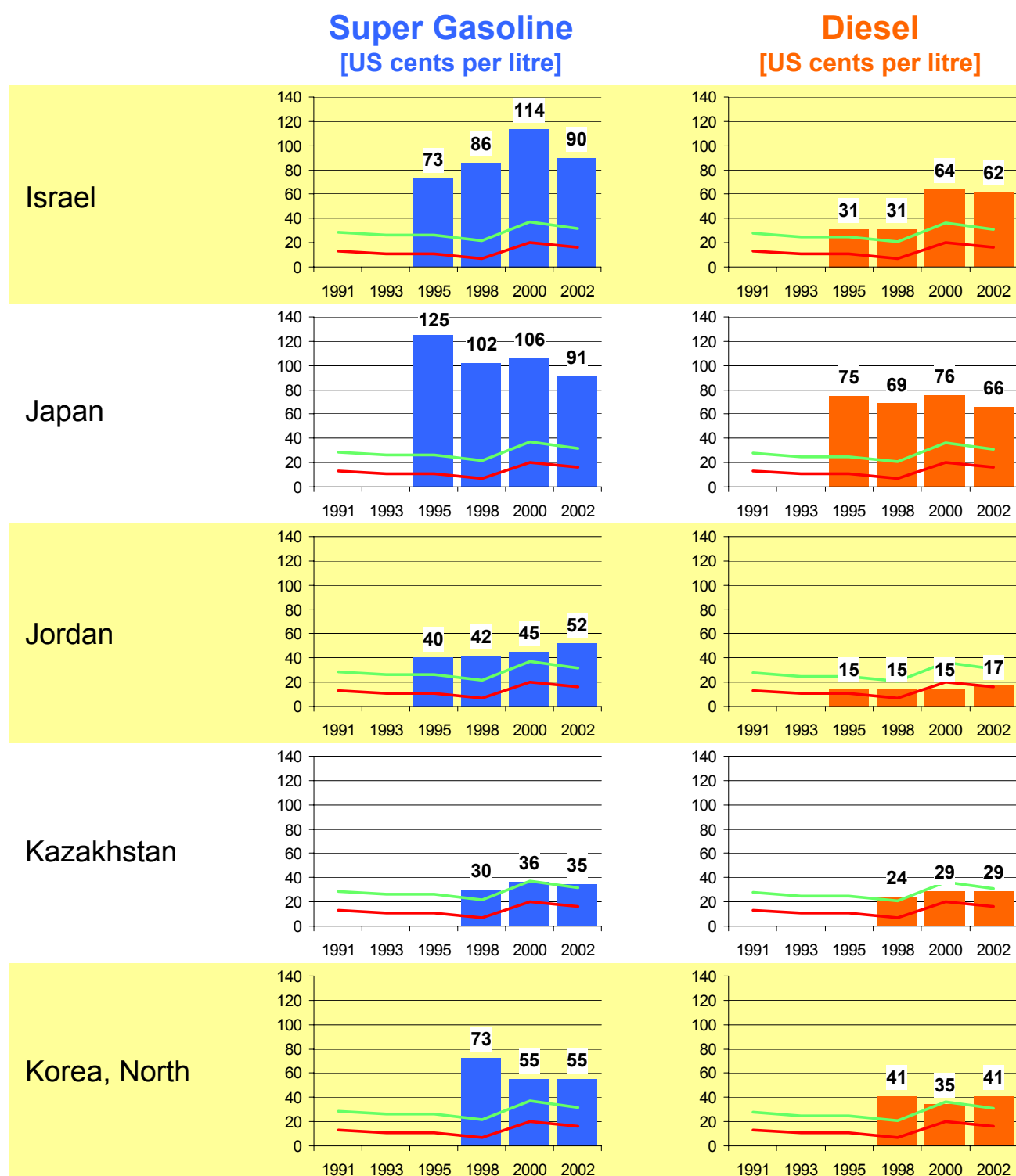


- The **“Red Base Line”** represents the world market price for crude oil (North Sea Brent) at Rotterdam port at time of survey.
- The **“Green Base Line”** represents the hypothetical sales price for refined and distributed PETROLEUM FUEL, if it were sold as a normal commercial commodity e.g. MINERAL WATER. Therefore the green line marks the border between fuel subsidy & taxation. This green line also applies to **oil producing countries**: assuming that the oil production could have been sold abroad, fuel prices are effectively subsidised at the expense of the country's energy sector.

Note: The graphs above show actual prices paid

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002]

3.3.3 Detailed Time Series of Fuel Prices in Asia 1991 – 2002 (from Israel to Korea, North)

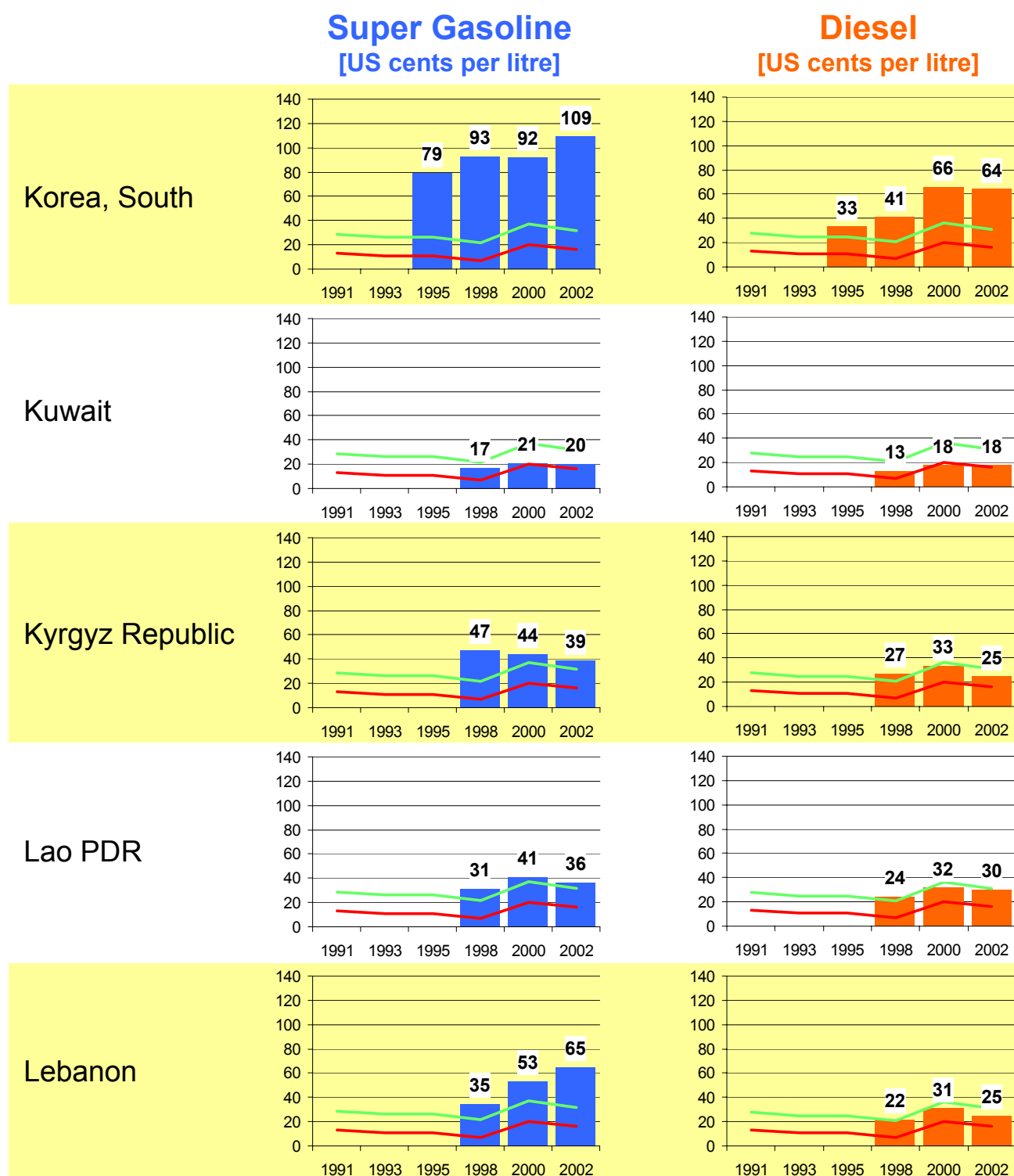


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Note: The graphs above show actual prices paid

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002]

3.3.3 Detailed Time Series of Fuel Prices in Asia 1991 – 2002 (from Korea, South to Lebanon)

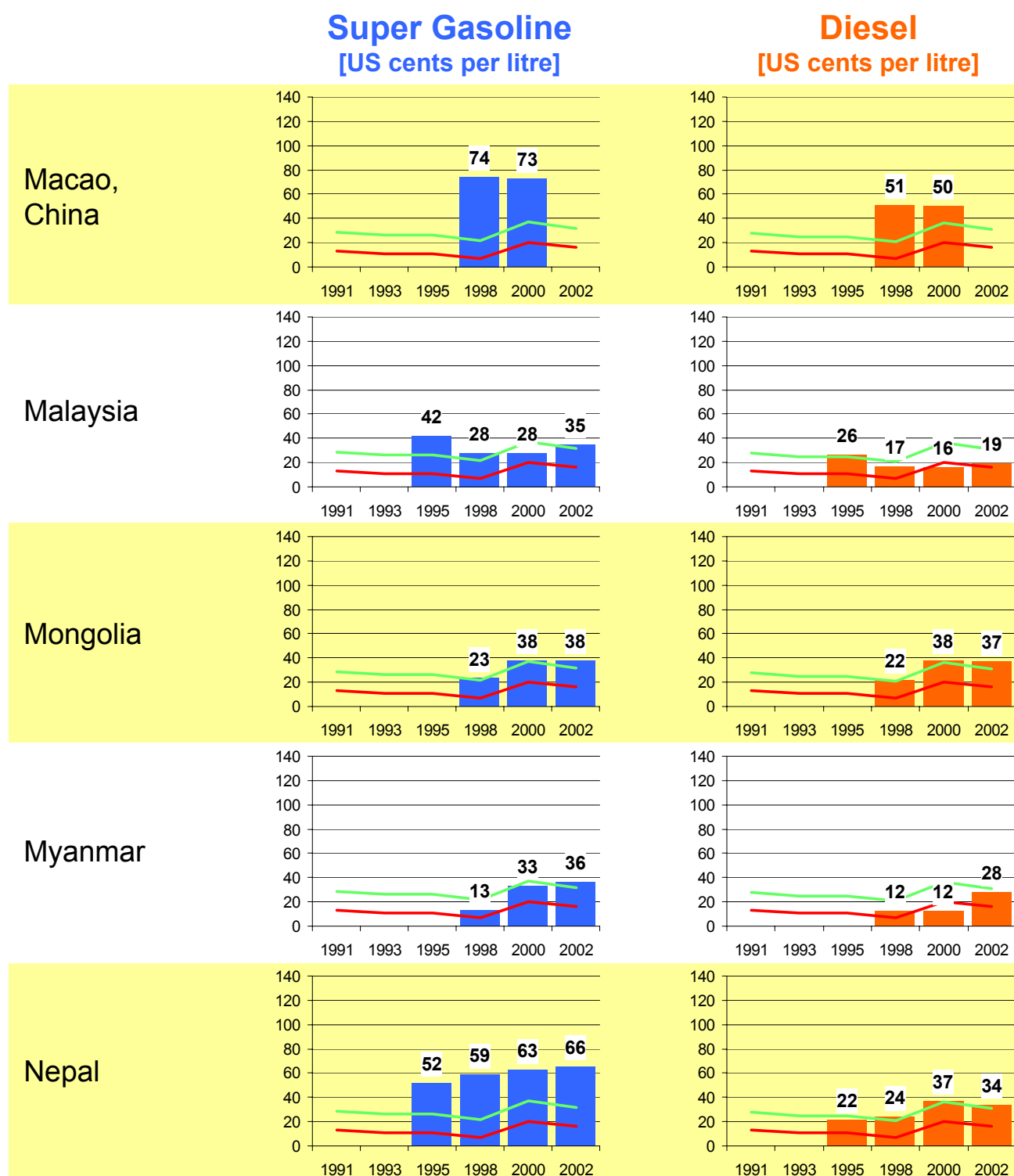


- The **“Red Base Line”** represents the world market price for crude oil (North Sea Brent) at Rotterdam port at time of survey.
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Note: The graphs above show actual prices paid

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002]

3.3.3 Detailed Time Series of Fuel Prices in Asia 1991 – 2002 (from Macao to Nepal)

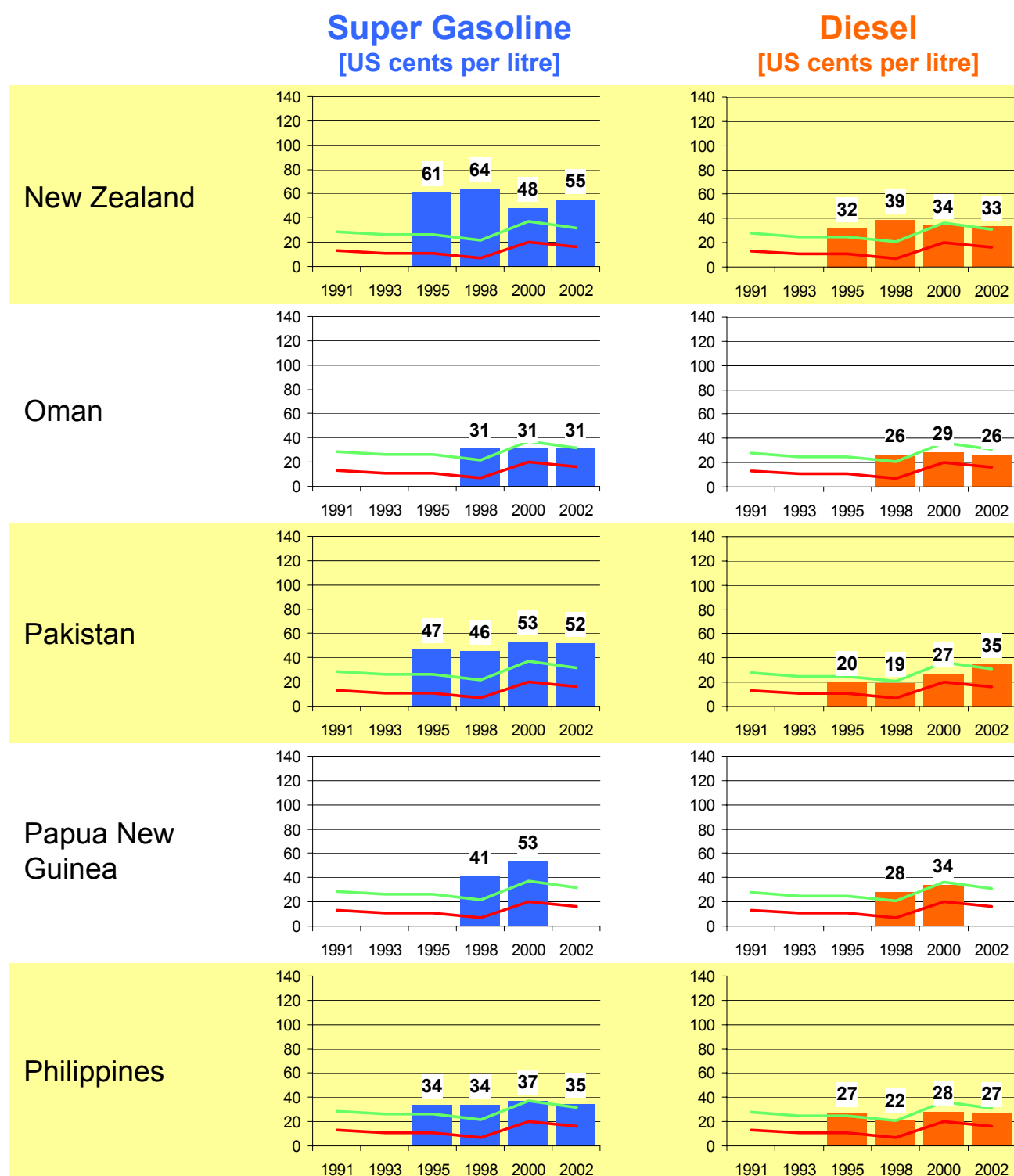


- The **“Red Base Line”** represents the world market price for crude oil (North Sea Brent) at Rotterdam port at time of survey.
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Note: The graphs above show actual prices paid

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002]

3.3.3 Detailed Time Series of Fuel Prices in Asia 1991 – 2002 (from New Zealand to Philippines)

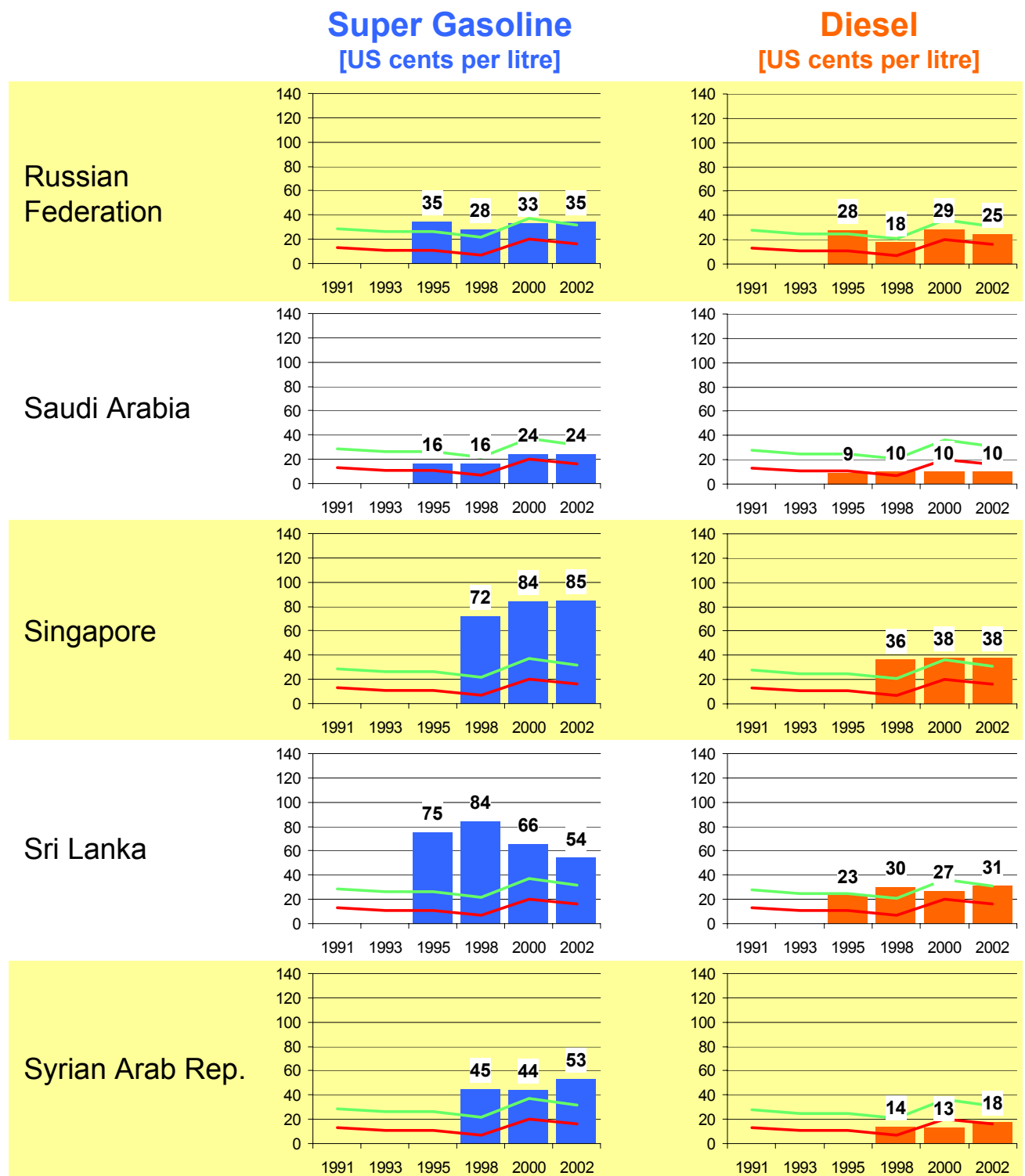


- The **“Red Base Line”** represents the world market price for crude oil (North Sea Brent) at Rotterdam port at time of survey.
- The **“Green Base Line”** represents the hypothetical sales price for refined and distributed PETROLEUM FUEL, if it were sold as a normal commercial commodity e.g. MINERAL WATER. Therefore the green line marks the border between fuel subsidy & taxation. This green line also applies to **oil producing countries**: assuming that the oil production could have been sold abroad, fuel prices are effectively subsidised at the expense of the country's energy sector.

Note: The graphs above show actual prices paid

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002]

3.3.3 Detailed Time Series of Fuel Prices in Asia 1991 – 2002 (from Russia to Syria)

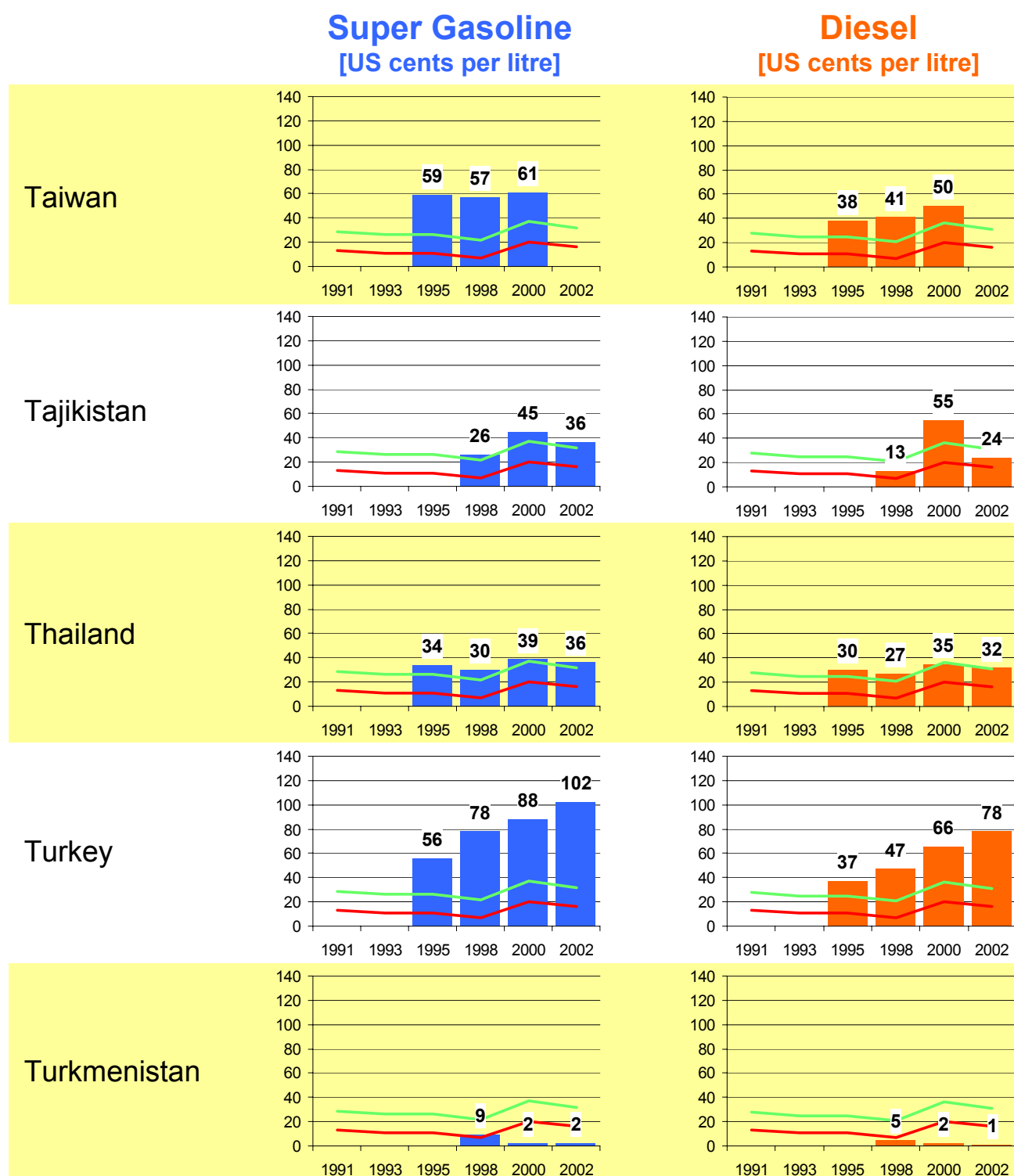


- The **“Red Base Line”** represents the world market price for crude oil (North Sea Brent) at Rotterdam port at time of survey.
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Note: The graphs above show actual prices paid

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002]

3.3.3 Detailed Time Series of Fuel Prices in Asia 1991 – 2002 (from Taiwan to Turkmenistan)

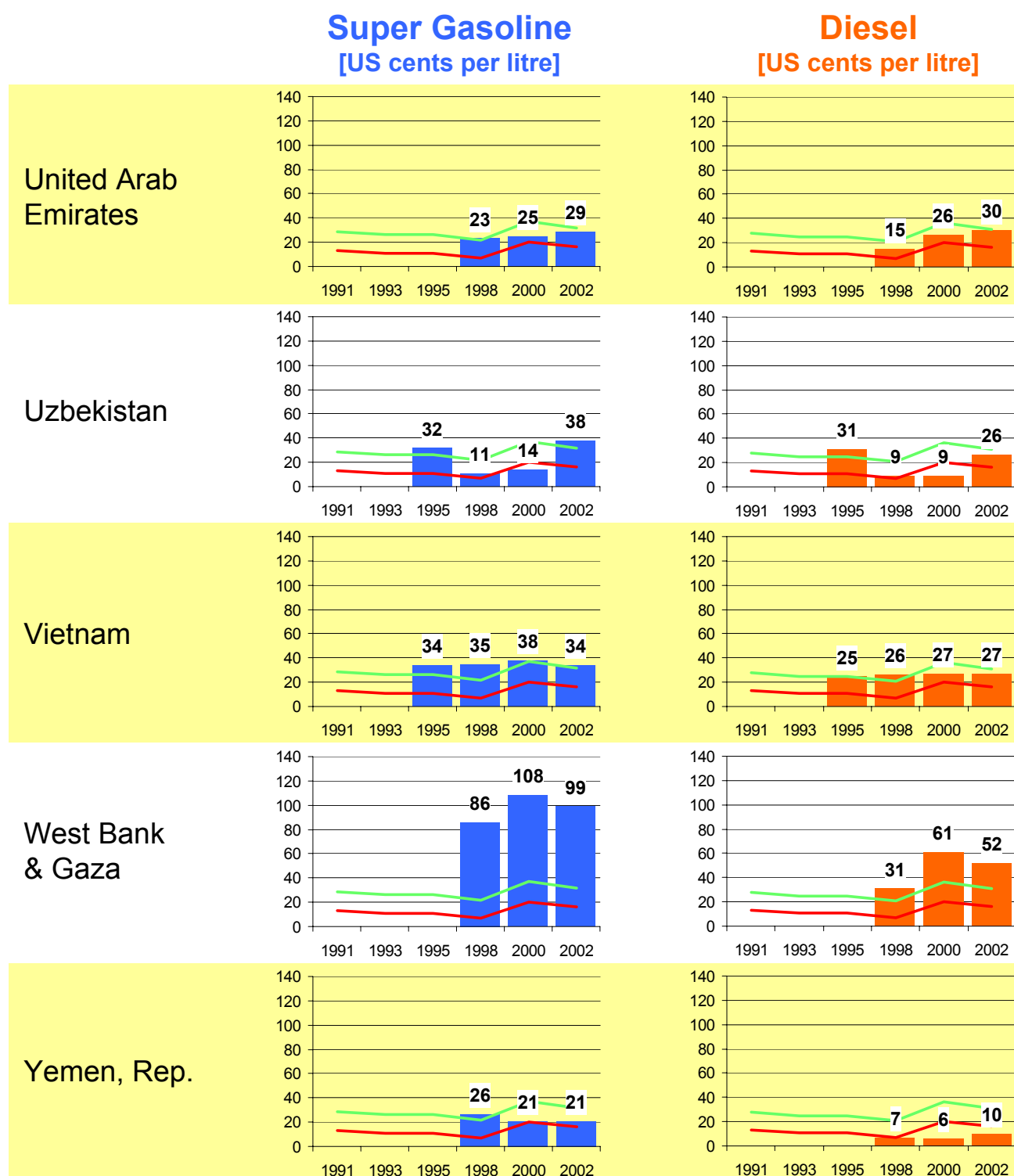


- The “Red Base Line” represents the world market price for crude oil (North Sea Brent) at Rotterdam port at time of survey.
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Note: The graphs above show actual prices paid

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002]

3.3.3 Detailed Time Series of Fuel Prices in Asia 1991 – 2002 (from UAE to Yemen)

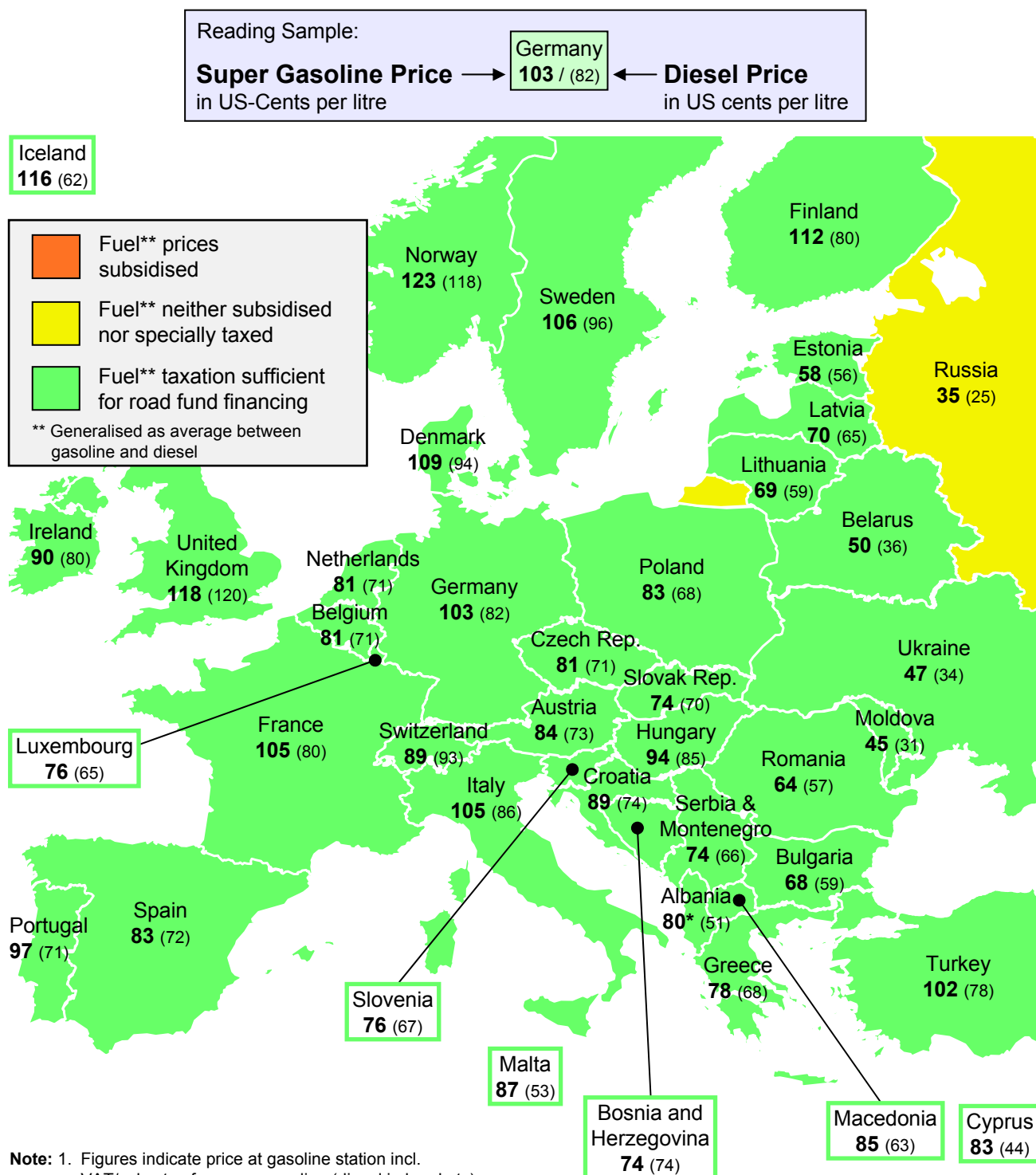


- The **“Red Base Line”** represents the world market price for crude oil (North Sea Brent) at Rotterdam port at time of survey.
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Note: The graphs above show actual prices paid

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002]

3.4 Fuel Prices in Europe as of 10 December 2002



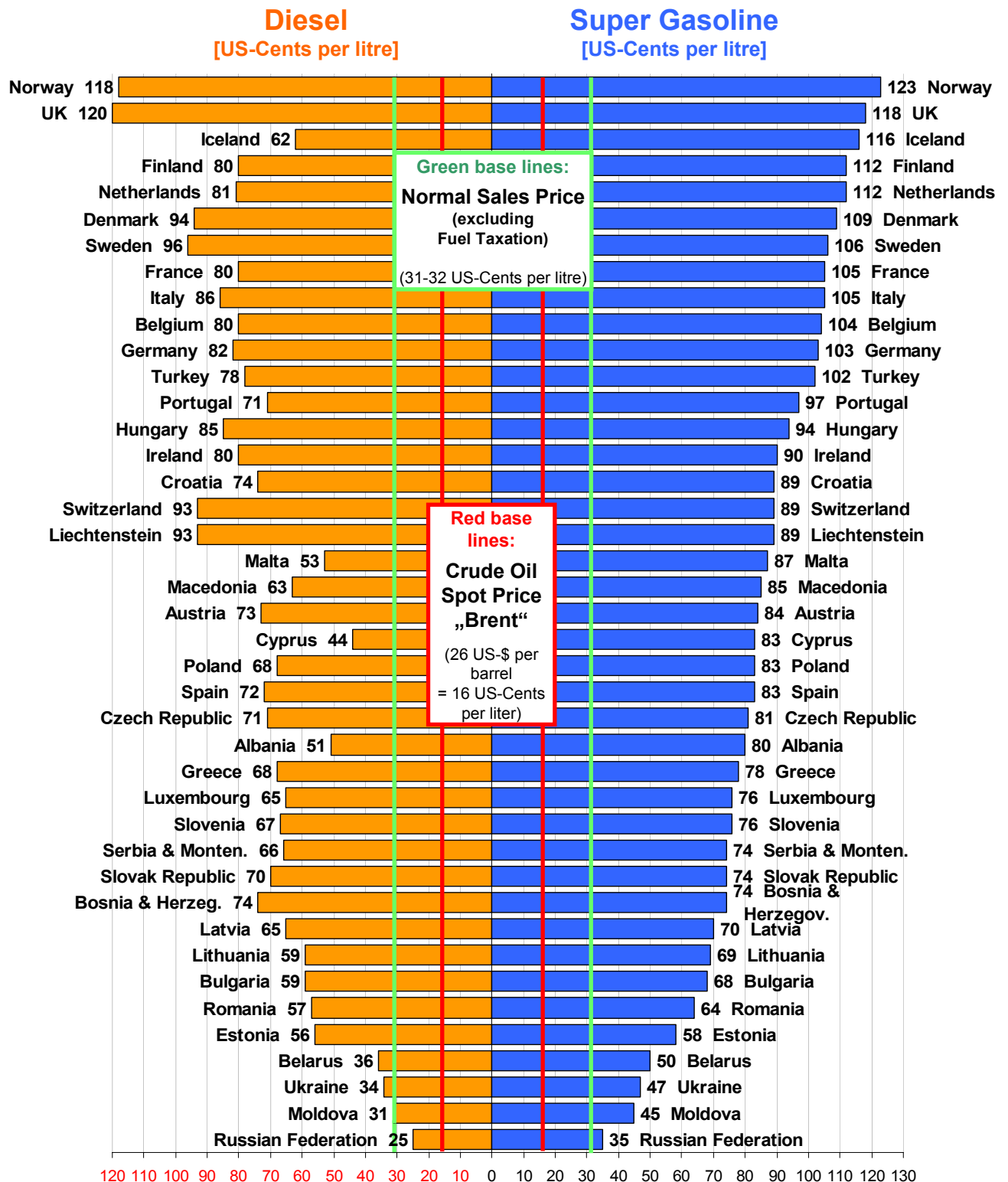
Note: 1. Figures indicate price at gasoline station incl. VAT/sales tax for super gasoline (diesel in brackets) in US cents per liter. At the time of survey the world market price for crude oil was US\$ 26 / barrel "Brent".

2. Cross check on cost recovery of fuel prices:

	Diesel US cents per litre	Super Gasoline US cents per litre
Crude oil price (26 US-\$ / 159 litre)	16	16
+ Refinery and distribution costs; Industry and dealer margins	10 – 12	11 – 13
+ VAT/Sales Tax of 10 – 20 % of the Normal Sales Price	3 – 6	3 – 6
= "Normal Sales Price" excluding fuel taxation	31 (29 – 34)	32 (30 – 35)

[Source: Metschies, gtz survey Dec. 2002]

3.4.1 Comparison of Fuel Prices in Europe as of 10 December 2002



* Normal grade gasoline, as super gasoline is not commonly available in the country

Note: The “Red Base Line” represents the world market price for crude oil (North Sea Brent) at Rotterdam port on 10th December 2002. This price was by chance roughly the average crude oil price during the year 2002.

The “Green Base Line” represents the hypothetical sales price for refined and distributed PETROLEUM FUEL, if it were sold as a normal commercial commodity e.g. MINERAL WATER. Therefore the green line marks the border between fuel subsidy & taxation. This green line also applies to oil producing countries: assuming that the oil production could have been sold abroad, fuel prices are effectively subsidised at the expense of the country's energy sector.

[Source: Metschies, gtz survey Dec. 2002]

3.4.2 Time Series of Fuel Prices in Europe

Survey Table 1991 - 2002

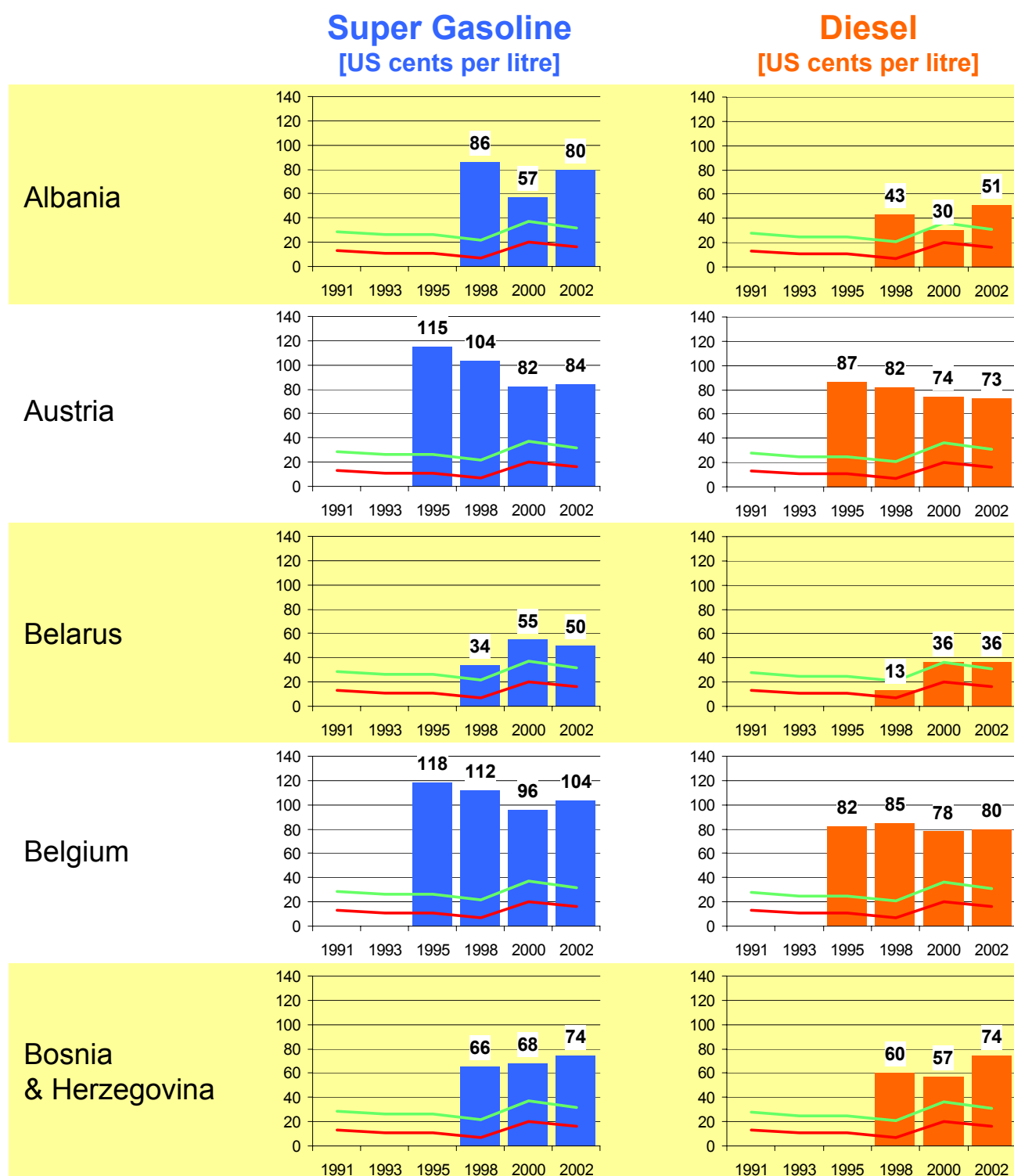
Fuel Prices in US Cents per Litre (actual prices paid)													
	Diesel						Super Gasoline						
	1991	1993	1995	1998	2000	2002	1991	1993	1995	1998	2000	2002	
Red Base Line	13*	11*	11*	7	20	16	13*	11*	11*	7	20	16	
World Market Crude Oil**													
Green Base Line	28	25	25	21	36	31	29	26	26	22	37	32	
Normal Sales Price													
Country	1991	1993	1995	1998	2000	2002	1991	1993	1995	1998	2000	2002	Source & Date of 2002 Data
Albania				43	30	51				86	57	80	ADAC Dec 2002
Austria			87	82	74	73			115	104	82	84	ADAC Dec 2002
Belarus				13	36	36				34	55	50	Embassy Dec 2002
Belgium			82	85	78	80			118	112	96	104	ADAC Dec 2002
Bosnia and Herzegovina				60	57	74				66	68	74	ADAC Dec 2002
Bulgaria			26	52	58	59			46	66	70	68	ADAC Dec 2002
Croatia			64	61	60	74			75	67	76	89	ADAC Dec 2002
Cyprus				25	18	44				78	57	83	ADAC Dec 2002
Czech Republic			60	60	68	71			85	72	77	81	ADAC Dec 2002
Denmark			87	85	90	94			108	105	101	109	ADAC Dec 2002
Estonia			33	36	55	56			33	45	60	58	ADAC Dec 2002
Finland			85	79	84	80			120	117	106	112	ADAC Dec 2002
France			78	77	82	80			117	111	99	105	ADAC Dec 2002
Germany			77	69	78	82			112	96	91	103	ADAC Dec 2002
Greece			59	40	71	68			88	65	72	78	ADAC Dec 2002
Hungary			65	64	79	85			74	72	81	94	ADAC Dec 2002
Iceland				40	45	62				112	105	116	ADAC Dec 2002
Ireland			87	102	72	80			96	102	72	90	ADAC Dec 2002
Italy			86	93	83	86			118	119	97	105	ADAC Dec 2002
Latvia			34	35	58	65			41	55	67	70	ADAC Dec 2002
Liechtenstein				89	84	93				85	81	89	ADAC Dec 2002
Lithuania			30	34	55	59			35	51	66	69	ADAC Dec 2002
Luxembourg			68	61	67	65			84	78	75	76	ADAC Dec 2002
Macedonia			59	46	56	63			93	70	76	85	ADAC Dec 2002
Malta				49	44	53				77	81	87	ADAC Dec 2002
Moldova				31	40	31				45	45	45	ADAC Dec 2002
Netherlands			82	79	78	81			121	114	103	112	ADAC Dec 2002
Norway			109	110	115	118			133	121	119	123	ADAC Dec 2002
Poland			42	44	65	68			55	54	76	83	ADAC Dec 2002
Portugal				71	54	71				102	77	97	ADAC Dec 2002
Romania			19	40	35	57			29	53	46	64	ADAC Dec 2002
Russian Federation			28	18	29	25			35	28	33	35	ADAC Dec 2002
Serbia & Montenegro			84	43	56	66			76	61	56	74	ADAC Dec 2002
Slovak Republic			40	54	68	70			66	61	69	74	ADAC Dec 2002
Slovenia			50	64	66	67			59	66	63	76	ADAC Dec 2002
Spain			70	70	65	72			89	84	73	83	ADAC Dec 2002
Sweden			101	84	80	96			117	109	94	106	ADAC Dec 2002
Switzerland			101	91	84	93			102	86	78	89	ADAC Dec 2002
Turkey			37	47	66	78			56	78	88	102	ADAC Dec 2002
Ukraine				25	30	34				49	37	47	ADAC Dec 2002
United Kingdom			85	111	122	120			92	111	117	118	ADAC Dec 2002

* Annual average crude oil price used

** Crude oil prices are noted in US cents per litre in the above table. Crude oil prices per barrel:
US-\$ 20 (1991), US-\$ 17 (1993 & 1995), US-\$ 11 (1998), US-\$ 31 (2000), US-\$ 26 (2002)

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002]

3.4.3 Detailed Time Series of Fuel Prices in Europe 1991 – 2002 (from Albania to Bosnia & Herz.)

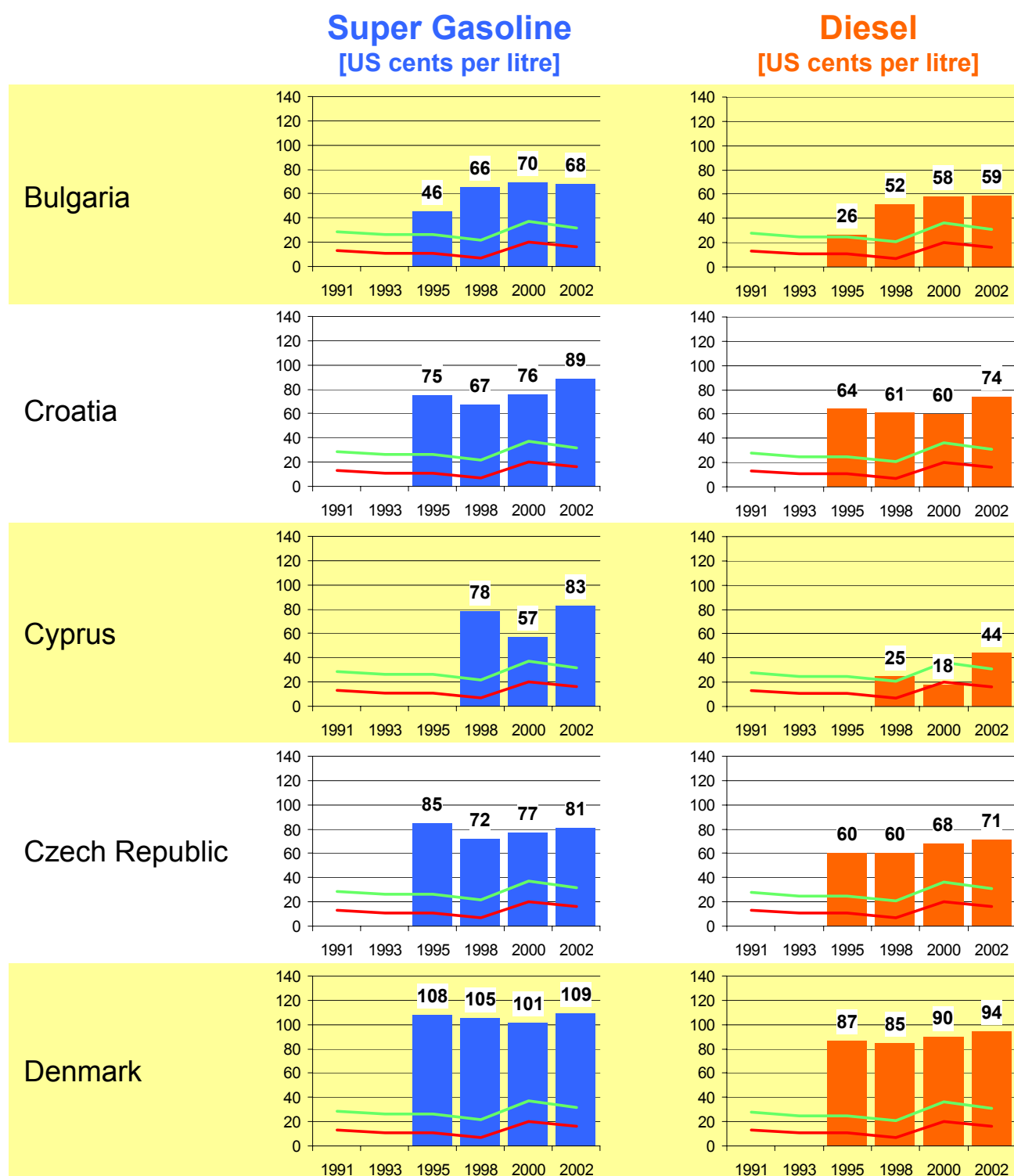


- The **“Red Base Line”** represents the world market price for crude oil (North Sea Brent) at Rotterdam port at time of survey.
- The **“Green Base Line”** represents the hypothetical sales price for refined and distributed PETROLEUM FUEL, if it were sold as a normal commercial commodity e.g. MINERAL WATER. Therefore the green line marks the border between fuel subsidy & taxation. This green line also applies to **oil producing countries**: assuming that the oil production could have been sold abroad, fuel prices are effectively subsidised at the expense of the country's energy sector.

Note: The graphs above show actual prices paid

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002]

3.4.3 Detailed Time Series of Fuel Prices in Europe 1991 – 2002 (from Bulgaria to Denmark)

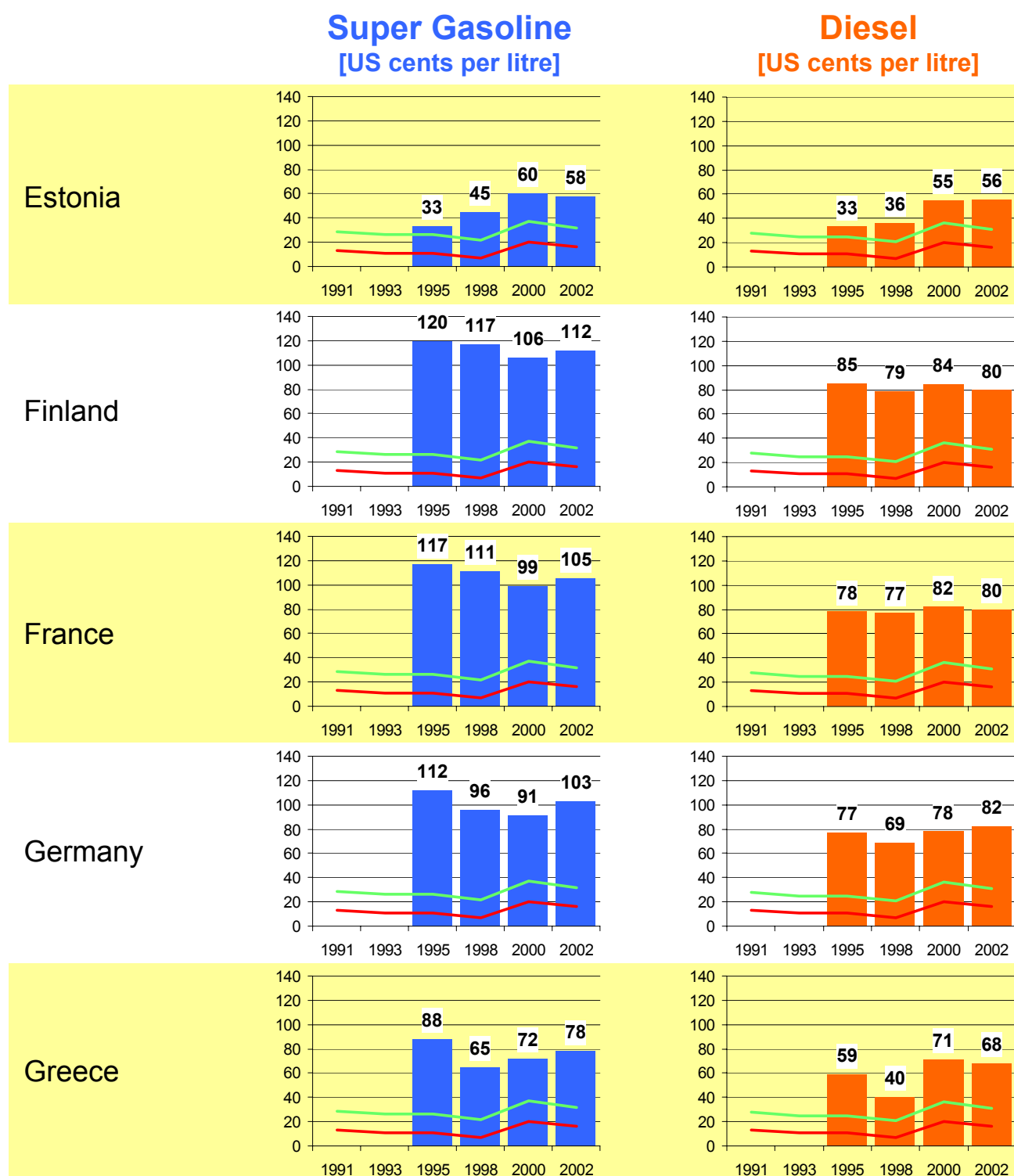


- The **“Red Base Line”** represents the world market price for crude oil (North Sea Brent) at Rotterdam port at time of survey.
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Note: The graphs above show actual prices paid

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002]

3.4.3 Detailed Time Series of Fuel Prices in Europe 1991 – 2002 (from Estonia to Greece)

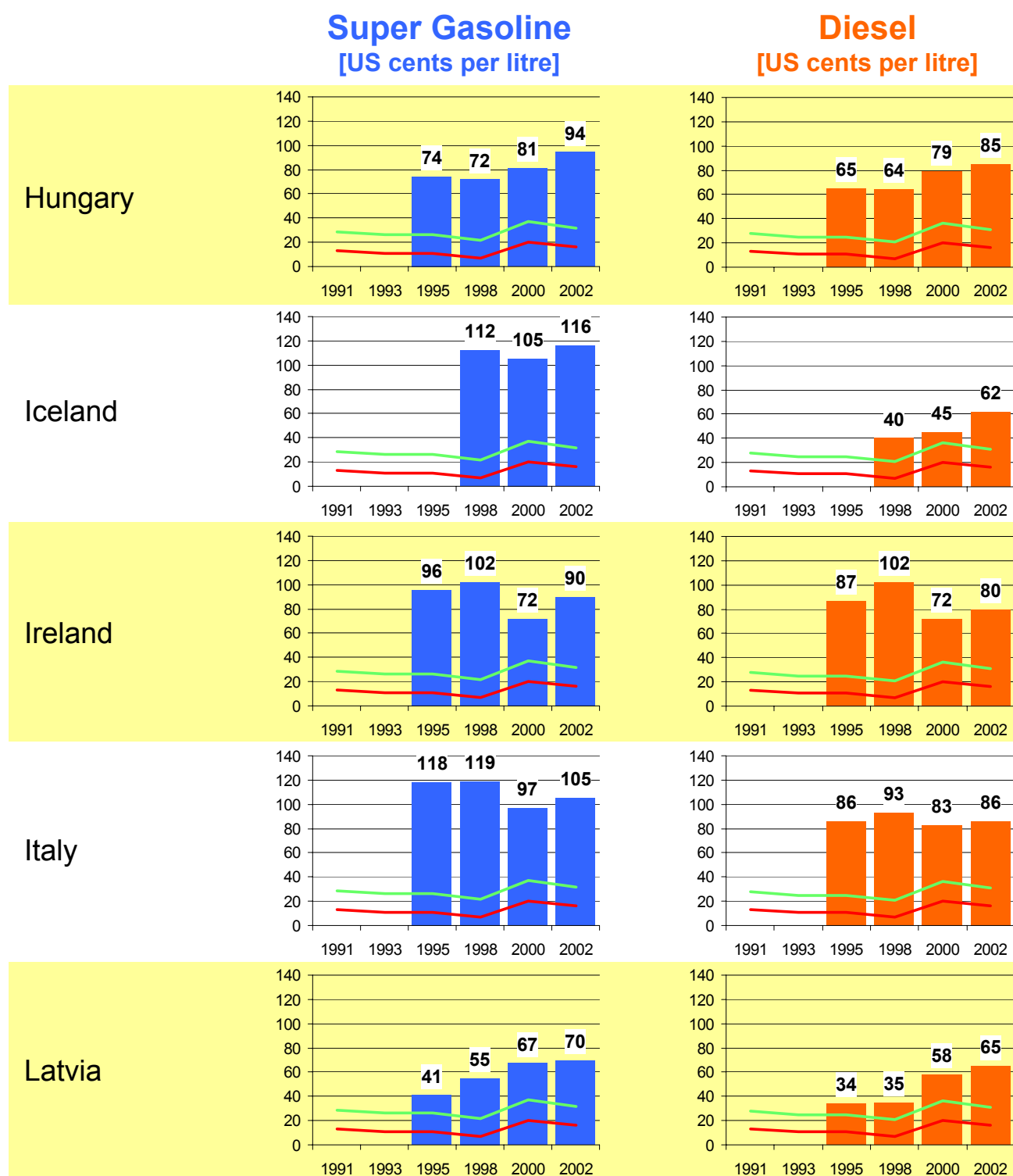


- The **“Red Base Line”** represents the world market price for crude oil (North Sea Brent) at Rotterdam port at time of survey.
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Note: The graphs above show actual prices paid

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002]

3.4.3 Detailed Time Series of Fuel Prices in Europe 1991 – 2002 (from Hungary to Latvia)



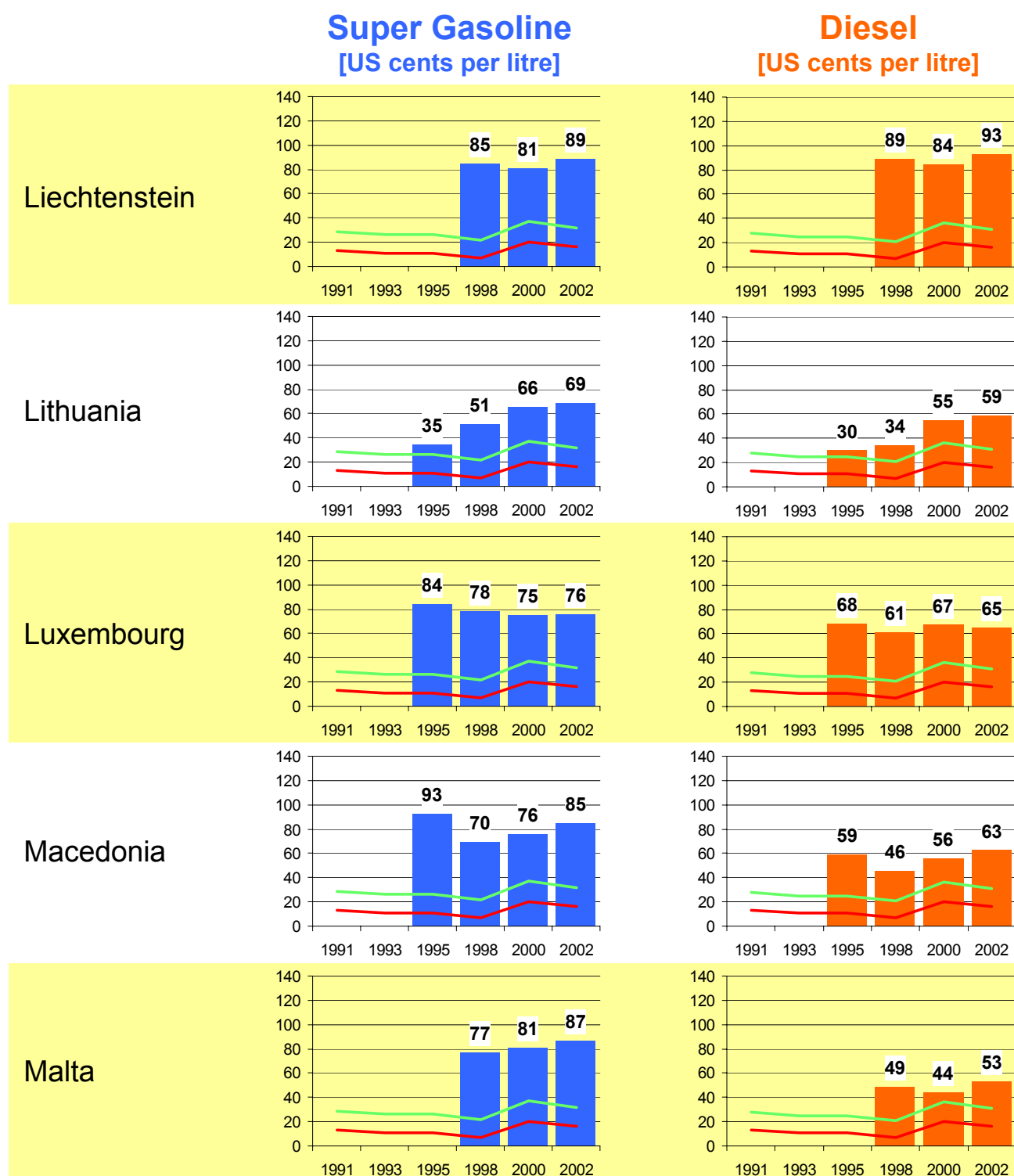
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Note: The graphs above show actual prices paid

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002]

3.4.3 Detailed Time Series of Fuel Prices in Europe 1991 – 2002 (from Liechtenstein to Malta)

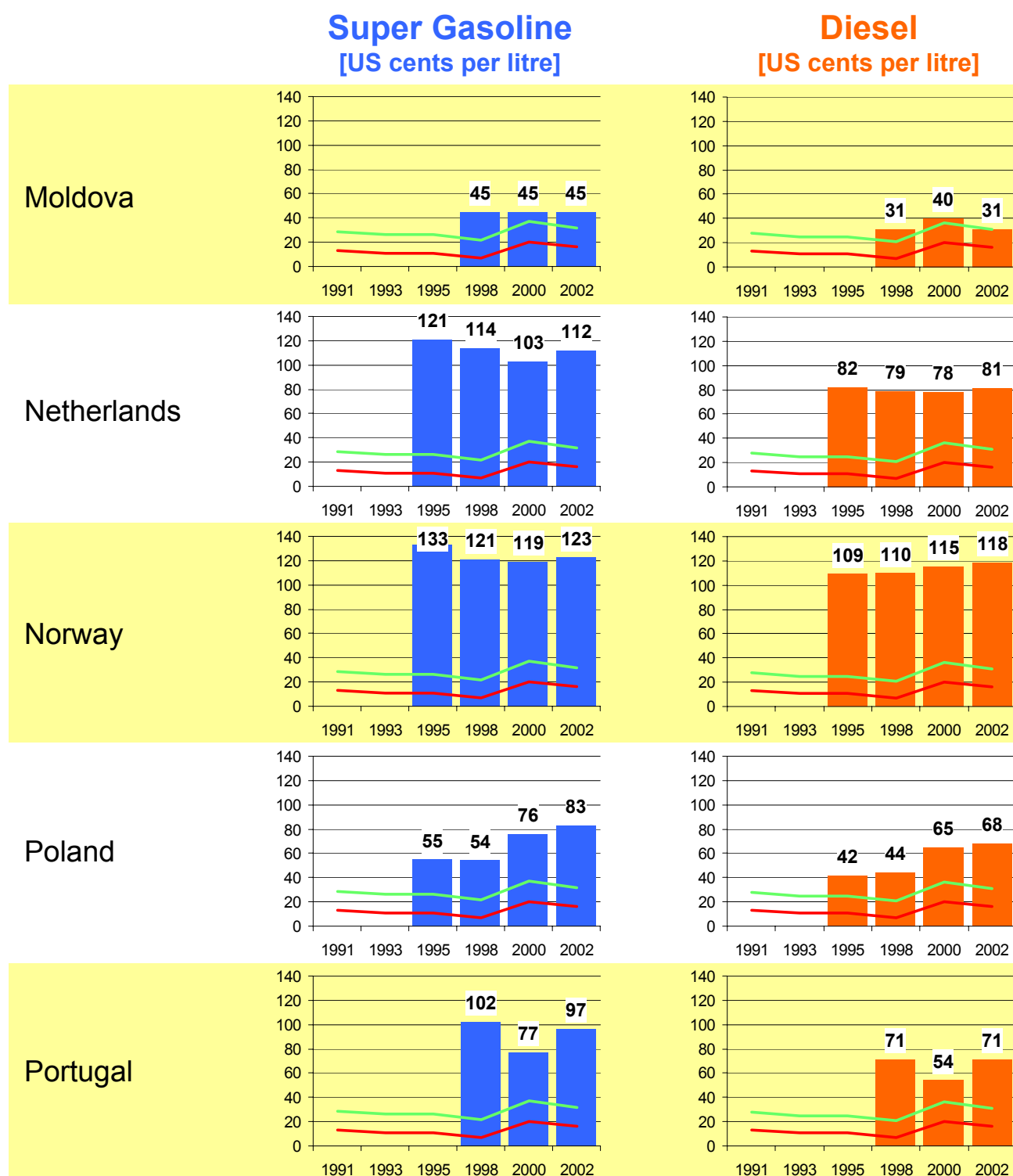


- The **“Red Base Line”** represents the world market price for crude oil (North Sea Brent) at Rotterdam port at time of survey.
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Note: The graphs above show actual prices paid

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002]

3.4.3 Detailed Time Series of Fuel Prices in Europe 1991 – 2002 (from Moldova to Portugal)



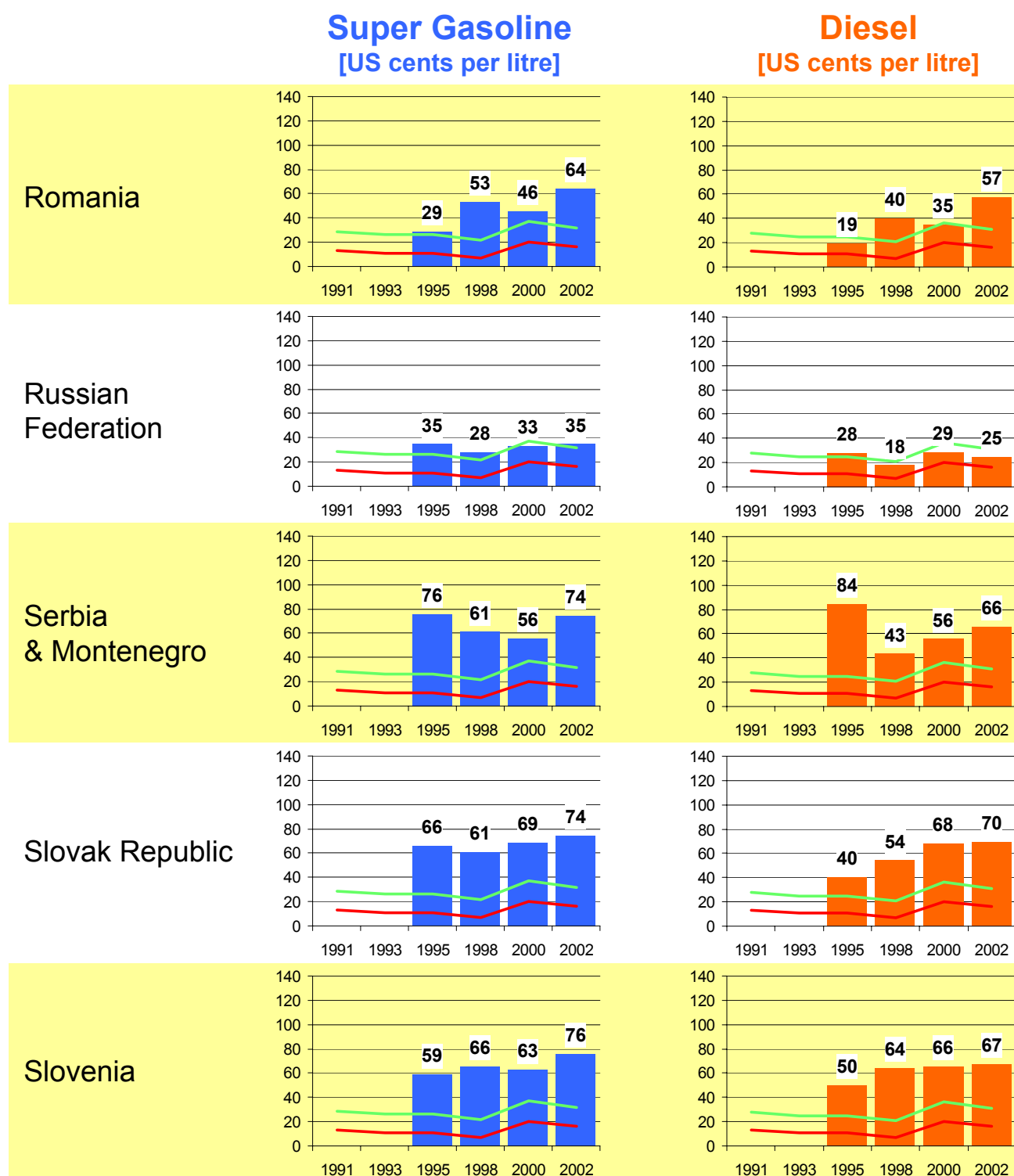
— The “Red Base Line” represents the world market price for crude oil (North Sea Brent) at Rotterdam port at time of survey.

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Note: The graphs above show actual prices paid

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002]

3.4.3 Detailed Time Series of Fuel Prices in Europe 1991 – 2002 (from Romania to Slovenia)

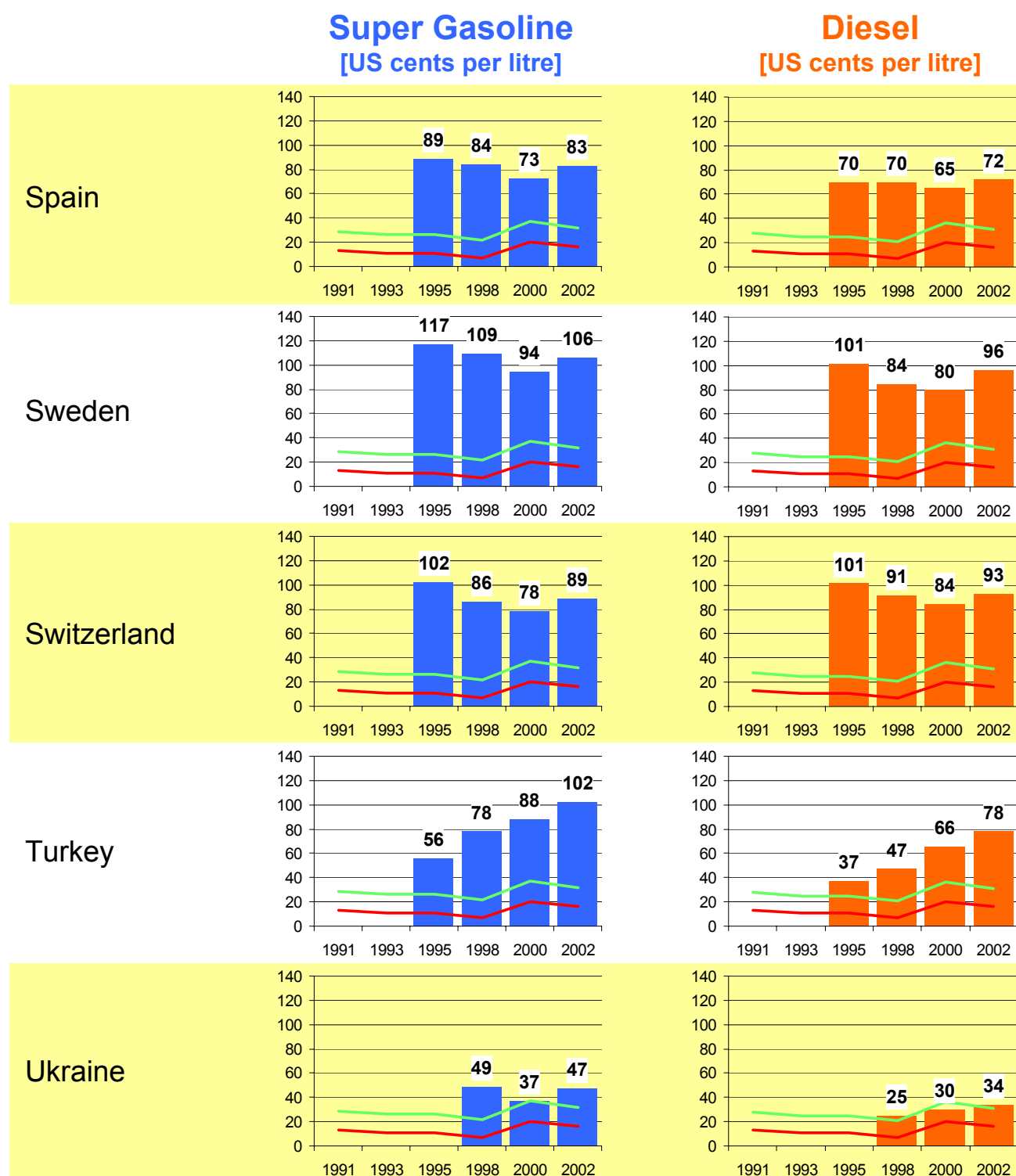


- The **“Red Base Line”** represents the world market price for crude oil (North Sea Brent) at Rotterdam port at time of survey.
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Note: The graphs above show actual prices paid

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002]

3.4.3 Detailed Time Series of Fuel Prices in Europe 1991 – 2002 (from Spain to Ukraine)

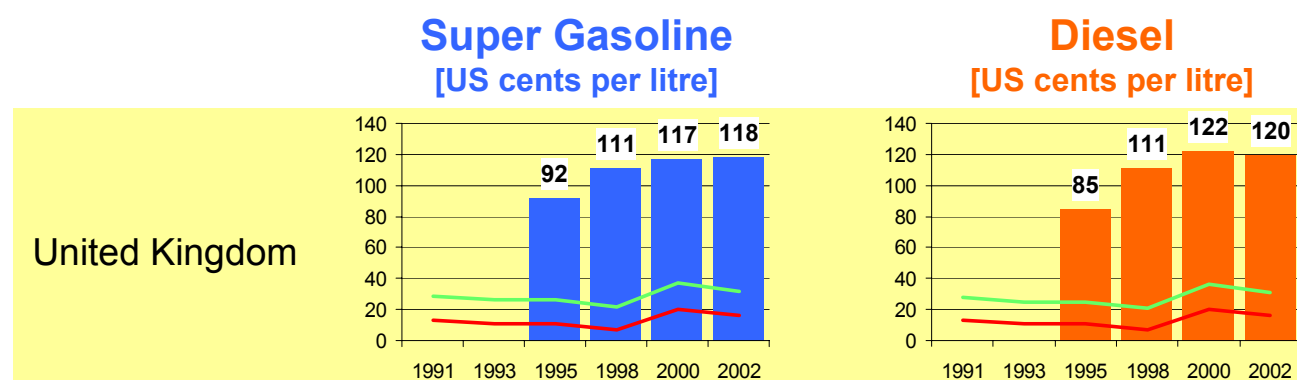


- The **“Red Base Line”** represents the world market price for crude oil (North Sea Brent) at Rotterdam port at time of survey.
- The **“Green Base Line”** represents the hypothetical sales price for refined and distributed PETROLEUM FUEL, if it were sold as a normal commercial commodity e.g. MINERAL WATER. Therefore the green line marks the border between fuel subsidy & taxation. This green line also applies to **oil producing countries**: assuming that the oil production could have been sold abroad, fuel prices are effectively subsidised at the expense of the country's energy sector.

Note: The graphs above show actual prices paid

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002]

3.4.3 Detailed Time Series of Fuel Prices in Europe 1991 – 2002 (United Kingdom)



- The “**Red Base Line**” represents the world market price for crude oil (North Sea Brent) at Rotterdam port at time of survey.
- The “**Green Base Line**” represents the hypothetical sales price for refined and distributed PETROLEUM FUEL, if it were sold as a normal commercial commodity e.g. MINERAL WATER. Therefore the green line marks the border between fuel subsidy & taxation. This green line also applies to **oil producing countries**: assuming that the oil production could have been sold abroad, fuel prices are effectively subsidised at the expense of the country's energy sector.

Note: The graphs above show actual prices paid

[Sources: GTZ Fuel Price Surveys, 1991, 1993, 1995, 1998, 2000, 2002]

3.5 Diesel & Gasoline Prices

Global Country Ranking

At 120 US cents per litre, the United Kingdom has the highest diesel prices, and at 1 US cent per litre, Iraq and Turkmenistan have the lowest. Hong Kong, at 147 US cents per litre, has the highest super gasoline price, Turkmenistan and Iraq at only 2 US cents per litre have the lowest.

The diagrams clearly indicate the four main country categories:

Category I (prices at the highly taxed EU and Japan level); i.e., the EU countries, Japan, and other countries in which the per litre tax on fuel ranges from 30 to 90 US cents per litre diesel. Super Gasoline taxation ranges between 40 and 115 US cents per litre. (resulting pump price: 65 -120 US cents/litre diesel and 76 - 147 US cents/litre super gasoline).

Category II (prices between US and minimum EU level); i.e., countries which occupy the range between low-taxed and highly taxed price policies (pump price: 40 - 63 US cents/litre diesel and 41 – 75 US cents/litre super gasoline).

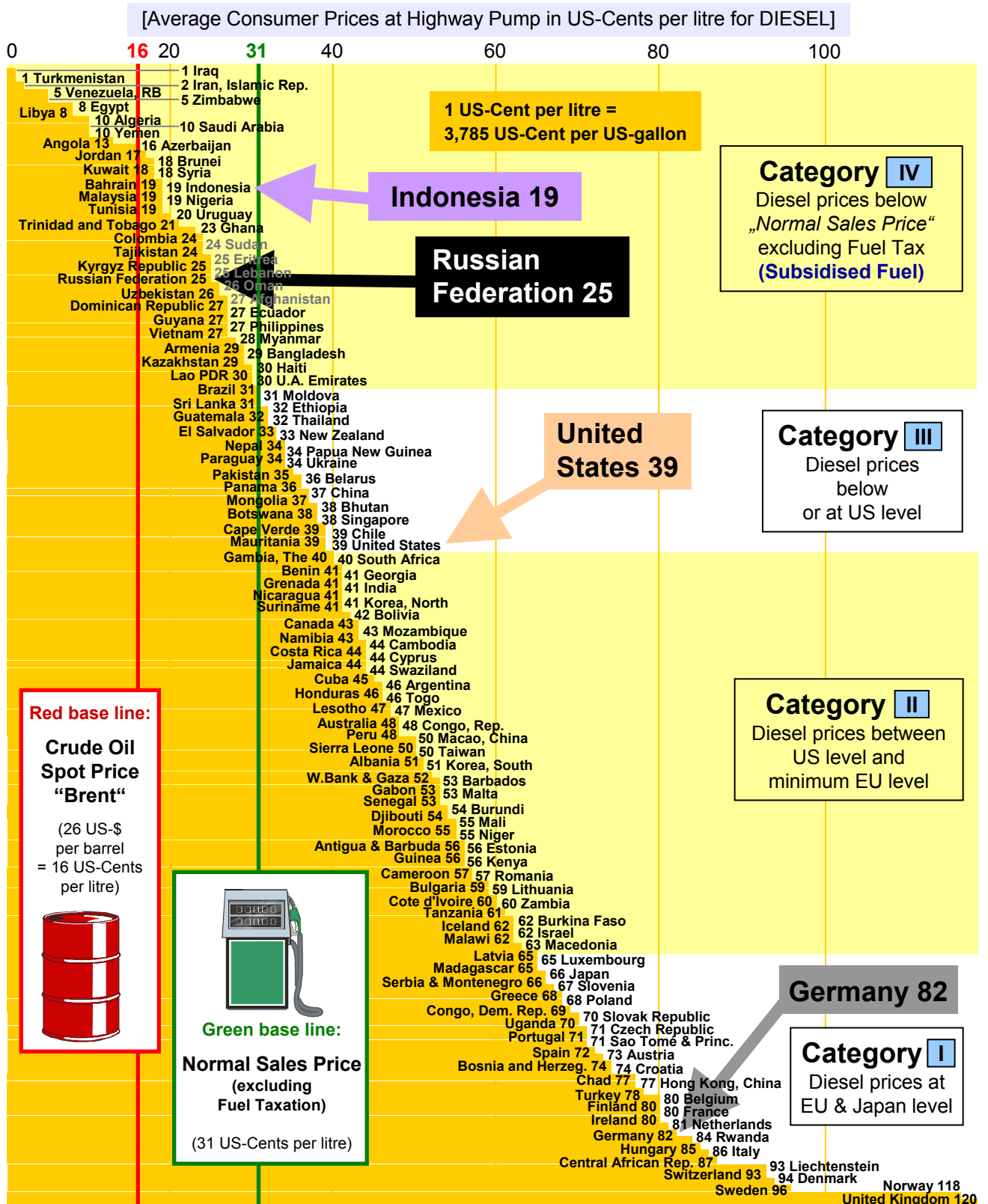
Category III (prices below or at US level); i.e., the USA and other countries that pursue a low-price policy (pump price: 31 - 39 US cents/litre diesel and 32 – 40 US cents/litre super gasoline).

Category IV (subsidised fuel); these are the oil subsidising and producing countries, in which fuel is available for less than the “*Normal Sales Prices*” (excluding fuel tax) of 31 US cents per litre of diesel and 32 US cents per litre of super gasoline.

Conclusions:

A given country's assignment to one of the above 4 categories is not dependent on its economic situation. Indeed, the impression is more or less one of arbitrariness, since the high-tax gasoline category includes countries like Uganda, Brazil and Bolivia, while comparable countries such as Ghana, the Philippines and Russia belong to the low-tax price group.

3.5.1 Diesel Prices in 165 Countries as of 10 December 2002

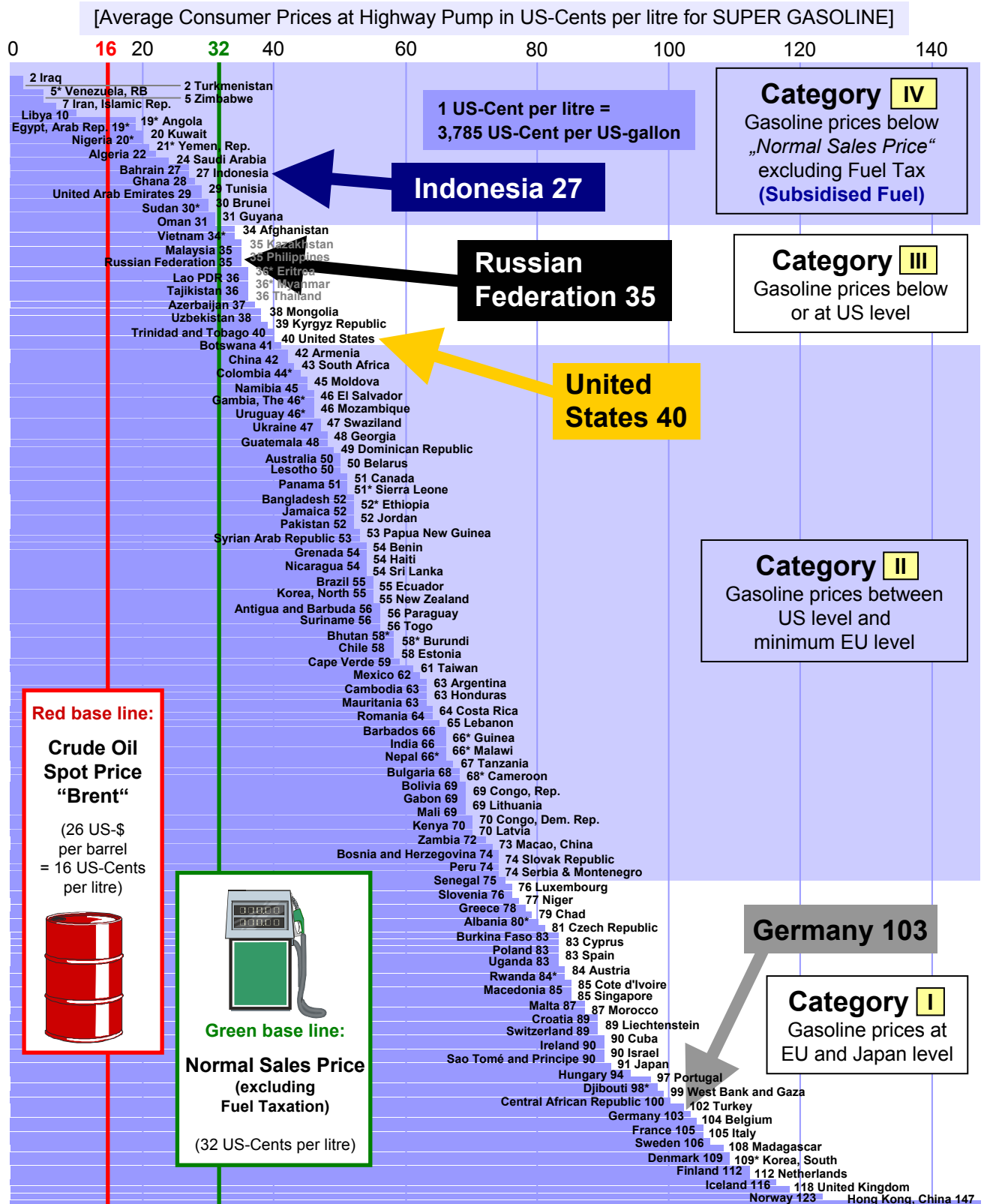


Note: The “Red Base Line” represents the world market price for crude oil (North Sea Brent) at Rotterdam port on 10th December 2002. This price was by chance roughly the average crude oil price during the year 2002.
The “Green Base Line” represents the hypothetical sales price for refined and distributed PETROLEUM FUEL, if it were sold as a normal commercial commodity e.g. MINERAL WATER. Therefore the green line marks the border between fuel subsidy & taxation. This green line also applies to **oil producing countries**: assuming that the oil production could have been sold abroad, fuel prices are effectively subsidised at the expense of the country's energy sector.

[Source: Metschies, gtz survey Dec. 2002 / Dec. 2003]

update: 09.Dec.2003

3.5.2 Super Gasoline Prices in 165 Countries as of 10 December 2002



* Normal grade gasoline, as super gasoline is not commonly available in the country

Note: The “Red Base Line” represents the world market price for crude oil (North Sea Brent) at Rotterdam port on 10th December 2002. This price was by chance roughly the average crude oil price during the year 2002.

The “Green Base Line” represents the hypothetical sales price for refined and distributed PETROLEUM FUEL, if it were sold as a normal commercial commodity e.g. MINERAL WATER. Therefore the green line marks the border between fuel subsidy & taxation. This green line also applies to **oil producing countries**: assuming that the oil production could have been sold abroad, fuel prices are effectively subsidised at the expense of the country's energy sector.

[Source: Metschies, gtz survey Dec. 2002 / Dec. 2003]

update: 09.Dec.2003

3.6 Basic Parameters of the Survey Data

Method of collection

Around the world, fuel prices vary not only from country to country as a function of global oil prices or due to individual countries legal provisions, but also within individual countries. Countrywide average filling-station fuel price statistics (pump prices) were utilised in this survey for Europe and South America, whereas for all other developing countries fuel prices as posted at filling stations in the respective capital cities were collected. The latter was done by way of a questionnaire circulated to GTZ local offices worldwide. When several fuel prices for major cities were available the un-weighted average has been used (see below).

Average Fuel Price of India:

Cities of India	Diesel Price Indian Rupee / litre	Super Gasoline Price Indian Rupee / litre
Delhi	18.06	30.20
Mumbai	22.50	34.30
Chennai	19.78	35.00
Kolkatta	19.43	30.42
Average Fuel Price India	20	32

Source: gtz India, Dec 2002

Data reference date

Following the 2-yearly sequence of the previous fuel price surveys, 10 December 2002 was chosen as the fuel-price reference date, although the data for some individual prices may vary somewhat. The price series from earlier surveys are annotated with their respective month and year.

Currency conversion

The objective was to compare the fuel-price situation in various countries around the world. The US dollar was chosen as the reference currency because all crude oil prices and most countries' import statistics are quoted in dollars. The conversion rates for the individual countries were also pegged to that of the US dollar as of December 6th, 2002, as listed in the international monetary table published in the "Financial Times".

In countries with different, or double exchange rates, the "market rate / parallel rate / black market rate" was given preference over the official exchange rate, not only because it is the rate that consumers mostly rely on, but also because experience shows that sooner or later the official exchange rate tends to be replaced by the parallel exchange rate. (c.f. Zimbabwe, Uzbekistan, Iraq)

Fuel quality

Since taxation and state revenues from taxation were the main point of interest, the most widely sold grade of gasoline (in terms of quantity) was taken as the respective basis for each country, i.e., unleaded super in European and other industrialised countries, and super (95 or 98 octane) in developing and newly industrialising countries. In countries where regular-grade gasoline is still the norm this fuel was used instead of super gasoline. No qualitative differences were drawn for diesel fuel.

Units of measurement

All fuel prices are based on the metric litre as unit of measurement. The US and to some extent South American prices were converted from US gallons to litres.

1 US gallon = 3.7853 litres; 1 barrel = 159 litres; 1 Imperial gallon = 4.5 litres

Data sources

The data pertaining to the industrialised countries stems from various sources, primarily from the German automobile club “Allgemeiner Deutscher Automobil Club” (ADAC) in Munich for the countries of Europe and the GTZ-EU OLADE Project as an energy agency in Quito, Ecuador, for South America. Most of the data for developing countries, especially those in Africa and Asia, is based on local price surveys conducted by the GTZ’s local offices. In some cases, e.g., Cuba, Myanmar, Sudan, Turkmenistan and several Persian Gulf Countries, the German Federal Foreign Office kindly assisted us in our efforts to collect the relevant data.

“Normal Sales Price” and “crude oil world market price”

The total price difference between the actual pump price at the service station and the hypothetical “Normal Sales Price” is decisive for increasing state revenues.

The “Normal Sales Price” (excluding fuel taxation) is assumed here to be 31 US cents per litre diesel and 32 US cents per litre super gasoline. It is based on a world market price of 16 US cents per litre (26 US-\$ per barrel) crude oil (“Brent”) and a mark-up to cover all costs relating to fuel production at the refinery and subsequent distribution, including an average value added tax (sales tax). This mark-up is assumed at 15 US cents for diesel and 16 US cents for gasoline. More details of the calculation can be found in chapter 3.7.2.

Both the “Normal Sales Price” (Green Base Line) and the Rotterdam spot price for North Sea Brent crude oil (Red Base Line) are defined and used as reference prices in the graphs of this publication. These prices are vary somewhat over time. When world market prices for crude oil change the reference lines also need to be moved – with the spot price line for Brent moving proportionally to the changes in the Brent price.

For illustrative purposes, the development of the Brent price over the past year is presented in chapter 3.7.

Presentation of findings

An accurate presentation of country comparisons has been chosen in order to satisfy the needs of political decision-makers.

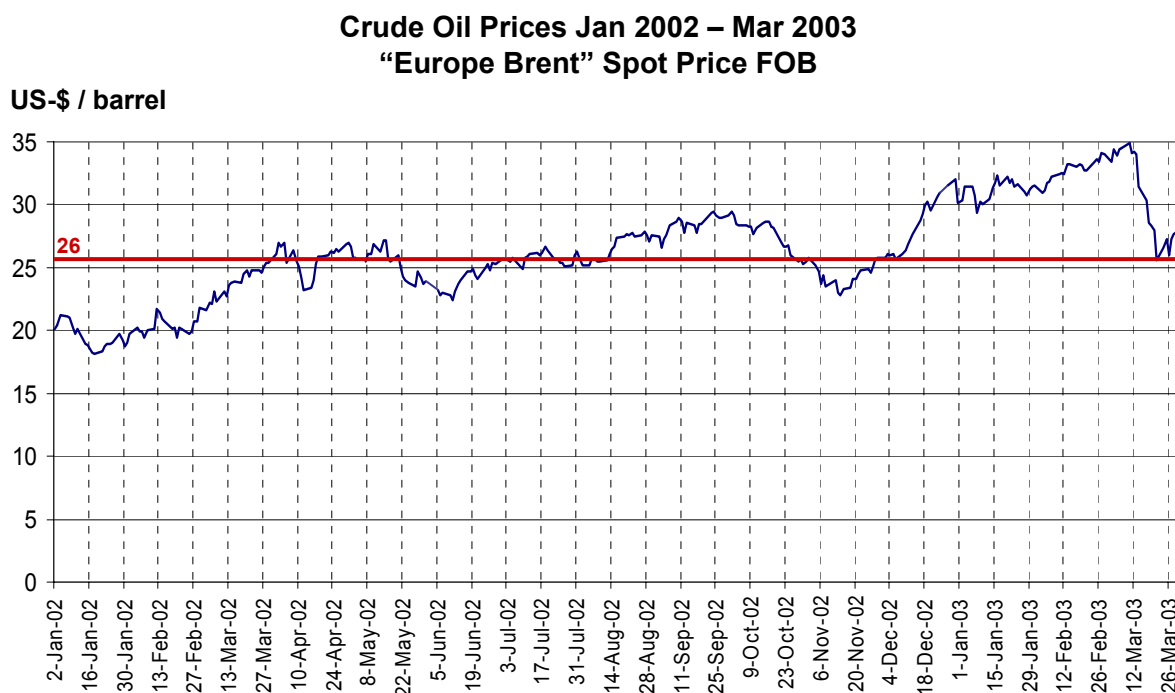
The fuel-price findings are broken down by continent and are presented in four different chapters: 3.1 AFRICA, 3.2 AMERICA, 3.3 ASIA and 3.4 EUROPE (with North and South America grouped together, and with Australia and Asia combined as ASIA). Also, different formats were chosen to satisfy different requirements:

- **Synoptic format**, in which the countries are arranged alphabetically in tables and prices for super and diesel are listed for the years 1991, 1993, 1995, 1998, 2000 and 2002;
- **Geographic format**, in which pump prices for super (and, in parentheses, for diesel) are shown both for the individual countries and for their neighbours, since political considerations in connection with potential price increases and the prevention of smuggling must, of course, include a comparison with the situation in neighbouring countries;
- **Graphical representation of price developments** in individual countries over an 11-year period. This format represents the attempts of various governments to increase or reduce the taxation of super gasoline and diesel as a revenue source (including revenue earmarked for funding the construction and maintenance of roads and highways).

3.7 From Crude Oil Price to Normal Sales Price

3.7.1 Crude Oil Price (**Red Base Line** in the graphs)

The spot price for crude oil serves as a starting point in calculating the reference price. More specifically, the “Europe Brent” quality as traded in Rotterdam has been chosen. As the graph below shows, this price has been (and continues to be) rather variable over time.



Source: U.S. Department of Energy, Energy Information Administration 2003

Note: Red Line gives world market crude oil price as of 10th Dec 2002 used in this survey

At the time of the GTZ fuel price survey (Dec 10th, 2002) the Brent price amounted to US\$ 26 per barrel, which was also close to the average price for 2002. This equates to 16 US cents per litre. Varying crude oil prices cause varying reference prices per litre, and the reference line in the graphs needs to be adjusted accordingly. Some alternative price levels per barrel and their equivalent litre prices are presented below:

Price per Barrel (=159 litre)		Price per litre
Nov 1998	US\$ 11 (1st Edition of Fuel Book)	7 US cents
Nov 2000	US\$ 31 (2nd Edition of Fuel Book)	20 US cents
Dec 2002	US\$ 26 (3rd Edition of Fuel Book)	16 US cents

3.7.2 “Normal Sales Price” (Green Base Line in the graphs)

In addition to crude oil prices, **costs for production at the refinery and for regional distribution, as well as local industry margins, oil company service fees and the local dealer margin** must be calculated; these costs may vary regionally. Past analysis however, has shown that regional differences are rather small – in particular when compared to absolute price levels. These costs can be assumed to be approximately 10 - 12 US cents per litre diesel and 11 - 13 US cents per litre gasoline.

Further details may be found in the 1998 edition of this report.

According to European Transport Policies as outlined by the European Commission, transport (and its constituent parts, such as tariffs, infrastructure costs, vehicles and fuels) basically should not be subsidised, but should instead be treated like any other industrial commodity.

Adding the costs for production, distribution and profit margins as well as sales tax / VAT* to the crude oil price yields the **“Normal Sales Price”**. This is the price for PETROLEUM FUEL, if it were sold at service stations like MINERAL WATER (i.e. no specific fuel related taxation added). This price (**Green Base Line**) also marks the boundary between fuel specific subsidisation and fuel taxation.

The above assumptions are summarized in the table below.

Calculation for the hypothetical **“Normal Sales Price”**:

	Diesel US cents per litre	Super Gasoline US cents per litre
Crude oil price of 26 US-\$ / 159 litre = Red Base Line	16	16
+ Refinery and distribution costs; Industry and dealer margins	10 – 12	11 – 13
+ Sales tax / Value Added Tax at 10 – 20 % of Normal Sales Price*	3 – 6	3 – 6
= “Normal Sales Price” excluding fuel taxation = Green Base Line	31 (29 – 34)	32 (30 – 35)

These calculations should be regarded by a rough benchmark only. However, it provides a helpful reference price to assess national fuel taxation.

“Normal Sales Price” excluding Fuel Tax for Crude Oil Price of 26 US-\$ / barrel, 15 % Sales tax / VAT	
Diesel	31 US cents per litre
Gasoline	32 US cents per litre

If national fuel prices exceed these levels, the difference may be attributed to national fuel taxation, whereas national prices below these levels may indicate subsidisation of fuel prices. However, side effects of supply and demand and competitive effects may also have some influence on the actual price level within a country.

* In previous editions of this book (1999 and 2001) an “untaxed retail pump price” was defined without VAT. The correlation to the “Normal Sales Price” of this book is: “untaxed retail pump price” + 15 % sales tax / VAT = “Normal Sales Price”

- Taxation Policies for Petroleum Products
- Basic Fuel Price Policies
- **Fuel Taxation as Part of Total Tax Revenues**
 - **Survey of 105 Countries**
 - Impact of Fuel Price Increases of 10 US Cents per Litre
 - Rising fuel taxation levels over 4 decades
 - „Windfall Profits“ in oil producing countries per person

4.1 Taxation Policies for Petroleum Products

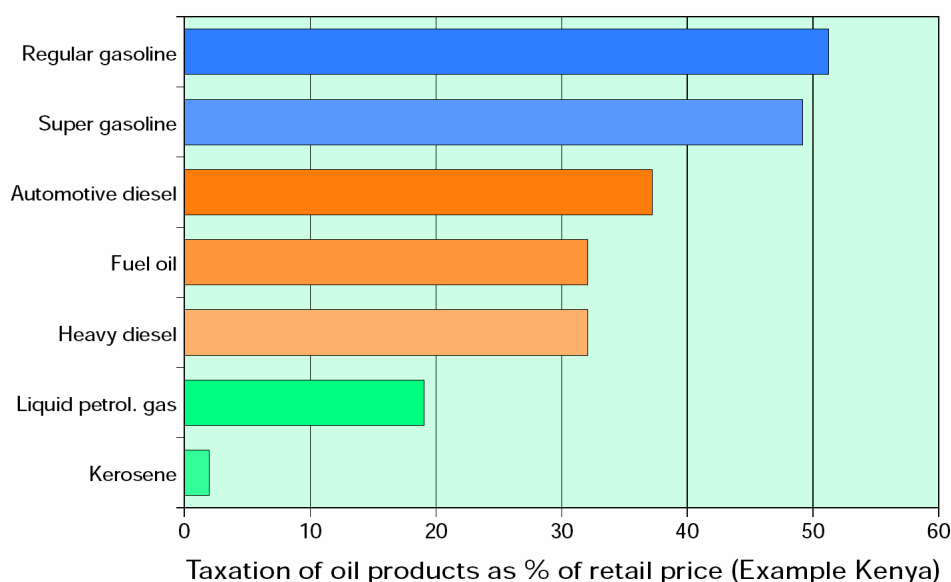
If the general economic policy is to avoid subsidisation of fuels and to consider oil products as commercial commodities, the positive aspects of revenue and expenditure management by the state will require more detailed investigation.

The taxation of petroleum products affects 3 major sectors:

- the **transport sector** (mainly road, rail and air transport),
- the **industrial sector** (mainly electricity production) and
- the **household sector** (in developing countries mainly cooking with kerosene)

The size of the fuel-consuming sectors may vary from country to country, but OLADE has calculated the following average shares for Latin America as a whole: 31.6 % for transportation, 33.4 % for industry, 35.0 % for residential and other purposes.

It is general practice to tax petroleum products by variable percentages depending on their end use, as in the example of Kenya below:



Source: Bereket Kebede: "Petroleum Pricing and Taxation: The Case of Ethiopia, Kenya and Malawi", in: Afrepren - African Energy Policy Research Network, Newsletter No.21, September 1997, pp. 1-3

The main purpose of the above diagram is to establish the ranking of taxation on petroleum products, i.e.:

- of all fuels, transport fuels carry the highest taxation,
- industrial fuels are taxed less,
- cooking energy may be tax-exempt or even subsidised.

As a rule of thumb, the **taxation of transport fuels** – such as regular and super gasoline in the case of Kenya above – also **smooths the way for the taxation of fuels and energy in other sectors.**

4.2 Fuel Price Policies (Subsidies, Taxation and Long-Term Effects)

While fuel taxation is taken for granted in industrialised countries, there are still a number of countries – primarily developing countries and former Eastern Bloc states – that pursue just the opposite policy, that is to subsidise fuel prices.

*"Let us not overlook the fact that developing countries are subsidising energy at the rate of US\$ 230 billion per year. That is more than five times the current total of development assistance payments from North to South."*¹

Such a – misguided – political decision in favour of general subsidisation of fuels applies not only to the transportation sector (including the relevant fuels) but also to the energy sector per se (including power generation based mainly on diesel generators), and often pervades a country's infrastructure, including agriculture (fuel for pumps, tractors, fishing boats, etc.).

Consequently, any change in such a country's policy of fuel subsidisation would often have to be regarded as only one, albeit crucial, component of an overall shift in economic policy, or at least in the respective sector policy. Among developing countries, this often yields what is referred to as **structural adjustment** or, in former Eastern Bloc countries, a **transition policy**.

4.2.1 Country-Specific Fuel Subsidies

In the present context, the term "fuel subsidies" is understood as the sum total of all official measures, which

- in the case of **direct subsidisation**, make the retail price of fuel cheaper compared to normal industrial commodities, or
- in the case of **indirect subsidisation**, such as exemption from sales tax / VAT or via lower-cost domestic fuel production, make the retail price of the fuel cheaper than in countries which depend on the world market.

4.2.2 Transport Sector Policy and Fuel Prices

There can be no doubt that a sound transport policy – as advocated by most bilateral and multilateral donors and banks – requires a sector policy which essentially comprises the following major steps:

- firstly, the elimination of fuel subsidies,
- secondly, taxation of transport fuels to cover all costs of road maintenance and construction in the country (often amounting to 10 US cents/litre of diesel and gasoline) and
- thirdly, further taxation to balance the total expenditure in the transport sector (including rail and public transport)

Furthermore, in the case of private passenger vehicles, many developing countries may levy additional luxury taxes on gasoline prices to cover other government expenses.

These basic principles of national fuel-price policy constitute a major issue in discussions about WTO (World Trade Organisation) membership for developing countries.

In the case of applications for EU (European Union) membership, the so-called *acquis communautaire* is applied. This requires that the country in question levies a minimum tax on diesel fuel such as to at least equal the lowest existing pump price in core-EU countries (i.e., Portugal).

Oil producing countries are often – erroneously – considered exemptions to normal policy standards, as the Norway/Turkmenistan example reveals (see Box 4.2.4 A). Oil importing countries should appreciate that all fuel sold in local currency is basically a world market product and should be paid for in convertible currency (either by the government or by the consumer: see Box 4.2.4 B).

¹ I. Serageldin, World Bank vice-president for environmentally sustainable development, in "Public Transport International", UITP – Brussels 2/1993, special issue, p. 30

BOX 4.2.4 A: Fuel Policy of Oil Producers – NORWAY and TURKMENISTAN

It is often said that oil producing countries should execute their sovereign power to guaranty low fuel prices for their own population. This is done in some countries, mostly in the Middle East, in Venezuela and Indonesia, however many other oil producers follow a world market policy. The extremes are shown in the following table:

	Inhabitants	Surface Area	Gasoline Price	Diesel Price
Turkmenistan	4.5 million	488 000 sq km	2 US cents/litre	1 US cent/litre
Norway	4.8 million	324 000 sq km	123 US cents/litre	118 US cents/litre

Middle East countries like Saudi Arabia, Kuwait, Bahrain, UAE and Oman, as well as Brunei are slowly following the trend of increasing their formerly low local fuel prices.

American oil producers like Trinidad and Colombia more or less follow the US price level whereby gasoline prices must at least pay for the roads.

European oil producers like Norway and Britain realise that high fuel taxes and all the “windfall” profits are urgently needed to finance the social requirements of the government.

BOX 4.2.4 B: Fuel Policy of Oil Importers - CUBA and ZIMBABWE

Since the breakdown of the central command economy in Eastern Europe and the dissolution of the Council for Mutual Economic Assistance COMECON¹ in June 1991, all former member states including Cuba, Mongolia and Vietnam, have had to follow the principles of the market economy based on world market prices and on convertible currencies. This holds true especially for the oil sector.

Therefore, For countries with traditionally “weak” non-convertible currencies such as Cuba, or countries which have recently introduced double exchange rates such as Zimbabwe, special problems arise:

The Cuban solution is to shift the new conditions from the government onto the consumer, i.e. to demand that the individual Cuban consumer **should pay for gasoline in foreign currency** (US\$) at the country’s filling stations (gasoline for 90 US cents/litre and diesel 45 US cents/litre). This is a viable solution, similar to the practice in many developing countries whereby all flight tickets even domestic, are bought with US\$. Thus the procurement of foreign currency (from whatever sources) becomes the task of the consumer.

The other solution is that of **Zimbabwe**. The import of fuel was calculated at the tremendously **overvalued local currency exchange rate** and the consumer is benefiting from the purchase of gasoline at “artificially” low prices: At the exchange rate of the parallel market, which indicates the real situation in the long term, gasoline sells in Zimbabwe at only 5 US cents per litre. The incentive to smuggle it into neighbouring Zambia (with a litre price of 72 cents) is evident and the break-down of the system only a question of time.

The third solution, to **adjust all local fuel prices regularly** or automatically by linking them to the floating currency and inflation, is generally recommended. But there are problems in some countries – like GHANA² – where all government price increases (including fuel prices) must first be approved by parliament.

¹ Harenberg, Aktuell 92, p. 102

² reported situation in the year 2000

4.2.3 Long-Term Effects of Fuel Price Policies

There are obvious short-term political benefits of low fuel prices, but in the long run even industrialised countries must pay for ill-conceived low-price policies:

Up to now RUSSIA has been unable to develop its own truck production¹ to the accepted environmental standards of Central Europe. US passenger cars consume on average 3.3 litres per 100 km more than European cars (see Box 4.2.3).

BOX 4.2.3: How Fuel Price Policies affect Specific Fuel Consumption of Vehicles

Engineering efforts to design low-consumption vehicles depend largely on national price incentives related to existing fuel taxation. The development of low-consumption motors for low-emission vehicles costs billions and takes decades.

Therefore countries with very low fuel prices (which by international standards are subsidised, as in Russia) produce cars with high fuel consumption. Countries with relatively low fuel taxation (like the US) did not achieve any progress in the reduction of specific fuel consumption in their national markets. It is mainly countries with high and increasing fuel taxation (as in Europe and Japan) which have developed low-consumption vehicles on a national scale. This may best be seen from the following table showing the average consumption for cars:

Examples of increasing and decreasing fuel consumption per average car nationwide:

	1975	1980	1985	1995	2002
	[litres per 100 km]				
US Average		10.6			11.5
German Average	10.9		10.7	8.4	8.2

(acc. to International Herald Tribune May 5, 2003 : “U.S. autos’ fuel efficiency at 22-year low” and Verkehrstaschenbuch 2002/3 ARAL AG, p. 405 or www.aral.de/presse)

Note:

Conversion of miles per gallon into litres per 100 km acc. to formula mpg = 235/litres per 100km

4.2.4 Fuel Shortages in Oil-Producing Countries

In the northern parts of NIGERIA fuel shortages are reported quite often. This strange phenomenon for an oil producing country is the result of an erroneous price policy: Since prices on the other side of the (open) borders are more profitable, customers abroad are served first and the remainder is left for the local population.

¹ “Release of import taxes for foreign trucks in Russia” (DVZ 04/2003)

4.3 Fuel Taxation as Part of Total Tax Revenues

Within the highly sophisticated tax systems of industrialised countries, fuel taxes play an increasingly important role and the present high taxation levels were built up step-by-step over a period of some decades.

In developing countries, collection of income taxes and sales taxes as the main sources of state revenue is problematic. Therefore the easy to collect fuel tax is an important financial source for the government. In some cases, the tax on fuel may even be the single most important tax.

Most Important Tax Revenues	% of Total Tax Revenues Germany 2002
1. Income Tax	36.0 %
2. Sales Tax (VAT)	31.0 %
of which from Fuel Tax*	1.4 %
3. Petroleum Tax	9.2 %
of which from Fuel Tax	8.7 %
4. Business Tax	5.5 %
5. Tobacco Tax	2.7 %
6. Corporate Tax	2.5 %
7. Solidarity Tax	2.5 %
8. Real Estate Tax	2.0 %
9. Vehicle Tax	1.8 %
10. Insurance Tax	1.6 %

Source: German Ministry of Finance, 2002

* Sales tax levied on the fuel tax, which can therefore be considered an additional fuel tax.

In GERMANY the fuel tax is the third most important tax, accounting for $8.7 \% + 1.4 \% = 10.1 \%$ of all government tax revenues.

The fuel sector in the state budget may represent a heavy burden, if it is subsidised, or one of the biggest sources of income and a mainstay of state finance if it is taxed.

As reliable data is scarce, the transport fuel consumption of the various countries has been estimated on the basis of the known figures of the size of the vehicle fleet. Thus an estimate of the cash contribution was possible using the difference between the countries actual sales price and the hypothetical "Normal Sales Price". Therefore VAT on fuel excise duties is included in the cash contribution. The contribution of non-transport fuels (as heavy diesel for power plants etc.) has not been taken into consideration. Motorcycle consumption has also been left since reliable data on motorcycles is not available on a worldwide scale.

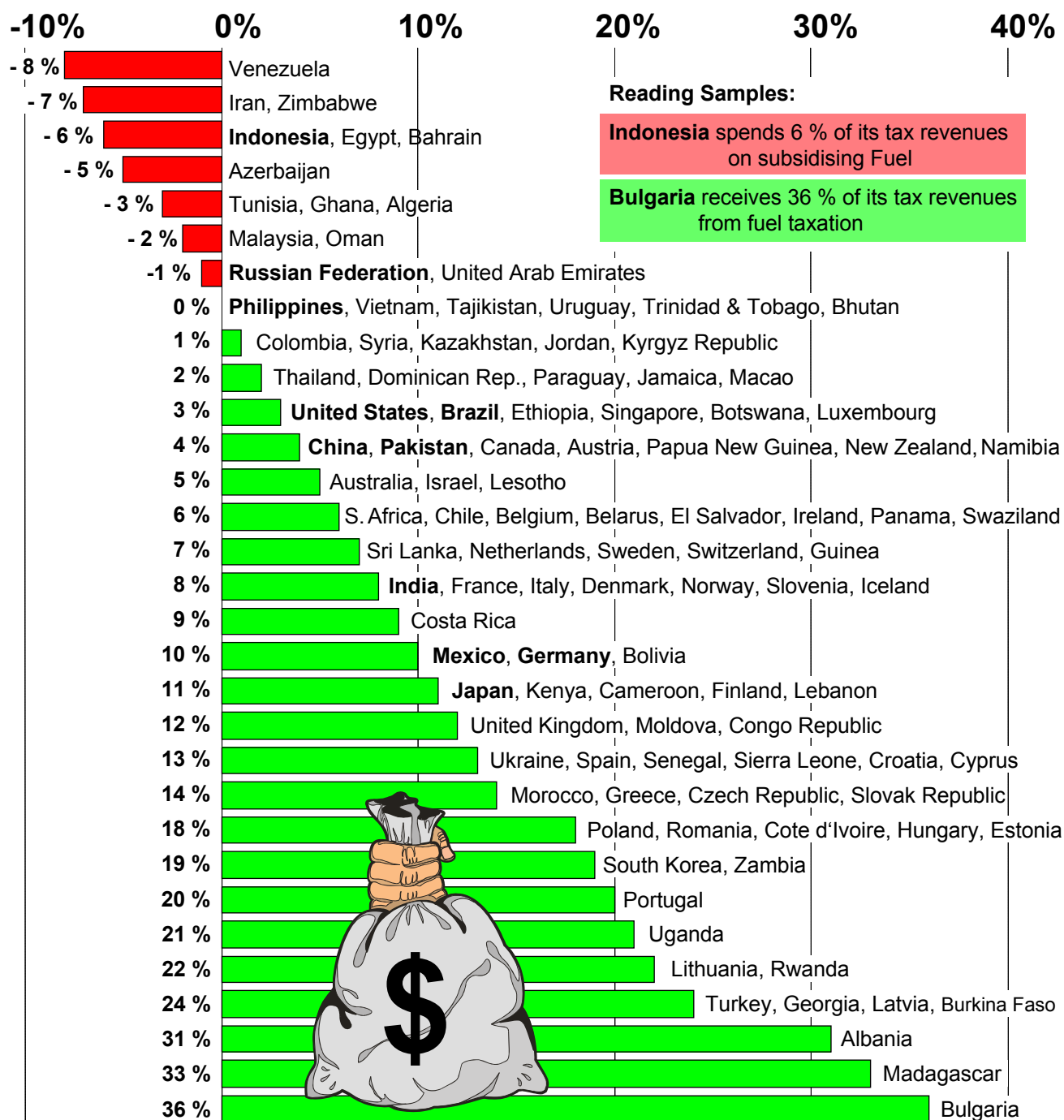
The figures for each country's total tax revenues have been taken from the most recent IMF Finance Statistics Yearbook.

The results, (transport fuel taxation as a percentage of total tax revenue in 110 countries) are presented graphically in chapter 4.3.1, which serves as a general orientation.

The same fuel taxation revenues are presented country by country on the continent maps of paragraph 4.3.2 – 4.3.5. However, the **4 continent maps** additionally contain information on how a potential fuel price increase of 10 US cents per litre on gasoline and diesel would increase the total government tax revenue – measured as a percentage of current government tax revenues.

4.3.1 Fuel Tax Contribution to Total Tax Revenues in 105 Countries

[Calculated Transport Fuel Taxation as % of Total Tax Revenues*]



Note: Current fuel taxation revenues have been calculated using a fuel consumption of 10 litres / 100 km for a car and 25 litres / 100 km for a commercial vehicle. The average annual distance travelled for cars has been estimated at 10,000 km per year, if exact data is not available. The average annual distance travelled for commercial vehicles has been estimated at 25,000 km per year (average of pick-up, truck and public service vehicles). Fuel taxation per liter has been estimated at sales price of 10 Dec. 2002 minus "Normal Sales Price (excluding fuel taxation)". (for details see chapter 8.1 and 8.2)

* Most recently available consolidated central government tax revenues from the International Monetary Fund have been used. Currencies have been converted using the average exchange rate of the fiscal year concerned. (for details see chapter 8.3)

[Sources: Verkehrstaschenbuch Aral 2002/2003, World Road Statistics IRF 2002, IMF Government Finance Statistics Yearbook 2002, Consultants Calculations]

update: 09.Dec.2003

4.3.2 Fuel Taxation Revenues in Africa

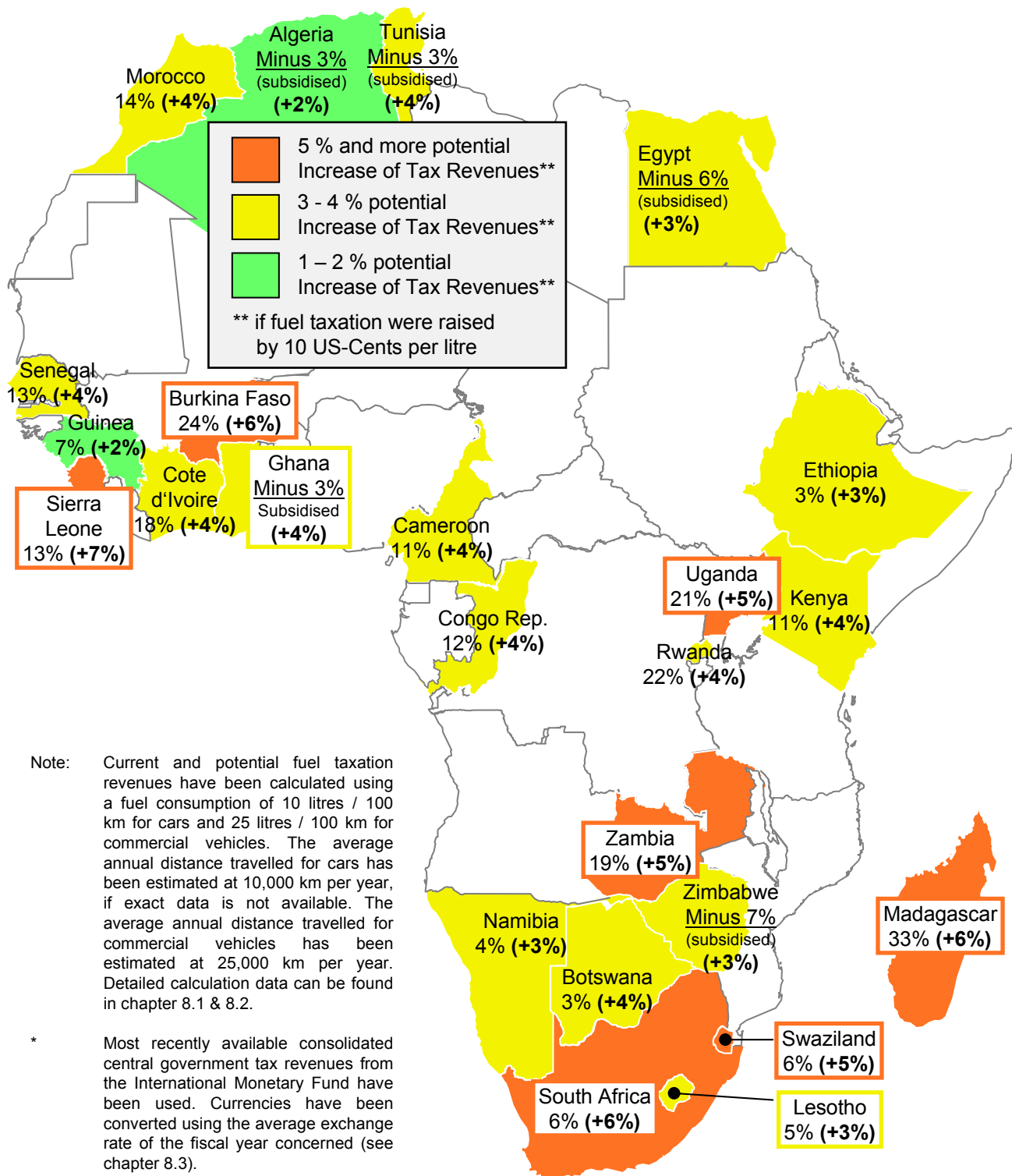
+ Impact of a Fuel Price Increase of 10 US-Cents / litre

Reading Sample:

Existing Fuel SUBSIDIES
represents 6% of all Tax Revenues*

Egypt
Minus 6% (+3%)
(subsidised)

Impact of a potential Tax Increase
of 10 US cents/litre represents 3 % of all Tax Rev.*



[Source: Verkehrstaschenbuch Aral 2002/2003, World Road Statistics IRF 2002, IMF Government Finance Statistics Yearbook 2002, World Bank World Economic Indicators 2003]

4.3.3 Fuel Taxation Revenues in America

+ Impact of a Fuel Price Increase of 10 US-Cents / litre

Reading Sample:

Existing Fuel TAXATION →

represents 10% of all Tax Revenues*

Mexico
10% (+4%) ←

Impact of a potential Tax Increase

of 10 US cents/litre represents 4 % of all Tax Rev.*



4.3.4 Fuel Taxation Revenues in Asia

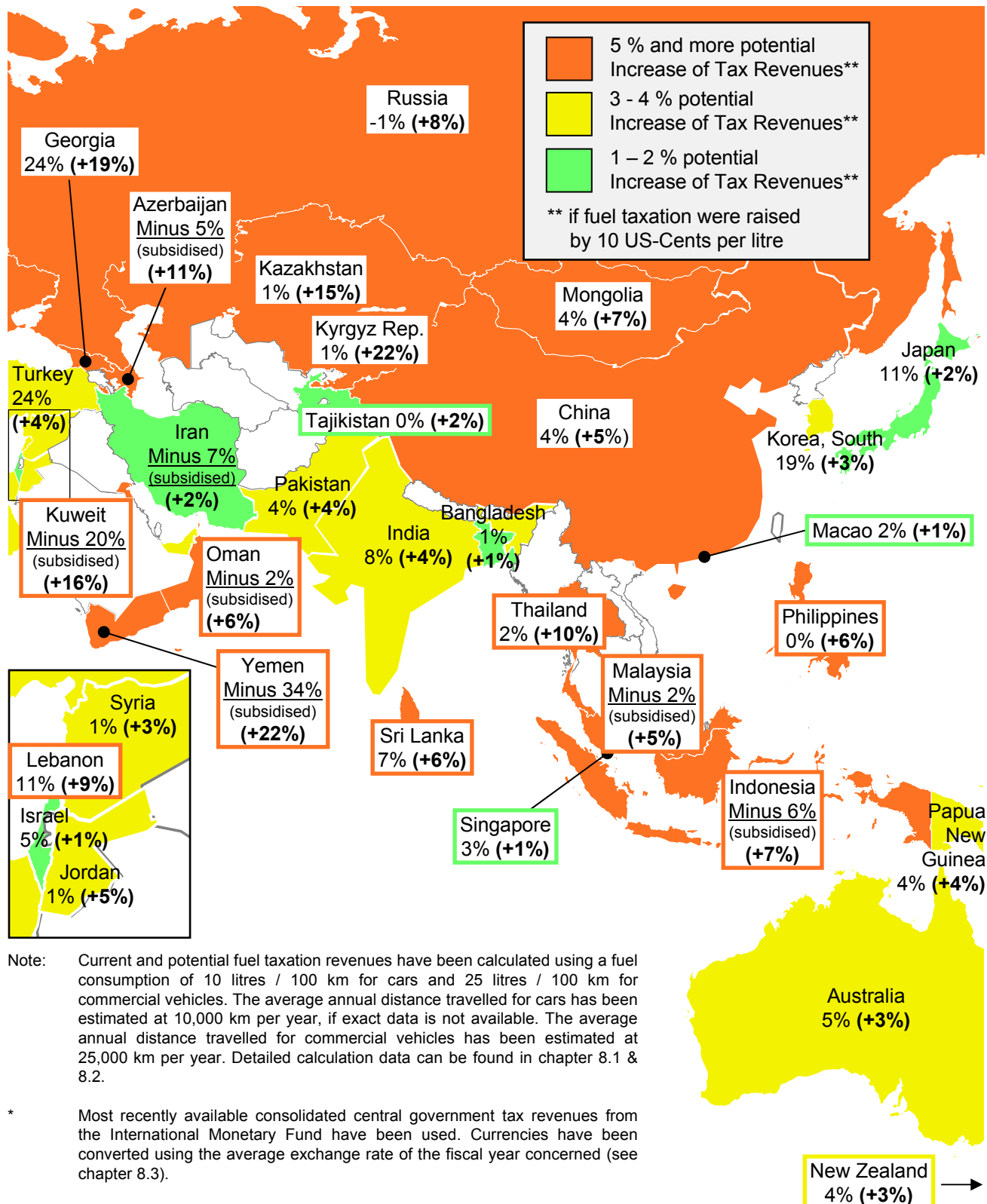
+ Impact of a Fuel Price Increase of 10 US-Cents / litre

Reading Sample:

Existing Fuel TAXATION
represents 8% of all Tax Revenues*

India
8% (+4%)

Impact of a potential Tax Increase
of 10 US cents/litre represents 4 % of all Tax Rev.*



[Source: Verkehrstaschenbuch Aral 2002/2003, World Road Statistics IRF 2002, IMF Government Finance Statistics Yearbook 2002, World Bank World Economic Indicators 2003]

4.3.5 Fuel Taxation Revenues in Europe

+ Impact of a Fuel Price Increase of 10 US-Cents / litre

Reading Sample:

Existing Fuel TAXATION →

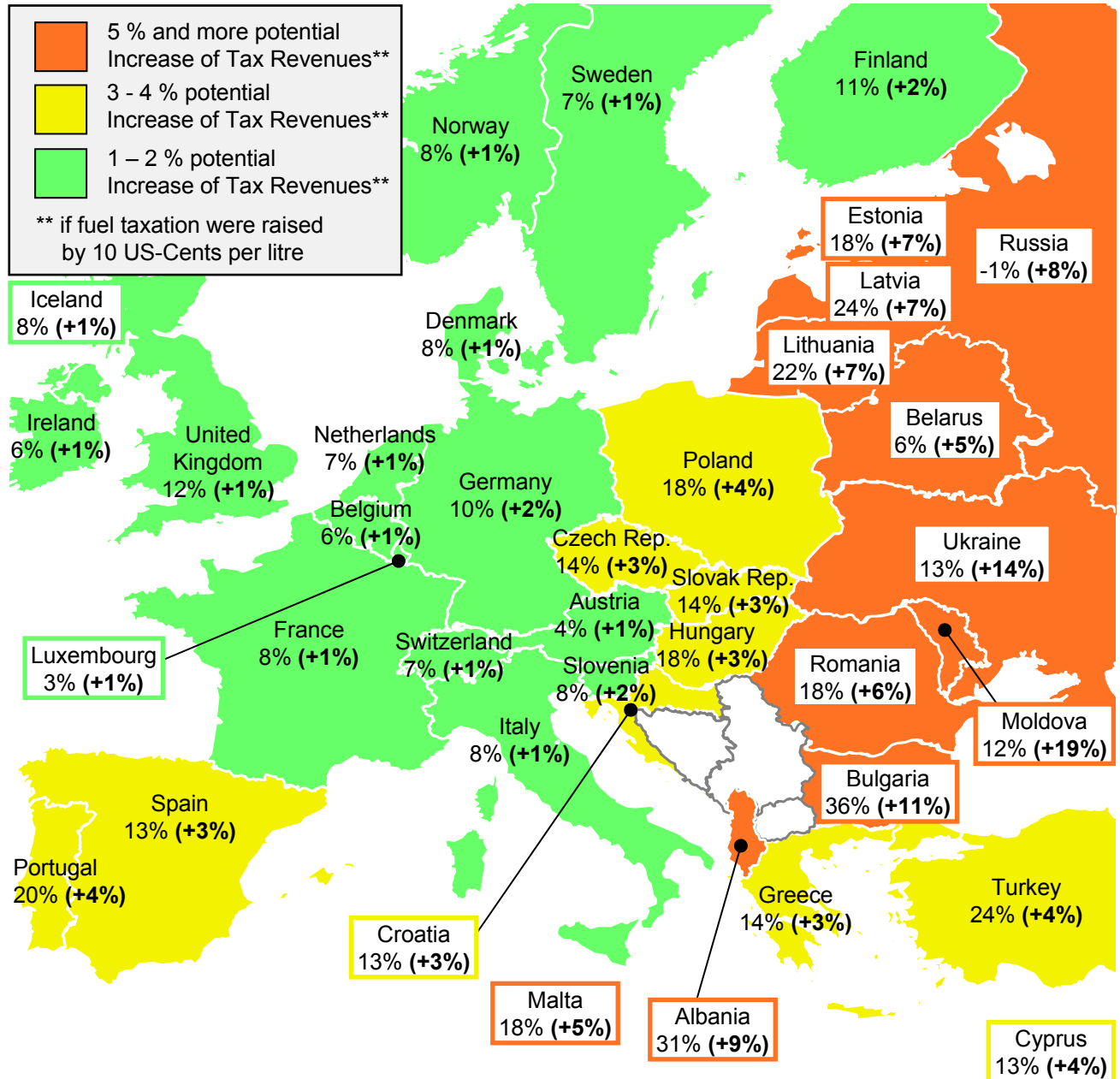
represents 10% of all Tax Revenues*

Germany

10% (+2%)

← **Impact of a potential Tax Increase**

of 10 US cents/litre represents 2 % of all Tax Rev.*



Note: Current and potential fuel taxation revenues have been calculated using a fuel consumption of 10 litres / 100 km for cars and 25 litres / 100 km for commercial vehicles. The average annual distance travelled for cars has been estimated at 10,000 km per year, if exact data is not available. The average annual distance travelled for commercial vehicles has been estimated at 25,000 km per year. Detailed calculation data can be found in chapter 8.1 & 8.2.

* Most recently available consolidated central government tax revenues from the International Monetary Fund have been used. Currencies have been converted using the average exchange rate of the fiscal year concerned (see chapter 8.3).

[Source: Verkehrstaschenbuch Aral 2002/2003, World Road Statistics IRF 2002, IMF Government Finance Statistics Yearbook 2002, World Bank World Economic Indicators 2003]

4.3.6 History of EUROPEAN Fuel Taxation Levels

German taxes on fuel were US\$ 44 billion in 2002 (using the average annual exchange rate). This enormous amount – which is higher than the US fuel tax revenues - is the result of a systematic policy of **fuel tax increases over the past 4 decades** (1964 – 2002).

Year	Applied Gasoline Tax in US cents*/ litre	Value Added Tax on Gasoline Tax in US cents*/ litre	Applied Diesel Tax in US cents*/ litre	Value Added Tax on Diesel Tax in US cents*/ litre
1964	16	0 (1% VAT)	15	0 (1% VAT)
1974	23	3 (11% VAT)	21	2 (11% VAT)
1984	26	4 (14% VAT)	23	3 (14% VAT)
1994	51 (unleaded)	8 (15% VAT)	32	5 (15% VAT)
2002	62 (unleaded)	10 (16% VAT)	44	7 (16% VAT)

* Exchange Rate of 10th Dec 2002 used (1 US\$ = 0.9922 €)

Source: Aral Verkehrstaschenbuch, 2002/2003

The example above of fuel-tax evolution in Germany over the past 4 decades illustrates the historical background of the present situation in high-tax countries (EU and Japan), as indicated in the global diagrams as "category IV" for the year 2002 only.

4.3.7 “Windfall Profits” of Oil Producer Countries

Oil producing countries generate additional state revenues from crude oil production. But the role of oil in state finances differs widely. Oil revenues may replace other taxes only in countries with small populations (<5 million) – an exception is Saudi Arabia with 20 million inhabitants. In most cases the role of oil production in state finances is grossly over-estimated. If the net “windfall profits” were assumed to be 50% of a World Market Price of 25 US\$ per barrel and if they were to be distributed equally, the following monthly revenue per person would be achieved. The internationally agreed poverty lines are 1-2 US\$ / day or 30-60 US\$ / month per person (for more countries see chapter 8.5).

Country	Population [million]	Crude Oil Production [1000 barrel / day]	Windfall Profits [US\$ / month / person]
Kuwait	2	1947	370
Norway	4	3227	307
United Arab Emirates	3	2114	268
Saudi Arabia	20	7889	150
Libya	5	1324	101
Venezuela	24	2792	44
Iraq	23	2594	43
Angola	12	740	23
Iran	63	3572	22
Mexico	97	3127	12
CIS and Russia	291	8070	11
USA	278	5801	8
Nigeria	124	2018	6
Brazil	168	1305	3
Indonesia	207	1214	2
China	1254	3297	1

Source: OPEC Annual Statistical Bulletin 2001, World Bank World Development Indicators 2002

- Taxation Exemptions
- Tax Evasion
- **Cross-Border Contraband**
- Harmonisation of Fuel Prices

Taxation is generally deemed an act of national sovereignty. However, a comparison with the price situation in neighbouring countries is often omitted from the internal political decision making process.

The continent-by-continent fuel price tables included in chapter 3 summarise the cross-border situation. For instance, a comparison of fuel prices in Nigeria and Cameroon yields a fuel price ratio of 1 : 2. And, since most developing countries' borders cannot be controlled effectively, there is an enormous potential for fuel smuggling – and that potential is being exploited.

It has been estimated that some 20 % to 50 % of all fuel consumed in Benin, Togo, Ghana, Burkina Faso, Mali, Niger, Cameroon and Chad is of non-taxed origin¹.

This equates to millions of US\$ in lost national revenues, while the state budget frequently does not even suffice to pay the salaries of state employees on time (with such payments often lagging a quarter of a year behind schedule²).

The price data and other figures stated in this report provide a basis for a more detailed calculation of the effects of fuel smuggling. However, the only real remedy for the problem may lie in international agreements to harmonise taxation levels on the basis of regional customs unions (e.g., ECOWAS and UDEAC in West and Central Africa), provided they are supported by the individual governments.

¹ Ian Heggie, Managing and Financing of Roads, p. 68

² Metschies, G., Note on fuel taxation in Togo, dated Dec. 6, 1995

5.1 Legal Fuel Taxation Exemptions: Farmers, Fisheries, Military & Presidency

Privileges are sought by many groups of the society. As the general trend persists to raise fuel prices, world-wide tax exemptions are granted in different fields:

- Use of diesel in subsidised **agriculture** is often exempted from fuel tax. In European countries agricultural diesel is distinguished by being coloured. Nevertheless a high degree of misuse (such as for private diesel cars etc.) is evident.
- Social reasons are promulgated, mainly to protect the poor. For example in the SENEGAL, the small **fisheries** using gasoline in their motor-driven canoes had to be protected. Misuse was to be expected, consequently some years later¹ nearly half the gasoline consumption of the country was attributed to fishermen's needs.
- The **military** in many countries also plays a special role. Therefore privileges of untaxed fuel are often used and even control of private military use is missing. It may happen (MADAGASCAR 1998) that even a rural roads study cannot be executed as planned because all information on fuel sector revenues are explicitly restricted by ministries.
- The **presidency** may execute special powers by authorising local businessmen to direct the import of fuel (such as by truck from NIGERIA to BURKINA FASO) thus alleviating local shortages, or members of the governing family (as reported from former Zaire or Mali) do so.
- Fuel tax exemptions for rail and public transport, even in cases where no fuel tax is used for the road sector, are common in many countries.

The conclusion drawn from the examples cited above is, that **generally, exemptions even from high fuel taxes should not be granted** and that subsidies, if required, should be managed in other ways, preferably by transparent direct transfers to the individual recipients.

¹ Findings of an International Bank on road Sector Financing in 1982

5.2 Tax Evasion due to Lack of Government Control

Negligence and lack of government control on semi-legal practices in the fuel sector may lead to substantial losses of tax revenues.

Thus the lack of a government order to limit the size of truck tanks to max. 200 litres, may result in a revenue loss in excess of the state's expenditure on roads. (*see Box 5.2 A*)

The lack of controls on transit fuel tankers leads to the same effect. (*see Box 5.2 B*),

Or the taxation point of fuel is not centralised at the refinery, but decentralised to the fuel companies which may fail to declare their full distribution of fuel. (*see Box 5.2 C*)

BOX 5.2 A: Poland - Fuel Import undermines Transport Policy of Government ²

In 2002 the Polish Fuel Distributors Association informed the Polish Government on the extent of fuel smuggling between Belarus and Poland. It estimated an annual tax loss € 570 million, truckers had enlarged their normal 200 litres tank up to 1,500 litres and were selling the cheaper Belarus fuel (diesel price of 36 US cents against 68 US cents per litre in Poland) all over Eastern Poland. The Polish government was urged to introduce a decree of limiting tank size to the European limit of 200 litres³, with effect from 01 January 2003.

This amount of lost tax revenues would have been sufficient for the construction of 160 km of new motorways each year. Budget Expenditure for all roads of the country was only US\$ 582 million (1997), out of which 40% needed to be paid by foreign sources¹.

BOX 5.2 B: West Africa – Missing Transparency in Transit Transport and Fuel Administration

Fuel supply by overland transport to landlocked countries is a special problem. It may be solved as in the Cote d'Ivoire, where transit tankers to Mali and Burkina Faso were given tax exemption ("duty-free") clearances. However, if the number and amount of clearance certificates is not sufficiently controlled⁴, tanker trucks may "vanish" or be half-unloaded along the transit route⁵. Another regimentation is to allow the transport of taxed fuel only. Preferably this tax should be that of the destination country. But nevertheless, trucks transiting to countries with higher local taxes may still find it profitable to sell part of their cargo underway.

In many countries fuel administration of imports is executed by parastatal bodies, the control of these should be a priority of the Auditor General

¹ NEI Study on Road Transport Charges in SOE Countries, Annex 12, Dec 2000

² Vereinigung Deutscher Kraftwagenspediteure VKS, 3/2003

³ The same problem was found in 1985 at the Malawi/Zambia border, when trucks with special 1000 litres tanks were put into service

⁴ Ivory Coast 1995

⁵ Details of illicit traffic in motor fuels in Westafrica are given in: METSCHIES/Rausch; „Financing road maintenance in Westafrica“, GTZ – Eschborn 2000, p. 163-168.

Theoretically, collection of tax from fuel is easy. Unlike Value Added Tax (VAT), thousands of output sources do not have to be identified (e.g. shops, craftsmen, factories etc. all over the country), but only a few input locations such as the (often only) refinery or port of import. For this purpose just a few dozen state officials may be sufficient.

Nevertheless experience shows that collection ratios are often low, e.g. only 57% in Kazakhstan¹. This means that even control of the few local fuel companies is inadequate. Similar situations prevail in other former CIS countries, where seats in parliament are often taken by local profiteers in order to enjoy parliamentary immunity.

The increase of tax collection rates from refineries and fuel companies to between 90 and 100% at short notice is a worthwhile conditionality imposed by foreign donors and international banks.

But practical control is difficult and needs to operate at different levels:

- at the state fuel import organisations, which often lack audited annual reports and
- at the state-owned refineries, which may – as on the West-African coast – form a cooperative supply chain reaching from Gabon, Cameroon and Nigeria up to Ghana, Côte d'Ivoire and Sierra Leone (See Box 5.2 C)

BOX 5.2 C: Côte d'Ivoire – Foreign Inspection Leakage

The profiteers have a powerful lobby which has ready cash to pay for lawyers:

When conditionalities imposed on the Abidjan refinery (1997) called for the inspection of incoming fuel ships a neutral foreign customs control company was appointed. But in the conditionalities it was only stated that the Swiss company should control some of the incoming ships, not all of them.

¹ NEI Study on Road Sector Finance 2000

5.3 Fuel Contraband

Contrary to tax evasion, the smuggling of fuel is clearly illegal. It may be done by individuals, but often it is in the hands of organised crime or local warlords. (see Box 5.3 B)

Given the enormous profits however (see Box: 5.3 A), fuel smuggling occurs all over the world.

BOX 5.3 A: World Records of Border Price Differences

The biggest price differences between neighbouring regions and countries are identified below:

Border of	Price Difference for Gasoline per litre	Smuggling Raw Profits (roughly)		
		per Jerrycan 20 litres	per Barrel 159 litres	per Trailer 15,000 litres
Hong Kong / Mainland China	147 - 42 = 105 US cents	US\$ 21	US\$ 167	US\$ 15 750
Turkey/ Iraq	102 - 2 = 100 US cents	US\$ 20	US\$ 159	US\$ 15 000

In such special cases customs control is mandatory, in the Chinese case a private submarine pipeline connecting Hong Kong with Mainland China was even detected by the police, while the Northern Iraq is Kurdish territory.

BOX 5.3 B: Afghanistan - Untaxed Fuel Supply in a Civil War

In Afghanistan, nearly all fuel for its 22 million inhabitants comes from the Iranian border by truck and not via nearby Pakistan, as may be seen from the following price table:

	DIESEL [US cents per litre]	SUPER [US cents per litre]
Iran	2	7
Kabul/Afghanistan	27	34
Pakistan	35	52



The contraband trade from Iran mainly crosses Nimroze Province in South-West Afghanistan via Ghurghuri and Zaranj City. Fuel tankers (often loaded with 12 000 litres) then reach Kabul via Kandahar, therefore fuel prices in Kandahar are lower than in Kabul. Due to this, the central government has to cede the profits of contraband fuel from Iran to local warlords and Talibans.

update: 09.Dec.2003

Traditions are difficult to change. This holds true for fuel smugglers also, especially in West and Central Africa, where the English-speaking countries of Nigeria, Ghana and Sierra Leone traditionally followed a low-price policy for fuel, while the neighbouring French speaking countries continued the former French policy of high taxation.

BOX 5.3 C: Ghana – Over 25 years Tradition of Fuel Contraband

In the late 1970s in GHANA fuel prices were 3-4 times higher than in neighbouring French-speaking CFA countries. After Ghana's economic breakdown in 1984 this ratio improved, but after 1991 Ghana's new situation ran into difficulties as shown in the following table:

Country	1991		2002	
	Diesel Price [US cents per litre]	Gasoline Price [US cents per litre]	Diesel Price [US cents per litre]	Gasoline Price [US cents per litre]
Togo	66	81	46	56
Cote d'Ivoire	115	124	60	85
Burkina Faso	84	103	62	83
Ghana	43	53	23	28



The above table compares the situation before and after the 50 % devaluation of the CFA Franc in 1994, which led – calculated in US\$ terms – to the above fuel price reductions in all of the countries neighbouring Ghana¹.

Remarkably, Ghana followed suit in dropping its local fuel prices. It lowered them even more than all the neighbouring countries, cutting sales prices between 1991 and 2002 by half. In this way the gross profit margin of the contraband trade (approximately 40 US cents per litre diesel and 50 US cents per litre gasoline) could be maintained. Cross-border transport routes are well established, thus in the 1984 crisis the World's biggest cocoa crop was able to be sold to neighbouring countries.

Comparing the 1991 situation with that of 2002 also reveals that the gross margin of contraband between Burkina and Ghana was formerly approximately equivalent to the fuel sales price in Ghana, in 2002 however this margin was almost double the Ghana price. It seems that the state itself has no lobby for its own interests and during the presidential campaign of 2001 even the Value Added Tax on fuel was abolished.

Although low fuel prices are officially defended ("special treaties with Nigeria"), the present problem is that fuel prices are below the subsidisation borderline! This means that the former contraband tolerance of the state, which previously drew at least some tax profits from the low taxed smuggled fuel, has vanished.

This situation has had serious consequences for state finances, including the financing of the previously established Road Fund.

¹ Details can be found in the previous 2nd edition of Fuel Prices and Vehicle Taxation, page 59

5.4 The Need for Fuel Price Harmonisation

The problem of different national fuel taxation rates, in spite of a Common Market and open international borders applies even within the European Union. Recently the British government in Northern Ireland has complained about diesel smuggling from the neighbouring Irish Republic, where the diesel price is 40 US cents per litre less. Also Luxembourg has fuel prices well below those in neighbouring countries.

BOX 5.4 A: Luxembourg - Fuel Tourism in Europe

In Luxembourg, with the lowest fuel prices in the EU and its “Fuel Tourism”, the need for fuel tax harmonisation is evident. Although the actual behaviour of fuel consumers in Luxembourg may be similar to other EU countries, the fuel consumption per capita in Luxembourg is more than 3 times that of neighbouring European countries or the European average.

Fuel Prices and Fuel consumption per capita in Western Europe:

Country	Diesel price per litre 2002	Gasoline price per litre 2002	Fuel Consumption per capita (in kg) 2001
France	80	105	1454
Belgium	80	104	2162
Germany	82	103	1491
Luxembourg	65	76	5430
EU average of 15 countries	81	95	1452

(acc. ARAL Verkehrstaschenbuch 2002/3, p. 354 and MWV)

As the table reveals, due to the fuel price and tax differences in Luxembourg: for 1 litre fuel consumed locally approximately, 2 additional litres are transferred abroad. A fall in the fuel consumption of the 440 000 Luxembourg inhabitants to the EU average may generate serious consequences and may even affect the GDP of the country.

Nevertheless a political agreement on fuel tax harmonisation within the EU is overdue.

Experience from all over the world indicates that in the long-term, cross border contraband can only be successfully prevented by political agreements on international price harmonisation.

Theoretically a harmonisation may drive prices either up or down, but in practice a price increase may be the only solution. Since political debates are driven by the self interest of the participants, detailed financial and economic studies on the profits and consequences of price harmonisation should be executed by independent consultants. In most cases all the governments involved will profit from price harmonisation – at the expenses of private profiteers. On the basis of the data presented in the continent maps, five countries were identified where price harmonisation with neighbouring countries is most urgently needed.

BOX 5.4 B: The 5 Most Urgent Cases for Harmonisation and Fuel Price Adjustments

As shown on the African fuel price map there are two oil producing countries in Sub-Saharan Africa, where low prices and therefore the incentives for contraband distort the neighbouring regions.

1. Illicit fuel exports from **NIGERIA** not only affect direct neighbours such as Cameroon, Niger and Benin, but also its indirect neighbours such as the Central African Republic, Chad, Burkina Faso, Mali and Togo. Official fuel prices in all these countries are 3 - 4 times higher than in Nigeria. However, even though fuel prices are rising in Nigeria, an international harmonisation should be effected before the Finance Ministry is also able to profit from the contraband.
2. Since the end of civil war **ANGOLA** has experienced increased fuel smuggling into the neighbouring countries of Congo-Brazzaville, Congo-Kinshasa, Zambia and Namibia, where fuel prices on average are 4 times higher than in Angola. An increase of fuel prices in Angola would also help to balance the budget and lower inflation.

In both cases all regional economic cooperation (as intended by ECOWAS, UDEAC, SADEC etc.) has been stalled, because the overdue harmonisation of fuel prices is not in place.

As shown on the Asian fuel price map the most urgent candidates for fuel price adjustment are:

3. **INDONESIA**, whose subsidised fuel prices are the lowest in South and East Asia with diesel prices half of those in India or China, and
4. **RUSSIA** (together with the Central Asian Republics), whose fuel prices are not only the lowest in Europe, but are also lower than in China and India.

Russia's fuel prices are only one third of those of a comparable country such as Turkey.

On the American Fuel Price Map the main issue is

5. **VENEZUELA** with fuel prices 5 to 10 times lower than in neighbouring countries like Colombia or Brazil.

As all these countries are experiencing severe budget problems, an adjustment of fuel prices would also help alleviate the state deficit and contribute to non-inflationary currencies.

update: 09.Dec.2003

- Fuel Price Increase and the General Public
- Fuel Prices and Purchasing Power (EGG – INDEX)
- **Diesel Prices in Egg-Equivalents of 100 Countries**
- Alternatives to Fuel Taxation

6.1 Fuel Price Increases and the General Public

Long-term rational policies are often implemented at short notice, whereby they meet emotional opposition. The main arguments of the opponents are regularly “the social effects and inability to afford the higher prices”. Therefore strategic planning is needed; the reaction of target groups must be considered and financial and economic arguments prepared for a public relations campaign in the mass media.

Fuel prices must be increased from time to time for the following two reasons:

- To compensate for the gradual "relative adjustment" to what are often quite considerable national inflation levels and/or as a direct result of local currency devaluation.
- To effect "structural price increases", e.g. in the new EU applicant countries, because higher prices are targeted for the long term.

In developing countries however, such price rises are frequently implemented in an unprofessional manner. After months or years of official passivity, all the incremental price hikes that should have been instituted in the past are suddenly lumped together and imposed on an unprepared population all at once. Even if the subsidised fuel prices are amongst the lowest in the world, this is not an appropriate approach.

Numerous past examples document how such irresponsible behaviour on the part of governments can lead to riots and bloody conflicts – up to and including the government's own overthrow.

In some cases, such as in Indonesia and Zimbabwe in 1998, popular discontent forced the state to rescind such price hikes.

It is of particular interest to note that such revolts in opposition to fuel-price rises are always triggered by the relative increase (often 30 % or more), while the absolute increase (frequently only a few cents being added to "dirt cheap" fuel prices) plays practically no role at all.

This applies especially in Nigeria, where fuel-price increases have repeatedly led to rioting, even though fuel had already become – viewed objectively – cheaper than drinking water.

When **Ghana** discarded its traditional cheap-fuel policy in the 1980s, and fuel prices nearly tripled within a relatively short time, the country got into big trouble. The only way to remedy the situation was for the government to temporarily interrupt the country's supply of fuel. Immediately, black-market traders from neighbouring countries began selling fuel at four times the previous price level. After about four weeks, the government resumed its official imports, thus forcing the black-market price down by about one-half. This found the approval of the public at large, and the end result of the politically risky manoeuvre was that fuel then cost twice as much as before.

The following logical consequence can be drawn from the above: Whether for inflation related or structural reasons, the dictates of mass psychology stipulate that **fuel price increases should never exceed 10 % of the pump price at any one time in real terms** (calculated free of inflation).

Instead, long-term price strategies based on numerous regular but modest price increases are to be recommended.

One fuel price adjustment policy that has been politically quite successful, was instituted in January 1996 by the **14 countries of the CFA Franc Zone in Western and Central Africa** (extending from Senegal across Cote d'Ivoire to Cameroon and the Central African Republic). Although the regional currency was practically slashed in value by about 50 % overnight, fuel prices were adjusted to the new exchange rate in a step-by-step manner.

6.2 Fuel Prices and Purchasing Power (Egg Index)

Undoubtedly, in the macroeconomic sense, imported goods such as motor vehicles and fuels, even the streets and roads in some countries (due to the 75 % foreign currency share of their overall cost) should be calculated on a foreign-exchange basis, i.e. US \$, because that is how the importer or the government renders payment.

For the country's political leaders however, it is important to know that local consumers do not care about the world market; what they care about is their own purchasing power on the home market.

Thus, governments should not only be aware of price levels in neighbouring countries, they should also heed the arguments of a protesting populace, i.e. the usual, popular "purchasing power argument". As such, in a cheap-fuel country like NIGERIA, public debate along the lines of "once again, our fuel is cheaper than Coca Cola, which costs little more than water" can be regarded as locally appropriate.

Purchasing-power indices are always relative by nature, and the public must be carefully prepared for any increase in fuel prices, particularly in the case of structural price changes in the aforementioned subsidising countries.

General purchasing-power statistics like those published by the United Nations are of little help because they are not readily adaptable, and their genesis is practically impossible to investigate.

Transparency in the measurement of local purchasing power is needed. Sometimes a "Hamburger Index" for locally produced food is recommended, but size and quality vary widely worldwide and it is by no means a common food outside the USA.

Therefore the traditional hen egg has been chosen for the purposes of this publication. In this way a universally obtainable, non-subsidised, locally produced and sold commodity is used as the benchmark criterion. Indirect subsidies (e.g. to poultry farmers) do not in most cases influence egg prices significantly, but there are a few exceptions. (see BOX 6.2)

The egg prices used are those of medium-sized eggs at local shops/supermarkets (incl. VAT/sales tax). In doubtful cases, the average prices of large and small eggs has been calculated. The specially priced "eco" eggs on offer in some countries have not been taken into account.

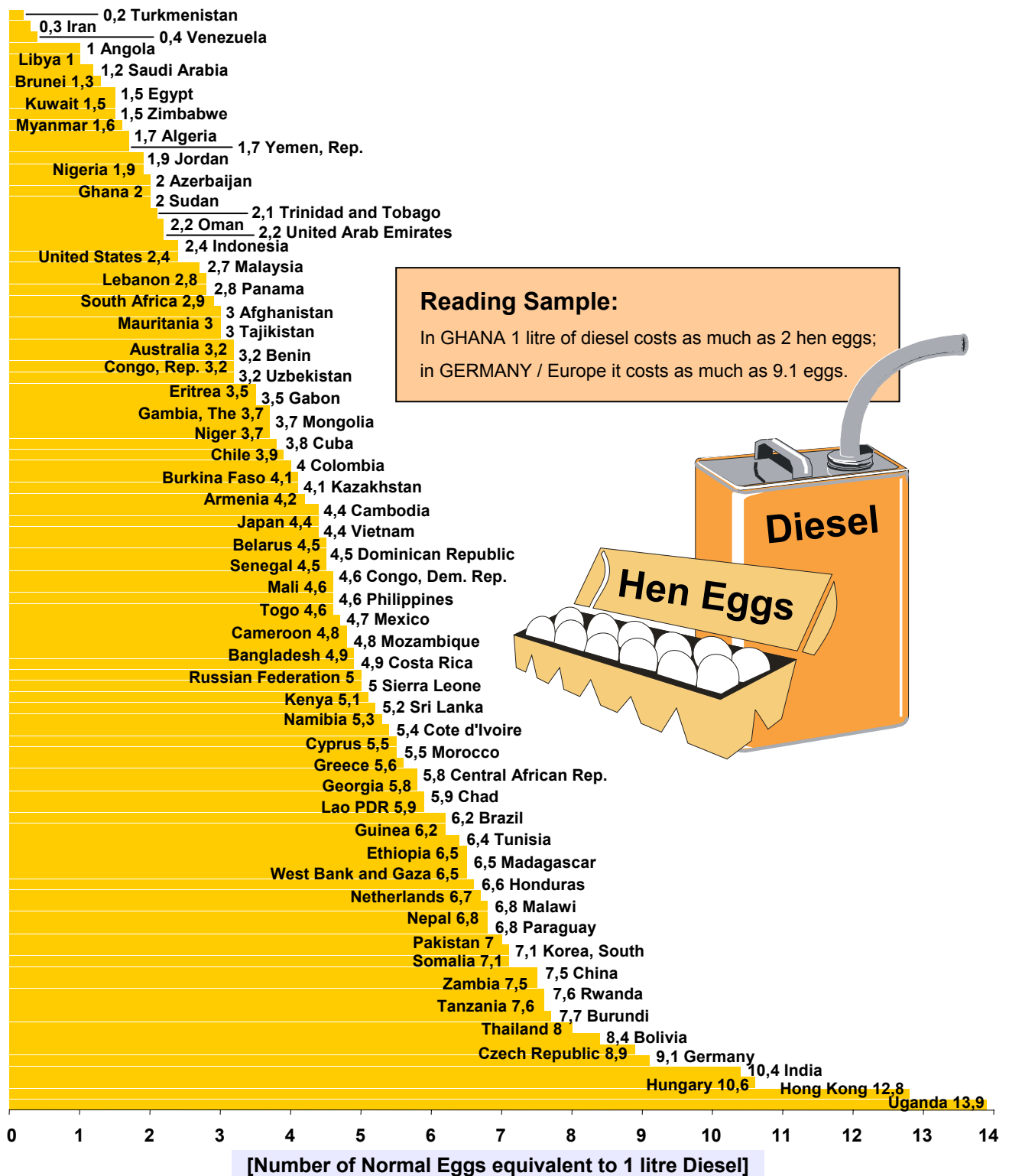
As for gasoline prices, which are on average 20 % higher than diesel prices, the egg index is to be adjusted accordingly. Worldwide differences then become even more obvious.

BOX 6.2: Saudi Arabia - Indirect Subsidies for Eggs

In most of the world's countries, egg prices are not subsidised. But there are a few cases in which high subsidies to farmers lead to an indirect subsidisation of hen's eggs.

Saudi Arabia pays US\$ 100 million per year to farmers for poultry feed. Assuming 50% of the hens in Saudi Arabia are used for egg production of the 2.4 billion hen eggs, the indirect subsidy per hen egg is about 2 US cents. This equates to 25 % of the sales price of the average hen's egg.

6.3 Diesel Prices in Egg Equivalents as of 10 Dec 2002 of 100 Countries



Note: The "normal egg" is calculated as the average of large and small hen's eggs.
Specially priced "eco" eggs are not taken into account.

[Source: Metschies, gtz survey Dec. 2002]

update: 09.Dec.2003

6.4 Alternatives to Fuel Taxation

For practical reasons - for example not to widen the gap in international price differences, thereby encouraging profiteering - it may be preferable not to base the main part of the transport taxation on fuel or only partly on fuel. In order to tap other sources of transport related revenues two main alternatives exist:

- the taxation of the vehicles (a yearly tax for private cars and commercial vehicles) or
- the taxation of road use (either time-based such as an annual fee, or as a distance based toll).

The annual vehicle tax for heavy vehicles is often designed as a property tax with a progressive linear increase of the tariff according to Gross Vehicle Weight, power or cubic capacity of the engine. Few countries design this tax according to the damage that the vehicle causes to the road. In this case the progression is to the 4th power and heavy vehicles are the main target group.

Annual vehicle taxes tend to be levied locally in towns and often 50% or more is retained for local and urban purposes.

If fuel tax and annual vehicle taxes have reached their limits (in Europe they are often used for non-transport related purposes), taxation of road use by an annual fee (vignette) or by distance-related tolls has been introduced in many European countries.

Thus a new, third type of transport-related tax has been introduced - based on the principle of “the user pays” for the road use itself (principally for highly frequented roads).

At the same time, discussions on its being earmarked for road related purposes start again.

Both the alternatives and the overview of international vehicle tax rates are published in a separate brochure¹.

¹ Metschies, International Vehicle Taxation, GTZ, Eschborn 2003

7. State Expenditure on the Transport Sector out of Fuel Taxation

- Principle 1: The user-pays concept of fuel taxes as a "road fee"
- Principle 2: The road network concept for limited cross-subsidization
- Principle 3: sector concept for the balance of state transport budgets: "transport finances transport"
- Principle 4: concept of surplus "luxury" (excise) taxation of gasoline for non-commercial (private) passenger vehicles
- Principle 5: commercial VAT concept of value added tax, or sales tax for general state taxation purposes
- **Rules of Thumb for Road Financing**

Contrary to the traditional belief that all taxes, from whatever source, merely need to satisfy the common state revenue budget, it is nowadays accepted that – pursuant to the general goal of economic growth – the allocation of taxes has to follow certain principles. In the case of transport **5 principles (concepts) for fuel taxes** have to be considered and applied in strict hierarchical order:

Principle 1: The user pays principle of fuel taxes as a "road fee"

This denotes that in general, the fee for using and damaging the road is not levied by special toll stations but by way of a fuel surcharge. Thus, the financing of the roads & highways sector via fuel surcharges is the primary pricing-policy task in all countries. On a global average, some 80 % to 90 % of all transport-sector revenues are derived from fuel taxes. The remaining 10 % to 20 % consist mainly of annual vehicles taxes, whereby small passenger vehicles naturally pay less than large trucks.

- According to past experience, the general magnitude of road-financing by fuel taxes is about 10 US cents / litre of diesel and gasoline in industrialized countries such as the USA. There, this is enough to cover all direct expenditure on the roads & highways sector (maintenance, refurbishment, new construction and capital recovery for the roads & highways departments)¹. Thus, the average US federal tax rate amounts to 18 cents per gallon (= 5 cents per litre), and another average 18 cents per gallon is added as the state highway tax rate for the financing of state roads and highways. This is demonstrated by the US Highway Trust Funds (see box on next page)
- Due to the lower traffic density, i.e. the presence of fewer vehicles, in the developing countries of Africa and elsewhere however, 10 US cents / litre covers only day-to-day and periodical road maintenance expenditures but not new construction or capital recovery for the roads and highways network. This standard rate of 10 US cents per litre fuel (plus a vehicle tax of US\$ 75 per annum for small passenger vehicles and US\$ 500 for medium-size trucks) was adopted by the World Bank within the scope of the International Road Maintenance Initiative² for less developed countries.

Principle 2: The road network concept for limited cross-subsidization

Contrary to the traditional practice of justifying new road investments via cost-benefit analysis on a road-by-road project basis, the existing road system is generally regarded as a unified network (often called "core network") in which the more heavily frequented, "better-off" states are expected to help finance the less heavily frequented, "worse-off" roads in states such as Alaska and Hawaii.

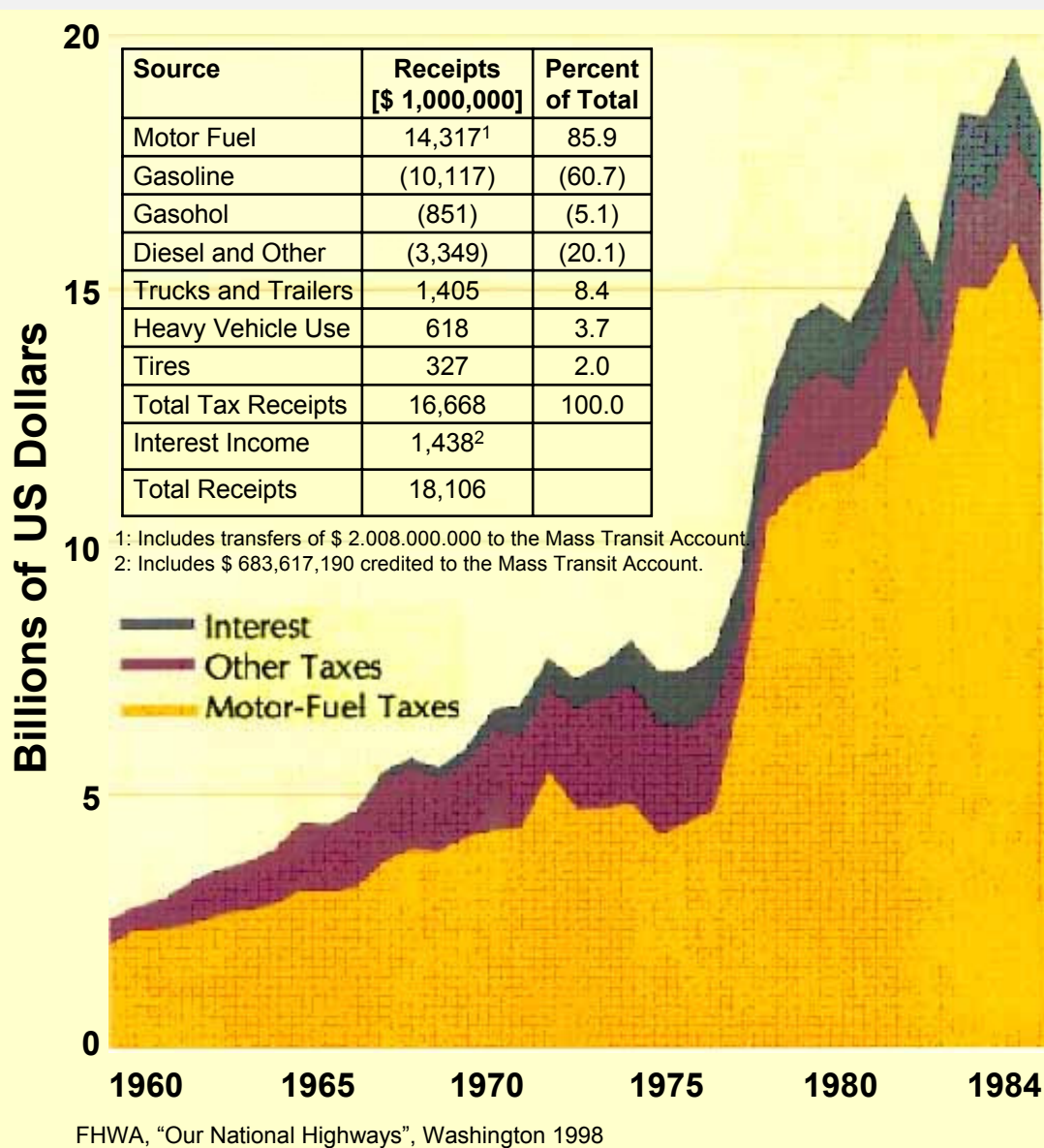
In developing countries, cross-subsidization takes place between the national roads of the main network on the one hand and rural roads on the other. While most fuel revenues stem from the main roads in countries like Tanzania and Zambia, **20 % - 25% of the road fund is earmarked for rural roads.**

¹ 1 US Federal Highway Administration FHWA-PL-95-028, Our Nation's Highways, Washington, D.C., p. 6

² World Bank, Ian Heggie, Technical Working Paper No. 275, p. 75

BOX 7A: Financing of National Roads by Fuel Taxes

USA Federal Highway Trust Fund (HTF)
(Receipts [million US \$] over 34 years: 1960 - 1994,
incl. Interstate Highway System starting 1983)



Most receipts from the Federal taxation of motor fuel, along with a number of other Highway-related taxes, are deposited in the Federal Highway Trust Fund. The Trust Fund is made up of two accounts – highway and mass transit – and is dedicated for the funding of Federal surface transportation programs. In this way, taxes on highway users are used to fund highway facilities. The Trust Fund has provided a stable funding source for highway programs since it was established in 1956.

Principle 3: The sector concept: "transport finances transport" for the balance of state transport budgets

Modern economic thinking – as outlined in the structural adjustment process for the so-called transition and developing countries – requires a balanced transport sector budget at a national level. This means that deficits for other transport undertakings, often including the railways, which cannot be eliminated in the short run, have to be covered by the profits/surplus achieved in other sub-sectors of the "transport family".

This refers primarily to fuel revenue from road transport. In Germany for instance, this means that 7 US cents / litre is reserved for covering the deficits of regionalized railways, and 2 US cents / litre is invested in solutions for urban traffic problems. In the USA, the fuel-tax fed highway trust fund is tapped for "surface transportation program", "air quality improvement" and "highway safety program" expenditures.²

Principle 4: The concept of surplus "luxury" taxation of gasoline for non-commercial (private) passenger vehicles

The global fuel price tables illustrate that practically all over the world taxes on gasoline are higher than taxes on diesel. Not with standing the fact that heavy goods vehicles cause much more damage to roads than light passenger cars, politicians generally view the taxation of gasoline-driven passenger cars as more justified than the taxation of commercial diesel-driven vehicles.

Consequently, gasoline often costs 30% - 50% more than diesel at the pump. As such, the additional "luxury tax" on gasoline need not be earmarked for any particular use.

Principle 5: The commercial VAT concept of value added tax or sales tax for general state taxation purposes

The basic understanding of the transport sector as a commercial sector implies that all goods (including vehicles and fuels) are subject to value added tax. This tax is needed to help defray the cost of general state administration and is calculated on the basis of the sales value of the goods, including all other previous taxes.

¹ According to the "Gemeinde-Verkehrs-Finanzierungs-Gesetz GVFG"

² FHWA-PL-95-028, p.41

Rules of Thumb for Road Financing

The 5 principles for fuel taxes lead to the Rules of Thumb for Road Financing in Box 7 B.

BOX 7B: Road Financing by Fuel Taxes

- **10 US cents per litre fuel tax is generally considered to be sufficient to finance the maintenance of the entire road network**, out of which 1/3 (3 US cents) is used for current annual maintenance, nearly 1/3 (3 US cents) for periodic maintenance (general surface repair every 8-12 years) and nearly 1/3 for rehabilitation (every 30 years and even new construction, mainly in industrialised countries) as well as 10% (1 cent) for administration overheads.
This amount of 10 US cents per litre of fuel would be better secured within a Road Fund outside the yearly State Budget discussions, in order to preserve the value of this most precious state asset.
- **2 US cents per litre fuel tax is needed to maintain the rural roads of an average country¹ (according to the 20% proportion of the road fund).** 2 US cents per litre gasoline and diesel may “do the trick” of financing the neglected rural roads. This cross-subsidisation of rural roads within the “family of roads” has proved to be the best solution to the financing of these roads which are crucial for rural development. In many countries even, no ministry (Works, Local Government, Agriculture, Interior etc.) wishes to be responsible for these rural roads.

Such general rules of thumb have proved to be useful in political debates for the Mass Media and for general discussion at Cabinet level between the ministries of works and finance.

- For the majority of developing countries situated in fuel price category III (between the Low US and the high EU fuel taxation levels, cf. chapter 3.5) the above 2 rules may even be summarized into one financing rule:

“The primary Value Added Tax on gasoline and diesel is to be used for roads (as a so called Value Preservation Tax), and only the secondary VAT may go into the state budget.”² I.e. 15% of the net sales price of 70 US cents / litre gasoline and 55 cents for diesel may result in approximately 10 cents per litre for expenditure on roads.

Note: The possible inaccuracy of these figures is counterbalanced by the fact that the unknown backlog of previously suspended maintenance is not taken into consideration. Furthermore urban roads and the annual vehicle tax are not included, these are often approximately 10-15 % of the road fund volume.

¹ PIARC-C3/20 Committee, Metschies “Finance, Organisation and Participation for rural roads”, Siem Rap/Cambodia 2002

² Metschies/Rausch “Road Maintenance Financing in Westafrica”, GTZ, Eschborn 2000

This Annex gives details of the statistics used in the preparation of this report.

8.1 Estimation of Fuel Taxation Revenue of 157 Countries

The table contains the most recent figures of the Number of passenger cars and the Number of commercial vehicles in the respective countries. The assumptions used for the annual vehicle distance travelled for passenger and commercial vehicles, and for gasoline and diesel use were based on figures from countries where fuel consumption is known.

8.2 Estimation of Fuel Taxation Revenue, Example: Germany

This example explains step-by-step how the fuel taxation revenue has been calculated.

8.3 Total Government Tax Revenue

The importance of fuel revenue can only be measured in relation to total tax revenue. However taxes are not the only source of revenue for governments.

8.4 Fuel Prices in Local Currency

This table not only shows local prices, but also the conversion rates of the respective currencies. In several countries, where there is state interference in exchange rates, the parallel, or black market rate has been used, sooner or later “official” rates tend to move towards the market rate.

8.6 Bibliography

8.1 Estimation of Fuel Taxation Revenue

Afghanistan to Czech Republic

Country Name	A	B	C	D	E=AxBx0.1+CxDx0.25	F	G = E x F	H = E x 0.1
	Passenger Cars Number ['000] 2000	Average Annual Travel Distance [km]	Commercial Vehicles Number ['000] 2000	Average Annual Travel Distance [km]	Total Fuel** Consumption [million litres per year]	Average*** Fuel Taxation [US cents per litre]	Estimated Fuel Taxation Revenues [million US\$ per year]	Potential Revenues from additional Taxation of 10 US Cents / litre [million US \$ per year]
Afghanistan	40*	10000	13*	25000	121	-1	-1	12
Albania	131	10000	44	25000	406	34	138	41
Algeria	1186*	10000	395*	25000	3655	-16	-566	365
Angola	216	10000	26	25000	379	-16	-59	38
Argentina	5060	10000	1554	25000	14773	23	3398	1.477
Armenia	14*	10000	5*	25000	45	4	2	5
Australia	9561	10000	2177	25000	23167	18	4054	2.317
Austria	4097	10000	354	25000	6310	47	2965	631
Azerbaijan	332	10000	96	25000	932	-5	-47	93
Bahrain	173	10000	40	25000	423	-9	-36	42
Bangladesh	151	10000	50	25000	464	9	42	46
Barbados	61	10000	10	25000	124	28	35	12
Belarus	1490	10000	8	25000	1540	12	177	154
Belgium	4654	10000	602	25000	8417	61	5092	842
Benin	42	10000	13	25000	123	16	20	12
Bolivia	236	10000	38	25000	474	24	114	47
Bosnia and Herzegovina	135	10000	17	25000	241	43	103	24
Botswana	84*	10000	28*	25000	259	8	21	26
Brazil	15100	10000	3900	25000	39475	12	4540	3.948
Brunei	70	10000	14	25000	158	-8	-12	16
Bulgaria	1908	10000	313	25000	3864	32	1237	386
Burkina Faso	51	10000	15	25000	145	41	59	15
Burundi	31*	10000	10*	25000	94	25	23	9
Cambodia	312	10000	68	25000	737	22	162	74
Cameroon	134*	10000	45*	25000	415	31	129	42
Canada	14147	10000	3817	25000	38003	16	5891	3.800
Cape Verde	4	10000	1	25000	10	18	2	1
Central African Republic	13*	10000	5*	25000	44	62	27	4
Chad	24*	10000	8*	25000	74	47	34	7
Chile	1514	10000	505	25000	4670	17	794	467
China	11775*	10000	3925*	25000	36306	8	2905	3.631
Colombia	1803	10000	319	25000	3797	3	95	380
Congo, Dem. Rep.	720*	10000	240*	25000	2220	38	844	222
Congo, Rep.	41	10000	14	25000	129	27	35	13
Costa Rica	399	10000	133	25000	1230	23	277	123
Cote d'Ivoire	246*	10000	82*	25000	759	41	311	76
Croatia	1125	9900	127	25000	1908	50	954	191
Cuba	287*	10000	96*	25000	887	36	319	89
Cyprus	289	10000	96	25000	889	32	284	89
Czech Republic	3432	10000	387	25000	5851	45	2604	585

* Number of Commercial Vehicles has been limited to 25 % of all vehicles to minimize the influence of passenger cars classified as commercial vehicles. Excess numbers have been added to passenger cars.

** Specific average fuel consumption: cars 10 litres / 100 km; commercial vehicles 25 litres / 100 km

*** Taxation is taken from the graphs in chapter 3.5 and 3.6 as difference between present sales price and Normal Sales Price (borderline between taxation and subsidy). The average of gasoline and diesel taxation has been applied.

Note: For an example of calculation see chapter 8.2.

[Sources: IRF World Road Statistics 2002; Worldbank 2000, Africa Transport Technical Note no. 30; Aral Verkehrstaschenbuch 2002 / 2003]

update: 09.Dec.2003

8.1 Estimation of Fuel Taxation Revenue

Denmark to Kyrgyz Republic

Country Name	A	B	C	D	E=AxBx0.1+CxDx0.25	F	G = E x F	H = E x 0.1
	Passenger Cars		Commercial Vehicles		Total Fuel** Consumption [million litres per year]	Average*** Fuel Taxation [US cents per litre]	Estimated Fuel Taxation Revenues [million US\$ per year]	Potential Revenues from additional Taxation of 10 US Cents / litre [million US \$ per year]
	Number ['000] 2000	Average Annual Travel Distance [km]	Number ['000] 2000	Average Annual Travel Distance [km]				
Denmark	1843	20000	394	25000	6149	70	4304	615
Djibouti	10	10000	3	25000	29	45	13	3
Dominican Republic	353*	10000	118*	25000	1091	7	71	109
Ecuador	507	10000	63	25000	901	10	86	90
Egypt, Arab Rep.	1482	10000	442	25000	4245	-18	-764	424
El Salvador	330*	10000	110*	25000	1018	8	81	102
Eritrea	6	10000	0	25000	6	-1	0	1
Estonia	464	11000	88	25000	1060	26	270	106
Ethiopia	77*	10000	26*	25000	240	11	25	24
Finland	2121	18900	311	25000	5952	65	3839	595
France	28060	14300	5753	25000	76082	61	46410	7.608
Gabon	34*	10000	11*	25000	103	30	30	10
Gambia, The	14*	10000	5*	25000	45	12	5	5
Georgia	245	10000	67	25000	664	13	86	66
Germany	43772	12100	4202	21400	75445	61	46021	7.544
Ghana	113	10000	38	25000	351	-6	-21	35
Greece	2419	15200	806	25000	8714	42	3616	871
Guatemala	579	10000	53	25000	910	9	77	91
Guinea	29*	10000	10*	25000	92	30	27	9
Guyana	10	10000	3	25000	29	-3	-1	3
Haiti	50*	10000	17*	25000	156	11	16	16
Honduras	327	10000	59	25000	696	23	160	70
Hong Kong, China	390	10000	135	25000	1234	81	993	123
Hungary	2365	10000	384	25000	4765	58	2764	477
Iceland	159	10000	21	25000	290	58	167	29
India	5655	10000	1885	25000	17436	22	3836	1.744
Indonesia	4059	10000	1353	25000	12515	-9	-1064	1.252
Iran, Islamic Rep.	2150	10000	762	25000	6913	-27	-1866	691
Iraq	844	10000	281	25000	2600	-30	-780	260
Ireland	1350	10000	230	25000	2788	54	1491	279
Israel	1422	17100	328	25000	4482	45	1994	448
Italy	32584	10000	3581	25000	54965	64	35178	5.497
Jamaica	104	10000	23	25000	248	17	41	25
Japan	52437	9800	20212	25000	177713	47	83525	17.771
Jordan	251	10000	90	25000	814	3	24	81
Kazakhstan	1000	10000	279	25000	2744	0	14	274
Kenya	245	10000	97	25000	851	32	268	85
Korea, South	9030	10000	3010	25000	27843	55	15313	2.784
Kuwait	553	10000	171	25000	1622	-13	-203	162
Kyrgyz Republic	187	10000	26	25000	350	1	2	35

- * Number of Commercial Vehicles has been limited to 25 % of all vehicles to minimize the influence of passenger cars classified as commercial vehicles. Excess numbers have been added to passenger cars.
- ** Specific average fuel consumption: cars 10 litres / 100 km; commercial vehicles 25 litres / 100 km
- *** Taxation is taken from the graphs in chapter 3.5 and 3.6 as difference between present sales price and Normal Sales Price (borderline between taxation and subsidy). The average of gasoline and diesel taxation has been applied.

Note: For an example of calculation see chapter 8.2.

[Sources: IRF World Road Statistics 2002; Worldbank 2000, Africa Transport Technical Note no. 30; Aral Verkehrstaschenbuch 2002 / 2003]

update: 09.Dec.2003

8.1 Estimation of Fuel Taxation Revenue

Lao PDR to Rwanda

Country Name	A	B	C	D	E=AxBx0.1+CxDx0.25	F	G = E x F	H = E x 0.1
	Passenger Cars Number ['000] 2000	Average Annual Travel Distance [km]	Commercial Vehicles Number ['000] 2000	Average Annual Travel Distance [km]	Total Fuel** Consumption [million litres per year]	Average*** Fuel Taxation [US cents per litre]	Estimated Fuel Taxation Revenues [million US\$ per year]	Potential Revenues from additional Taxation of 10 US Cents / litre [million US \$ per year]
Lao PDR	29*	10000	10*	25000	92	2	1	9
Latvia	557	10000	109	25000	1238	36	446	124
Lebanon	1355	10000	100	25000	1980	14	267	198
Lesotho	31*	10000	10*	25000	94	17	16	9
Libya	922	10000	307	25000	2841	-23	-639	284
Lithuania	1172	10000	103	25000	1816	33	590	182
Luxembourg	267	10000	33	25000	473	39	185	47
Macao, China	49	10000	6	25000	87	30	26	9
Macedonia	285	10000	32	25000	485	43	206	49
Madagascar	86*	10000	29*	25000	267	55	147	27
Malawi	47*	10000	16*	25000	147	33	48	15
Malaysia	4213	10000	714	25000	8676	-5	-390	868
Mali	37*	10000	12*	25000	112	31	34	11
Malta	189	10000	43	25000	458	39	176	46
Mauritania	25	10000	8	25000	75	20	15	8
Mexico	11138	10000	3713	25000	34344	23	7899	3.434
Moldova	232	10000	66	25000	645	7	42	64
Mongolia	56*	10000	19*	25000	175	6	10	17
Morocco	1162	10000	317	25000	3143	40	1242	314
Mozambique	61*	10000	20*	25000	186	13	24	19
Myanmar	20*	10000	7*	25000	64	1	0	6
Namibia	109*	10000	36*	25000	334	13	42	33
Netherlands	6539	15400	950	25000	16008	65	10405	1.601
New Zealand	2000	10000	395	25000	4469	13	559	447
Nicaragua	114*	10000	38*	25000	352	16	56	35
Niger	40	10000	16	25000	140	35	48	14
Nigeria	1196*	10000	399*	25000	3690	-12	-443	369
Norway	1852	10000	451	25000	4671	89	4157	467
Oman	263	10000	88	25000	813	-3	-24	81
Pakistan	857*	10000	286*	25000	2645	12	317	264
Panama	279	10000	93	25000	860	12	103	86
Papua New Guinea	89*	10000	30*	25000	277	12	33	28
Paraguay	75	10000	5	25000	106	14	14	11
Peru	817	10000	272	25000	2517	30	743	252
Philippines	1829*	10000	610*	25000	5642	-1	-28	564
Poland	9500	9500	1780	25000	20150	44	8866	2.015
Portugal	3443	14800	1307	25000	13264	53	6964	1.326
Romania	3129	8800	462	25000	5641	29	1636	564
Russian Federation	20200	10000	5150	25000	52388	-2	-786	5.239
Rwanda	25*	10000	9*	25000	81	53	43	8

* Number of Commercial Vehicles has been limited to 25 % of all vehicles to minimize the influence of passenger cars classified as commercial vehicles. Excess numbers have been added to passenger cars.

** Specific average fuel consumption: cars 10 litres / 100 km; commercial vehicles 25 litres / 100 km

*** Taxation is taken from the graphs in chapter 3.5 and 3.6 as difference between present sales price and Normal Sales Price (borderline between taxation and subsidy). The average of gasoline and diesel taxation has been applied.

Note: For an example of calculation see chapter 8.2.

[Sources: IRF World Road Statistics 2002; Worldbank 2000, Africa Transport Technical Note no. 30; Aral Verkehrstaschenbuch 2002 / 2003]

update: 09.Dec.2003

8.1 Estimation of Fuel Taxation Revenue

Sao Tomé and Príncipe to Zimbabwe

Country Name	A	B	C	D	E=AxBx0.1+CxDx0.25	F	G = E x F	H = E x 0.1
	Passenger Cars Number ['000] 2000	Average Annual Travel Distance [km]	Commercial Vehicles Number ['000] 2000	Average Annual Travel Distance [km]	Total Fuel** Consumption [million litres per year]	Average*** Fuel Taxation [US cents per litre]	Estimated Fuel Taxation Revenues [million US\$ per year]	Potential Revenues from additional Taxation of 10 US Cents / litre [million US \$ per year]
Sao Tomé and Príncipe	5	10000	2	25000	18	49	9	2
Saudi Arabia	2348*	10000	783*	25000	7242	-15	-1050	724
Senegal	101	10000	34	25000	314	33	102	31
Sierra Leone	22	10000	7	25000	66	19	12	7
Singapore	383	10000	141	25000	1264	30	379	126
Slovak Republic	1274	7900	164	25000	2031	41	823	203
Slovenia	848	9600	78	25000	1302	40	521	130
Somalia	5*	10000	2*	25000	18	0	0	2
South Africa	4991*	10000	1664*	25000	15391	10	1539	1.539
Spain	17449	10000	3835	25000	41418	46	19052	4.142
Sri Lanka	479*	10000	160*	25000	1479	11	163	148
Sudan	172*	10000	57*	25000	528	-5	-24	53
Suriname	61	10000	23	25000	205	17	35	20
Swaziland	53*	10000	18*	25000	166	14	23	17
Sweden	3999	14100	389	25000	8070	70	5609	807
Switzerland	3545	13300	319	25000	6709	60	3992	671
Syrian Arab Republic	359*	10000	120*	25000	1109	4	44	111
Taiwan	4716	10000	677	25000	8947	24	2147	895
Tajikistan	7*	10000	2*	25000	20	-2	0	2
Tanzania	122*	10000	41*	25000	378	33	123	38
Thailand	5288*	10000	1763*	25000	16307	3	408	1.631
Togo	58*	10000	19*	25000	177	20	34	18
Trinidad and Tobago	125	10000	26	25000	288	-1	-3	29
Tunisia	577	10000	192	25000	1777	-8	-133	178
Turkey	4422	10000	1543	25000	14066	59	8228	1.407
Uganda	89*	10000	30*	25000	277	45	124	28
Ukraine	5178	10000	1061	25000	11809	9	1063	1.181
United Arab Emirates	217	10000	62	25000	605	-2	-12	60
United Kingdom	27185	16700	3361	25000	66405	88	58105	6.641
United States	159975*	19100	53325*	25000	638834	8	51107	63.883
Uruguay	565	10000	73	25000	1021	2	15	102
Venezuela, RB	1635	10000	516	25000	4860	-27	-1288	486
Vietnam	494*	10000	165*	25000	1525	-1	-15	153
Yemen, Rep.	444*	10000	148*	25000	1369	-16	-219	137
Serbia & Montenegro	1955	10000	422	25000	4593	39	1768	459
Zambia	97*	10000	32*	25000	297	35	102	30
Zimbabwe	326	10000	50	25000	639	-27	-169	64

* Number of Commercial Vehicles has been limited to 25 % of all vehicles to minimize the influence of passenger cars classified as commercial vehicles. Excess numbers have been added to passenger cars.

** Specific average fuel consumption: cars 10 litres / 100 km; commercial vehicles 25 litres / 100 km

*** Taxation is taken from the graphs in chapter 3.5 and 3.6 as difference between present sales price and Normal Sales Price (borderline between taxation and subsidy). The average of gasoline and diesel taxation has been applied.

Note: For an example of calculation see chapter 8.2.

[Sources: IRF World Road Statistics 2002; Worldbank 2000, Africa Transport Technical Note no. 30; Aral Verkehrstaschenbuch 2002 / 2003]

update: 09.Dec.2003

8.2 Estimation of Fuel Taxation Revenue, Example: Germany

Estimates of potential state revenue from fuel taxation are important not only for the Ministry of Finance, but also for the Ministry of Transport / Public Works. Indeed, present and potential revenue from fuel taxation is practically indispensable for the sector approach generally taken by international donors and banks.

All such revenue estimates should be based on fuel consumption volumes and expressed in litres per year.

For cases in which statistical data on annual fuel consumption are restricted, unreliable or even nonexistent (true of many developing countries), estimates can instead be based on the number of vehicles, mileage/distance travelled per year by each type of vehicle, and the average fuel consumption (e.g., per 100 km).

Number of Vehicles

Detailed motorization figures (cars and commercial vehicles) for individual countries are shown in the Annex.

Average Annual Travel Distance per Vehicle

In Western Europe the average km travelled per year **per car** is about 15,000 km per year. In Eastern Europe the distance travelled is only about 10,000 km per year; for developing countries particularly, no reliable data is available. The average distance travelled for cars in countries with no reliable data has been estimated at 10,000 km per year.

Western Europe USA, Japan	Average Distance travelled per car per year
Belgium (1998)	15 000 km
Denmark (2000)	20 000 km
Finland (1999)	18 900 km
France (2000)	14 300 km
Germany (2000)	12 100 km
Greece (2000)	15 200 km
Japan (1999)	9 800 km
Netherlands (1999)	15 400 km
Portugal (1998)	14 800 km
Sweden (2000)	14 100 km
Switzerland (2000)	13 300 km
United Kingdom (1999)	16 700 km
United States (1999)	19 100 km
Average (approx.)	15 000 km

Eastern Europe	Average Distance travelled per car per year
Croatia (2000)	9 900 km
Estonia (2000)	11 000 km
Poland (2000)	9 500 km
Romania (2000)	8 800 km
Slovakia (1999)	7 900 km
Slovenia (2000)	9 600 km
Average (approx.)	10 000 km

Source: IRF, World Road Statistics 2002

The average annual distance travelled **by commercial vehicles** in Germany was 21,400 km in 2002. Buses (43,700 km p.a.), small trucks (24,300 km p.a.) and big trucks (81,600 km p.a.) travel much longer annual distances. But 33.9 % of all commercial vehicles in Germany belong to the group of diverse commercial vehicles (police vehicles, ambulance, garbage trucks, ...), which only travel an average of 8,000 km per year.

Therefore, the average annual distance travelled by commercial vehicles has been assumed at 25,000 km.

Fuel Consumption

The world wide average fuel consumption for cars has been estimated at 10 litres / 100 km and for commercial vehicles at 25 litres / 100 km.

Based on these figures, annual fuel consumption levels have been estimated.

Calculation of Fuel Consumption: Example Germany

	A	B	C	D = A x B x C/100
Germany	Number of Vehicles ¹ [‘000]	Average Travel Distance [km per year]	Average Fuel Consumption [litres / 100 km]	Total Fuel Consumption [Billion ² litres per year]
Cars	43 772	12 100	10	53
Commercial Vehicles	4 202	21 400	25	22.5
				75.4

¹ Aral Verkehrstaschenbuch 2002 / 2003

² =1000 million

The difference between the “*Normal Sales Price (excluding fuel tax)*” and the sales price at the service station is fuel taxation (or subsidies) – apart from minor differences in transportation costs, distribution costs and Value Added Tax on the untaxed sales price.

Calculation of Fuel Tax per liter: Example Germany

Germany	E	F	G = E – F
	Sales Price (including Fuel Tax) [US cents per litre]	“Normal Sales Price (excluding fuel tax)” [US cents per litre]	Diesel / Gasoline Taxation [US cents per litre]
Diesel	82	31	51
Super	103	32	71

The consumption levels of diesel and gasoline are similar in many countries. In Germany it was exactly 50% diesel consumption and 50% gasoline consumption in 2000¹. Lacking exact data especially in developing countries, it has been assumed that the consumption of diesel is equal to the consumption of gasoline.

Calculation of Average Fuel Tax: Example Germany

Germany	G	H
	Diesel/Gasoline Tax [US cents per litre]	Average Fuel Taxation [US cents per litre]
Diesel	51	61
Super	71	

The average fuel tax per litre multiplied by the total fuel consumption yields the fuel tax revenue.

Calculation of Fuel Tax Revenues: Example Germany

D	H	I = D x H
Total Fuel Consumption [Billion ² litres per year]	Average Fuel Tax [US \$ per litre]	Fuel Taxation Revenues [Billion ² US\$]
75.4	0.61	46

¹ Aral Verkehrstaschenbuch 2002/2003

² = 1000 million

As it is difficult to judge a number on its own, an adequate relation must be utilized to give a meaningful statement. Therefore fuel taxation revenue is represented in relation to total government tax revenues.

Fuel Taxation Revenue as % of Government Tax Revenue: Example Germany

I	J	K = I / J
Fuel Taxation Revenues	Total Government Tax Revenues Germany 2002¹	Fuel Taxation Revenues in Percent of Government Tax Revenues
[Billion ² US\$]	[Billion ² US\$]	
46	436	~ 10.5 %

Conclusion: Although there are many uncertainties in each figure, variations tend to counteract each other. In the example of Germany, the calculated fuel tax revenue of 10.5 % is very close to the real figure of 10.1 % in Germany's 2002 budget.

Impact of a Potential Fuel Price Increase of 10 US-Cents/litre as % of Government Tax Revenues

The total fuel consumption of a country is to be multiplied with US\$ 0.1 to yield the potential revenue increase. This has been set in relation to the government tax revenues.

Potential Fuel Price Increase of 10 US-Cents/litre: Example Germany

D	K	L = D x K	J	M = L / J
Total Fuel Consumption	Additional Fuel Tax	Potential Fuel Taxation Revenues	Total Government Tax Revenues Germany 2002¹	Potential Fuel Price Increase of 10 US cents / litre as % of Government Tax Revenues
[Billion ² litres per year]	[US\$ per litre]	[Billion ² US\$]	[Billion ² US\$]	
75.4	0.1	7.5	436	~ 2 %

¹ German Ministry of Finance 2002

² = 1000 million

8.3 Total Government Tax Revenues

Albania to Greece

Country Name	Currency of Tax Revenues	Consolidated Government Tax Revenues in [million local currency]	most recent Fiscal Year available at IMF**	Fiscal Year Ending ***	Average Fiscal Year Exchange Rate 1 US \$ =	Consolidated Central Government Tax Revenues [million US \$]
Albania	Lek	68.254	1998	Dec 31	152,40	448
Algeria	Algerian Dinar	1.354.627	2001	Dec 31	78,96	17.156
Argentina	Argentinian Peso	33.511	2001	Dec 31	1,00	33.545
Australia	Australian \$	138.150	1999	Jun 30	1,60	86.515
Austria	Schilling	950.230	1999	Dec 31	12,92	73.529
Azerbaijan	Manat	3.136.507	1999	Dec 31	~3833,00	818
Bahrain	Bahrain Dinar	215	2001	Dec 31	0,38	570
Bangladesh	Taka					~3353
Belarus	Belarus Rouble	4.568.970	2001	Dec 31	1533,0*	2.980
Belgium	Francs	3.909.600	1998	Dec 31	36,31	107.670
Bhutan	Ngultrum	2.197	2002	Jun 30	47,84	46
Bolivia	Boliviano	7.303	2001	Dec 31	6,71	1.089
Botswana	Pula	2.407	1997	Mar 31	3,50	688
Brazil	Reais	188.577	1998	Dec 31	1,16	162.515
Bulgaria	Lev	7.496	2001	Dec 31	2,18	3.443
Burkina Faso	CFA Fr	68.857	1992	Dec 31	283,16	243
Cameroon	CFA Fr	690.990	1999	Jun 30	588,52	1.174
Canada	Canadian \$	207.233	2002	Mar 31	1,57	132.375
Chile	Chilean Peso	7.895.020	2001	Dec 31	642,62	12.286
China	Yuan	554.760	1999	Dec 31	8,28	67.032
Colombia	Col Peso	16.067.000	1999	Dec 31	1.761,51	9.121
Congo, Dem. Rep.	Congo Fr	61.420	2001	Dec 31	312,0*	197
Congo, Rep.	CFA Fr	215.400	2001	Dec 31	741,47	291
Costa Rica	Colon	1.080.100	2001	Dec 31	333,16	3.242
Cote d'Ivoire	CFA Fr	1.287.000	2001	Dec 31	730,34	1.762
Croatia	Kuna	62.270	2001	Dec 31	8,40	7.410
Cyprus	Cyprus Pound	1.176	1998	Dec 31	0,52	2.267
Czech Republic	Koruna	697.748	2001	Dec 31	38,04	18.341
Denmark	Danish Krone	413.319	2000	Dec 31	8,09	51.101
Dominican Republic	Dominican Peso	50.060	2000	Dec 31	15,87	3.154
Ecuador	Sucres	5.061.000	1994	Dec 31	2.199,73	2.301
Egypt, Arab Rep.	Egyptian Pound	42.450	1997	Jun 30	3,40	12.478
El Salvador	US \$	1.387	2001	Dec 31	1,00	1.387
Estonia	Kroon	26.599	2001	Dec 31	17,47	1.523
Ethiopia	Ethiopian Birr	6.296	1999	Jul 7	7,42	849
Fiji	Fiji \$	634	1996	Dec 31	1,41	451
Finland	Markkaa	191.564	1998	Dec 31	5,35	35.823
France	Francs	3.188.900	1997	Dec 31	5,83	546.515
Gambia, The	Dalasi	744	1993	Jun 30		
Georgia	Lari	772	2002	Dec 31	2,17	355
Germany	Euro	462.500	2002	Dec 31	1,06	435.885
Ghana	Cedi	509.152	1993	Dec 31	649,06	784
Greece	Drachmas	7.860.000	1998	Dec 31	295,59	26.591

* Average Exchange Rate of Nov/Dec of the fiscal year concerned has been used

** International Monetary Fund, Government Finance Statistics Yearbook 2002

*** The fiscal year concerned ends at the specified date in the year mentioned in the neighbouring column

[Sources: IMF Government Finance Statistics Yearbook 2002; Oanda.com Exchange Rate Services]

8.3 Total Government Tax Revenues Grenada to Panama

Country Name	Currency of Tax Revenues	Consolidated Government Tax Revenues in [million local currency]	most recent Fiscal Year available at IMF**	Fiscal Year Ending ***	Average Fiscal Year Exchange Rate 1 US \$ =	Consolidated Central Government Tax Revenues [million US \$]
Grenada	US \$	172	1995	Dec 31	1,00	172
Guatemala	Quetzal	15.966	2001	Dec 31	7,93	2.014
Guinea	Guinea Fr	537.951	1999	Dec 31	1.341,66	401
Hungary	Forint	4.227.300	2000	Dec 31	282,89	14.943
Iceland	Icelandic Krona	151.347	1998	Dec 31	71,21	2.125
India	Indian Rupee	2.266.500	2002	Mar 31	47,73	47.487
Indonesia	Rupiah	196.720.000	2002	Mar 31	10.390,99	18.932
Iran, Islamic Rep.	Iran Rial	49.318.000	2001	Mar 20	1.755,00	28.101
Ireland	Pounds	16.164	1997	Dec 31	0,66	24.488
Israel	Shekel	171.532	2001	Dec 31	4,21	40.738
Italy	Lira	826.289.000	1999	Dec 31	1.818,49	454.383
Jamaica	Jamaica Dollar	90.985	2001	Mar 31	43,42	2.095
Japan	Yen	83.848.000	1994	Mar 31	107,90	777.056
Jordan	Jordanian Dinar	1.189	2001	Dec 31	0,72	1.657
Kazakhstan	Tenge	313.432	2001	Dec 31	174,55	1.796
Kenya	Kenya Shilling	146.509	1998	Jun 30	62,07	2.360
Korea, South	South Korean Won	78.434.000	1997	Dec 31	954,00	82.216
Kuwait	Kuwaiti Dinar	305	1999	Jun 30	0,30	1.002
Kyrgyz Republic	Som	7.676	2000	Dec 31	~48,00	160
Latvia	Lats	1.157	2001	Dec 31	0,63	1.849
Lebanon	Lebanese Pound	3.507.000	1999	Dec 31	1.508,75	2.324
Lesotho	Maloti	1.693	1999	Mar 31	5,79	293
Lithuania	Litas	10.697	2001	Dec 31	4,00	2.673
Luxembourg	Francs	246.079	1997	Dec 31	35,19	6.993
Macao, China	Patacas	9.076	2001	Dec 31	8,11	1.119
Madagascar	Madagascar Fr	2.972.000	2000	Dec 31	6.616,27	449
Malaysia	Ringgit	53.355	1997	Dec 31	2,82	18.927
Malta	Maltese Lira	378	1998	Dec 31	0,39	967
Mexico	Mexican Peso	725.708	2000	Dec 31	9,47	76.670
Moldova	Moldova Leu	4.509	2002	Dec 31	13,48	335
Mongolia	Tugrik	265.384	2001	Dec 31	1.096,35	242
Morocco	Dirham	86.440	1999	Dec 31	9,81	8.811
Myanmar	Kyats	75.727	2001	Mar 31	5,66	13.385
Namibia	Dollar	7.115	2001	Mar 31	7,35	968
Nepal	Nepalese Rupee	40.397	2002	July 15	79,40	509
Netherlands	Guilders	302.390	1997	Dec 31	1,95	154.991
New Zealand	New Zealand \$	34.077	2001	Jun 30	2,36	14.453
Nicaragua	Gold Cordoba	8.389	2000	Dec 31	12,28	683
Norway	Norway Krone	397.720	1999	Dec 31	7,80	50.964
Oman	Rial Omani	567	2001	Dec 31	0,39	1.472
Pakistan	Rupees	468.102	2002	Jun 30	63,59	7.362
Panama	Balboas	1.684	2000	Dec 31	1,00	1.689

* Average Exchange Rate of Nov/Dec of the fiscal year concerned has been used

** International Monetary Fund, Government Finance Statistics Yearbook 2002

*** The fiscal year concerned ends at the specified date in the year mentioned in the neighbouring column

[Sources: IMF Government Finance Statistics Yearbook 2002; Oanda.com Exchange Rate Services]

8.3 Total Government Tax Revenues

Papua New Guinea to Zimbabwe

Country Name	Currency of Tax Revenues	Consolidated Government Tax Revenues in [million local currency]	most recent Fiscal Year available at IMF**	Fiscal Year Ending ***	Average Fiscal Year Exchange Rate 1 US \$ =	Consolidated Central Government Tax Revenues [million US \$]
Papua New Guinea	Kina	1.924	1999	Dec 31	2,60	739
Paraguay	Guarani	2.851.461	2001	Dec 31	4.159,20	686
Peru	New Sol	25.670	2001	Dec 31	3,55	7.229
Philippines	Philippines Peso	489.859	2001	Dec 31	51,17	9.574
Poland	Zloty	196.707	2001	Dec 31	4,10	47.991
Portugal	Escudos	6.250.100	1998	Dec 31	180,27	34.670
Romania	Romanian Leu	266.118.000	2001	Dec 31	29.348,83	9.067
Russian Federation	Russian Rouble	2.031.265	2001	Dec 31	29,19	69.582
Rwanda	Rwanda Fr	25.274	1992	Dec 31	133,35	190
Senegal	CFA Fr	576.200	2001	Dec 31	730,34	789
Sierra Leone	Leone	82.337	1999	Dec 31	897,47	92
Singapore	Singapore \$	23.466	2002	Mar 31	1,81	12.945
Slovak Republic	Koruna	292.463	2001	Dec 31	48,38	6.045
Slovenia	Tolar	1.659.700	2001	Dec 31	244,59	6.786
South Africa	Rand	258.561	2002	Mar 31	9,54	27.111
Spain	Pesetas	22.037.100	1997	Dec 31	146,42	150.504
Sri Lanka	Sri Lanka Rupee	204.723	2001	Dec 31	89,61	2.285
Swaziland	Emalangen	2.572	2001	Mar 31	7,13	361
Sweden	Swedish Krona	700.610	1999	Dec 31	8,27	84.699
Switzerland	Swiss Fr	95.398	2000	Dec 31	1,69	56.500
Syrian Arab Republic	Syrian Pound	142.748	1999	Dec 31	42,29	3.375
Tajikistan	Somoni	263	2001	Dec 31	2,4*	110
Thailand	Baht	739.980	2001	Sep 30	44,29	16.706
Trinidad and Tobago	Trinidad&Tobago \$	7.377	1995	Dec 31	5,70	1.294
Tunisia	Tunisian Dinar	6.946	2000	Dec 31	1,37	5.061
Turkey	Turkish Lira	43.126.500.000	2001	Dec 31	1.240.941,74	34.753
Uganda	Uganda New Shilling	1.072.900	2001	Jun 30	1.784,35	601
Ukraine	Hryvna	44.266	2001	Dec 31	5,38	8.230
United Arab Emirates	Dirham	3.573	1999	Dec 31	3,67	973
United Kingdom	Great Britain Pound	308.722	1999	Dec 31	0,62	499.114
United States	US \$	1.833.800	2002	Sep 30	1,00	1.833.800
Uruguay	Peso Uruguay	57.823	2001	Dec 31	12,84	4.502
Venezuela, RB	Bolivar	11.165.804	2001	Dec 31	724,46	15.412
Vietnam	Dong	81.363	2001	Dec 31	15,03	5.413
Yemen, Rep.	Yemen Rial	109.548	1999	Dec 31	~171,00	641
Zambia	Zambian Kwacha	1.378.300	1999	Dec 31	2.513,19	548
Zimbabwe	Zimbabwe \$	26.914	1997	Jun 30	10,79	2.495

* Average Exchange Rate of Nov/Dec of the fiscal year concerned has been used

** International Monetary Fund, Government Finance Statistics Yearbook 2002

*** The fiscal year concerned ends at the specified date in the year mentioned in the neighbouring column

[Sources: IMF Government Finance Statistics Yearbook 2002; Oanda.com Exchange Rate Services]

8.4 International Fuel Prices in Local Currency as of 10th Dec 2002 – Afghanistan to Denmark

Country	Currency ¹	Prices in Local Currency per Liter		Exchange Rate ³
		Diesel	Super Gasoline	1 US\$ =
Afghanistan	Pakistan Rupee	15,50	20,00	58,36
Albania	Lek	70,00	110,00*	136,80
Algeria	Algerian Dinar	10,40	22,10	100,00 ²
Angola	Readj. Kwanza	8,00	12,00*	62,00 ²
Argentina	Argentinian Peso	1,65	2,26	3,58
Armenia	Dram	200,00	290,00	688,00 ²
Australia	Australian \$	0,86	0,89	1,78
Austria	Euro	0,72	0,83	0,99
Azerbaijan	Manat	800,00	1800,00	4893,00
Bahrain	Bahrain Dinar	0,07	0,10	0,38
Bangladesh	Taka	17,00	30,00	57,90
Barbados	US \$	0,53	0,66	1,00
Belarus	Belarus Rouble	690,00	960,00	1913,00
Belgium	Euro	0,79	1,03	0,99
Benin	CFA Fr	270,00	350,00	650,82
Bolivia	Boliviano	3,12	5,13	7,46
Bosnia and Herzegovina	Marka	1,45	1,45	1,96
Botswana	Pula	2,15	2,33	5,72
Brazil	Real	1,15	2,05	3,74
Brunei	Brunei \$	0,31	0,53	1,77
Bulgaria	Lev	1,15	1,31	1,94
Burkina Faso	CFA Fr	404,00	538,00	650,82
Burundi	Burundi Fr	730,00	780,00*	1350,00 ²
Cambodia	Riel	1700,00	2400,00	3835,00
Cameroon	CFA Fr	371,00	443,00*	650,82
Canada	Canadian \$	0,67	0,79	1,57
Central African Republic	CFA Fr	565,00	650,00	650,82
Chad	CFA Fr	500,00	515,00	650,82
Chile	Chilean Peso	275,70	407,00	703,75
China	Renminbi	3,10	3,50	8,28
Colombia	Col Peso	660,45	1214,70*	2777,75 ²
Congo, Dem. Rep.	Congo Fr	275,00	280,00	399,00
Congo, Rep.	CFA Fr	310,00	450,00	650,82
Costa Rica	Colon	167,10	239,10	375,92
Cote d'Ivoire	CFA Fr	390,00	550,00	650,82
Croatia	Kuna	5,40	6,53	7,34
Cuba	US \$	0,45	0,90	1,00
Cyprus	Cyprus Pound	0,25	0,47	0,57
Czech Republic	Koruna	22,00	25,00	30,77
Denmark	Danish Krone	6,91	8,01	7,37

¹ for some countries prices were only available in US\$

² Parallel rate has been used instead of official rate

³ Exchange rates of the 6th December from the Financial Times of the 9th December 2002

update: 09.Dec.2003

8.4 International Fuel Prices in Local Currency as of 10th Dec 2002 – Djibouti to Kuwait

Country	Currency ¹	Prices in Local Currency per Liter		Exchange Rate ³
		Diesel	Super Gasoline	1 US\$ =
Djibouti	Djib Fr	94,00	172,00*	175,00
Dominican Republic	Dominican Peso	5,86	10,65	21,70 ²
Ecuador	US \$	0,27	0,55	1,00
Egypt, Arab Rep.	Egyptian Pound	0,40	1,00*	5,20 ²
El Salvador	US \$	0,33	0,46	1,00
Eritrea	Nafka	4,92	7,25*	20,00 ²
Estonia	Kroon	8,70	8,95	15,53
Ethiopia	Ethiopian Birr	2,72	4,40*	8,40
Finland	Euro	0,79	1,11	0,99
France	Euro	0,79	1,04	0,99
Gabon	CFA Fr	345,00	450,00	650,82
Gambia, The	Dalasi	9,25	10,50*	23,00
Georgia	Lari	0,88	1,04	2,17
Germany	Euro	0,81	1,02	0,99
Ghana	Cedi	1955,00	2333,00	8330,00
Greece	Euro	0,67	0,77	0,99
Grenada	US \$	0,41	0,54	1,00
Guatemala	Quetzal	2,47	3,71	7,73
Guinea	Guinea Fr	1100,00	1300,00*	1976,50
Guyana	US \$	0,27	0,31	1,00
Haiti	US \$	0,30	0,54	1,00
Honduras	Lempira	7,72	10,57	16,80
Hong Kong, China	Hong Kong \$	5,99	11,48	7,80
Hungary	Forint	199,00	220,50	234,29
Iceland	Icelandic Krona	52,50	98,80	84,96
India	Indian Rupee	20,00	32,00	48,22
Indonesia	Rupiah	1720,00	2400,00	8990,00
Iran, Islamic Rep.	Iran Rial	130,00	550,00	7988,00
Iraq	Iraqi Dinar	15,00	50,00	2500,00 ²
Ireland	Euro	0,79	0,89	0,99
Israel	Shekel	2,92	4,26	4,71
Italy	Euro	0,85	1,04	0,99
Jamaica	US \$	0,44	0,52	1,00
Japan	US \$	0,66	0,91	1,00
Jordan	Jordanian Dinar	0,12	0,37	0,71
Kazakhstan	Tenge	45,00	55,00	155,76
Kenya	Kenya Shilling	44,70	56,00	79,65
Korea, North	Euro	0,41	0,55	0,99
Korea, South	South Korean Won	784,00	1333,00*	1220,50
Kuwait	Kuwaiti Dinar	0,06	0,07	0,30

¹ for some countries prices were only available in US\$

² Parallel rate has been used instead of official rate

³ Exchange rates of the 6th December from the Financial Times of the 9th December 2002

update: 09.Dec.2003

8.4 International Fuel Prices in Local Currency as of 10th Dec 2002 – Kyrgyz Rep. to Portugal

Country	Currency ¹	Prices in Local Currency per Liter		Exchange Rate ³
		Diesel	Super Gasoline	1 US\$ =
Kyrgyz Republic	Som	11,50	18,00	46,01
Lao PDR	New Kip	3153,00	3832,00	10680,00 ²
Latvia	Lats	0,39	0,42	0,60
Lebanon	Lebanese Pound	375,00	980,00	1501,00
Libya	Libyan Dinar	0,11	0,14	1,43 ²
Liechtenstein	Swiss Fr	1,36	1,30	1,46
Lithuania	Litas	2,01	2,35	3,43
Luxembourg	Euro	0,64	0,75	0,99
Macedonia	Macedonia Denar	38,50	51,50	60,93
Madagascar	Madagaskar Fr	4130,00	6890,00	6400,00
Malawi	Malawi Kwacha	52,00	56,00*	84,50
Malaysia	Ringgit	0,72	1,33	3,80
Mali	CFA Fr	359,00	448,00	650,82
Malta	Maltese Lira	0,22	0,36	0,41
Mauritania	Ouguiya	104,30	168,90	268,70
Mexico	Mexican Peso	4,84	6,41	10,27
Moldova	Moldova Leu	4,30	6,30	13,98
Mongolia	Tugrik	420,00	430,00	1123,00
Morocco	Dirham	5,79	9,08	10,47
Mozambique	Metical	10080,00	10650,00	23346,00
Myanmar	US \$	0,28	0,36*	1,00
Namibia	Rand	3,93	4,09	9,18
Nepal	Nepalese Rupee	26,50	52,00*	78,30 ²
Netherlands	Euro	0,80	1,11	0,99
New Zealand	New Zealand \$	0,66	1,10	1,99
Nicaragua	Gold Cordoba	5,97	7,86	14,56
Niger	CFA Fr	357,00	502,00	650,82
Nigeria	Naira	24,00	26,00*	128,55
Norway	Norway Krone	8,50	8,90	7,22
Oman	Rial Omani	0,10	0,12	0,39
Pakistan	US \$	0,35	0,52	1,00
Panama	US \$	0,36	0,51	1,00
Paraguay	Guarani	2400,00	3950,00	7060,00
Peru	New Sol	1,69	2,61	3,53
Philippines	Philippines Peso	14,62	18,60	53,48
Poland	Zloty	2,70	3,30	3,98
Portugal	Euro	0,70	0,96	0,99

¹ for some countries prices were only available in US\$

² Parallel rate has been used instead of official rate

³ Exchange rates of the 6th December from the Financial Times of the 9th December 2002

update: 09.Dec.2003

8.4 International Fuel Prices in Local Currency as of 10th Dec 2002 – Romania to Zimbabwe

Country	Currency ¹	Prices in Local Currency per Liter		Exchange Rate ³
		Diesel	Super Gasoline	1 US\$ =
Romania	Romanian Leu	19150,00	21500,00	33680,00
Russian Federation	Russian Rouble	8,00	11,00	31,87
Rwanda	Rwanda Fr	406,00	406,00*	485,00
Saudi Arabia	Saudi Arabia Riyal	0,38	0,90	3,75
Senegal	CFA Fr	348,00	490,00	650,82
Serbia & Montenegro	Yugoslavia New Dinar	40,70	45,40	61,49
Sierra Leone	Leone	1067,00	1089,00*	2150,00 ²
Singapore	Singapore \$	0,67	1,50	1,77
Slovak Republic	Koruna	28,90	30,60	41,40
Slovenia	Tolar	152,20	174,20	228,08
Somalia	Somali Shilling	5743,00	7053,00*	20150,00 ²
South Africa	Rand	3,70	3,92	9,18
Spain	Euro	0,71	0,82	0,99
Sri Lanka	Sri Lanka Rupee	30,00	52,00	96,74
Sudan	Sudan Dinar	61,00	78,00*	258,70
Suriname	US \$	0,41	0,56	1,00
Sweden	Swedish Krona	8,60	9,51	9,00
Switzerland	Swiss Fr	1,36	1,30	1,46
Syrian Arab Republic	Syrian Pound	8,45	24,35	46,00 ²
Tajikistan	Somoni	0,80	1,20	3,30 ²
Tanzania	Tanzanian Shilling	600,00	655,00	983,00
Thailand	Baht	13,89	15,59	43,58
Togo	CFA Fr	300,00	365,00	650,82
Trinidad and Tobago	Trinidad and Tobago \$	1,28	2,45	6,16
Tunisia	Tunisian Dinar	0,48	0,72	2,50 ²
Turkey	Turkish Lira	1220000,00	1590000,00	1560000,00
Turkmenistan	Manat (TMM)	300,00	400,00	22000,00 ²
Uganda	Uganda New Shilling	1280,00	1530,00	1839,00
Ukraine	Hryvna	1,80	2,50	5,34
United Arab Emirates	Dirham	1,11	1,06	3,67
United Kingdom	Great Britain Pound	0,76	0,75	0,64
United States	US \$	0,39	0,40	1,00
Uruguay	Peso Uruguay	5,60	12,60*	27,33
Uzbekistan	Sum	270,00	400,00	1040,00 ²
Venezuela, RB	Bolivar	60,00	70,00*	1314,75
Vietnam	Dong	4100,00	5300,00*	15396,00
West Bank and Gaza	Shekel	2,45	4,64	4,71
Yemen, Rep.	Yemen Rial	17,00	35,00*	165,00
Zambia	Zambian Kwacha	2999,00	3639,00	5020,00
Zimbabwe	Zimbabwe \$	66,39	74,47	1464,00 ²

¹ for some countries prices were only available in US\$

² Parallel rate has been used instead of official rate

³ Exchange rates of the 6th December from the Financial Times of the 9th December 2002

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GTZ Profile and Structure

The German Government established the German Technical Cooperation (GTZ) in 1975 as a government-owned, but privately organised corporation for international cooperation. GTZ's aim is to help positively shaping the political, economical, ecological and social development to improve the living conditions and perspectives of people in developing and transition countries. GTZ supports complex development and reform processes.



GTZ is the major interface between the political steering of the German Federal Ministry for Economic Cooperation and Development (BMZ) and the implementation of projects and programmes in partner countries. The BMZ is the main financing organisation of the GTZ.

GTZ also operates on behalf of other German ministries, the German Federal Foreign Office, partner-country governments, national and international development cooperation organisations and international clients such as the European Commission, the United Nations and the World Bank, as well as on behalf of private enterprises.

GTZ operates in 63 countries. The GTZ offices coordinate the regional and sectoral networking of the projects in the country concerned. GTZ works closely together with the German embassy.

Over 10,000 employees are working worldwide in over 130 countries. Some 8,500 of them are locally-contracted nationals. Around 1,000 employees work at GTZ Head Office in Eschborn/Germany.

GTZ is currently supporting some 2,700 projects and programmes worldwide and its fiscal turnover reached in 2002 a total of US \$ 1033 million.

In the seventies the focus of the GTZ was on building the technical skills of individuals, while in the eighties the priority shifted to the development of organisations, in particular state organisations, in partner countries. In the early nineties, German Technical Cooperation began to focus on the importance of political and institutional frameworks for development. Over a period of almost thirty years, the GTZ has gained a wealth of knowledge and experience in this field, has been able to develop its own advisory competencies and has devised a range of services.

GTZ's consultancy services span a wide range of activity areas, from economic development and employment promotion, through health and basic education to environmental protection, resource conservation and regional rural development. Government advisory services have become increasingly important in recent years. GTZ is now supporting numerous partner countries in their efforts to introduce comprehensive reform processes and to initiate the necessary changes in the policy, economic and social frameworks.

Further information about the GTZ is available in the Internet at: www.gtz.de/english

GTZ Department of Transport Consulting

Transport is the key to development. Transport shapes social, economic, ecological and political structures. Transport is what makes economic development, communications and access to education and health care possible. Sustainable development relies to a large extent on a well-functioning transport sector.

Transport is a major political challenge. Economic growth, rapidly expanding populations, and growing consumer demands are exposing developing countries to substantial supply and maintenance problems for transport infrastructure. In the coming decade, the need for transport-sector services is expected to double in many countries.

The transport sector remains one of the most important areas of bilateral and international development cooperation. GTZ's advisory and consultancy services address sectoral-policy-makers, administrations, industrial managers and specialists, governments and consulting/planning institutions, on both the demand and the supply side.

GTZ's consultant activities in the transport sector:

- Organization and financing of road maintenance (with the Road Management Initiative RMI)
- Private sector participation in and commercialization of infrastructure
- Eco-efficient management of ports
- Efficiency in the rail sector
- Transport logistics and Development-Oriented Emergency Aid (DEA)
- Dangerous goods transport and transport safety