

International Fuel Prices 2009

6th Edition – More than 170 Countries

International Fuel Prices 2009

6th Edition

The findings, interpretations, and conclusions expressed in this document are based on information gathered by GTZ and its consultants, partners and contributors from reliable sources. GTZ does not however guarantee the accuracy or completeness of the information in this document and cannot be held responsible for any errors, omissions or losses, which emerge from its use. The names used and the borders shown do not imply any judgement concerning the legal status of a territory nor any approval or acceptance of these borders.

Your Contribution: International Fuel Price Survey

In order to broaden the database and to provide data series throughout the year we decided to invite the public to participate in our study. Please assist us by completing the form on our special webpage:
<http://www.sutp.org/fuelprices>

Imprint

Authors: Sebastian Ebert
Dr Gerhard P. Metschies
Dominik Schmid
Armin Wagner

Case studies on the impact of fuel prices increases were contributed by:

Ethiopia - Melessaw Shankow (MEGEN Power)
Ghana - Dr Charles Amoatey
Kenya - Ashington Ngigi (Intergral Advisory Limited)
Namibia - Dr Patrice Urayeneza (CEPM)
Rwanda - Dr Gerhardt P. Metschies (Metschies Consult)
Uganda - Eng. Dr Mackay E. A. Okure
(Makerere University)
Tanzania - Dr Oscar Kibazohi
(University of Dar es Salaam)

Editor: Deutsche Gesellschaft für
Technische Zusammenarbeit (GTZ) GmbH
P. O. Box 5180
65726 Eschborn, Germany
<http://www.gtz.de>

Division 44, Water, Energy, Transport
Sector Project "Transport Policy Advisory Services"

On behalf of
Federal Ministry for Economic Cooperation
and Development (BMZ)
Division 313 - Water, Energy, Urban Development
P. O. Box 12 03 22
53045 Bonn, Germany
<http://www.bmz.de>

Editing: Armin Wagner
Transport Policy Advisor
Armin.Wagner@gtz.de

<http://www.gtz.de/transport>
<http://www.gtz.de/fuelprices>
<http://www.sutp.org>

Cover photo: Fuel price information in Turkmenistan
Alexander Hesse, 2008
Retail fuel price map Asia 2008, GTZ
Images on pages 4, 30 and 60 courtesy to Gerold Diem

Layout: Klaus Neumann, SDS, G.C.

Copyright: ©GTZ - International Fuel Prices 2009

Eschborn, December 2009

1. Executive summary	1
2. Fuel prices by continent	5
2.1 Fuel prices in Africa	5
2.2 Fuel prices in America	19
2.3 Fuel prices in Asia, Australia and Pacific	31
2.4 Fuel prices in Europe	47
2.5 Retail fuel prices of 174 countries	61
3. Fuel taxation and pricing mechanisms	64
3.1 Principles of fuel pricing	64
3.2 Adopting transparent pricing mechanisms	66
3.3 Recommended reading on fuel pricing and fuel pricing mechanisms	69
4. Rising energy prices and their impact on developing countries	71
4.1 Ethiopia	72
4.2 Ghana	76
4.3 Kenya	79
4.4 Namibia	82
4.5 Rwanda	85
4.6 Uganda	87
4.7 Tanzania	90
5. Freedom of information – publicise fuel price information	93
5.1 Sources of fuel price data of G-20 and N-11 countries	95
5.2 Recommended reading and links on increasing and volatile oil prices	97
6. About us	104
Our organisation	104
Our clients	104
Worldwide operations	104
GTZ Transport and Mobility	104
7. Annex	108
Data sources	108
Unit conversion for non-litre countries	108
Unit conversions	108
Currency conversion	108
Crude oil price at world market	109
8. Your contribution – how to participate	109

1. Executive summary: International fuel price trends and issues in 2007 and 2008

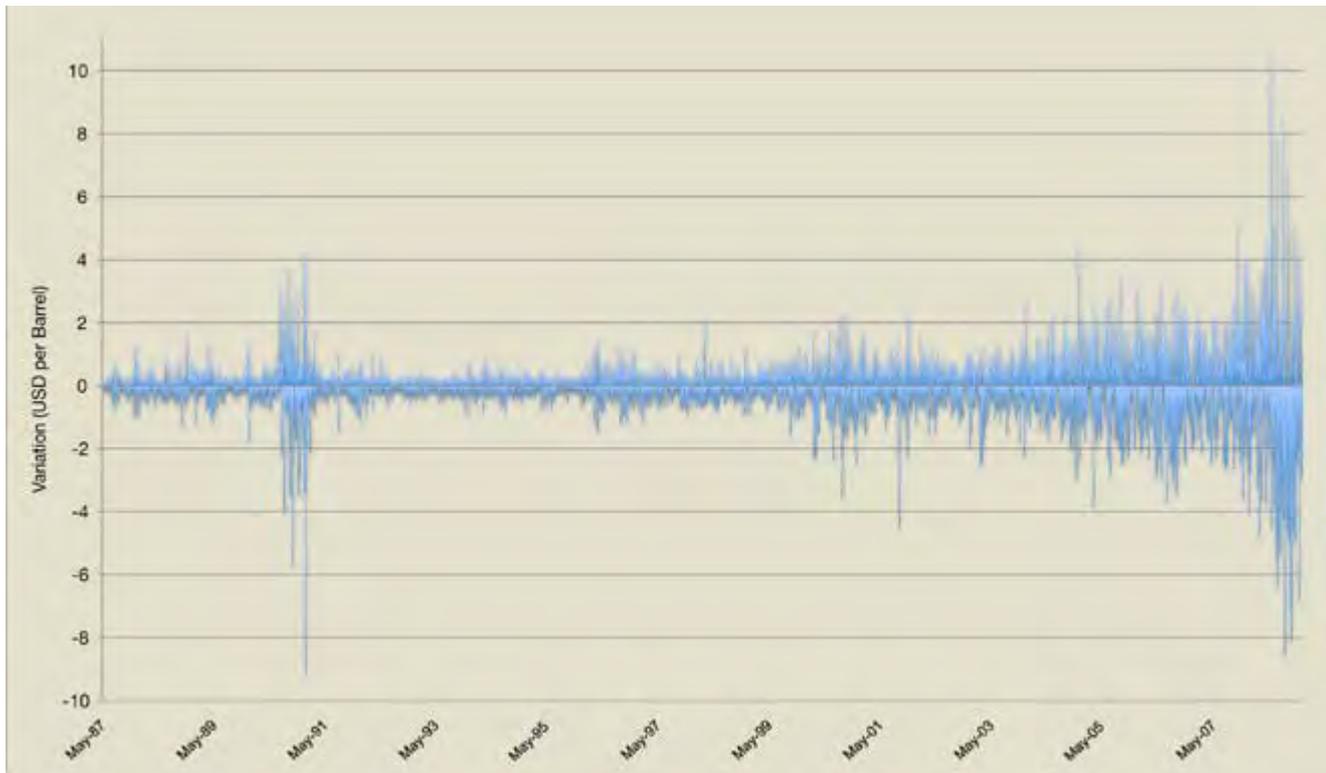
- The 2009 *International Fuel Prices* report provides an overview of the **retail prices of gasoline and diesel in more than 170 countries**, discusses **pricing policies**, presents **case studies on the impact of high and volatile fuel prices in 2007/2008 in developing countries** and provides **access to numerous additional resources**.
- The years 2007/2008 were characterised by **tremendous price increases** for fossil fuels on the global market and **high price volatility**. This caused an intense global debate on energy security and the role of fossil fuels that were consequently linked to the issues of global development and climate change. As depicted in the figure below, the scale of daily oil price variations has been constantly increasing since the start of the new millennium.
- This higher volatility in oil prices as well as the new peaks in prices observed in mid-2008 call for a reassessment of fuel price policies, especially regarding the adjustment of national retail prices and the question of taxation. Non-transparent ad hoc pricing caused substantial political debate and turmoil in several countries. Non-transparent taxation —in

terms of level and use of revenues— continues to be an issue of daily political concern in even more countries.

- Beyond this immediate need for the readjustment of fuel price policies, the questions of reliability of supply, sustainability and efficiency are gaining attention at the individual and political levels. The transport sector, which depends more than 95 % on fossil fuels, is therefore overly exposed to fuel price shocks and supply constraints. Other types of fuels such as biofuels and hydrogen are not yet available on a substantial scale and are often even less desirable due to their economical, ecological and social consequences. As such, the transport sector must continue to **focus on the reduction of travel needs, the preservation and expansion of public and non-motorised transport (walking and cycling) and the improvement of the efficiency of existing public and private transport**.
- Higher fuel prices can be an important driving force to a **low-carbon and energy efficient transport sector**. Significant levels of fuel taxation together with other policy instruments and investments in sustainable transport services and infrastructure make walking, cycling and public transport more attractive. Higher fuel taxes encourage the

Figure 1: Daily variations of Brent Spot Price 1987–2008.

Source: <http://tonto.eia.doe.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=RB RTE&f=D>



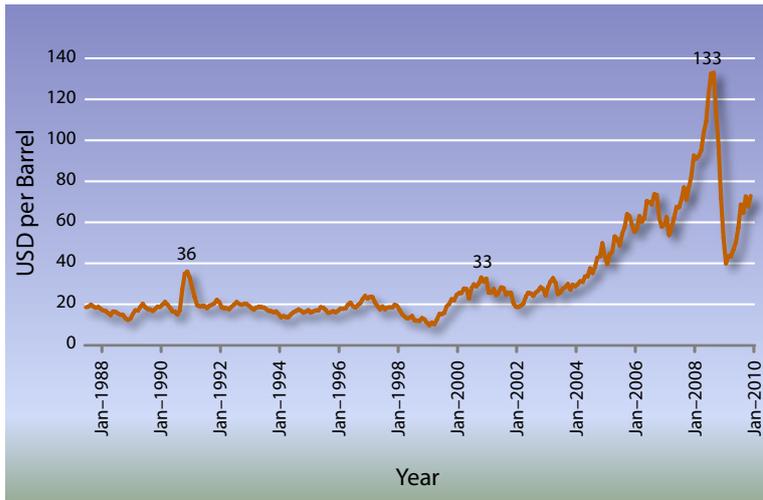


Figure 2: Daily Europe Brent Spot FOB (1988–2009).

Source: http://tonto.eia.doe.gov/dnav/pet/hist_xls/RBRTEm.xls

procurement of energy-efficient vehicles as well as their appropriate maintenance. In the long run, high fuel prices encourage the development of dense settlements, often in combination with mixed-use areas that in turn encourage shorter trips. Experiences from countries with high fuel prices reveal that users and providers of transport services and infrastructure often smartly adapt habits and policies. This should encourage countries with low taxation levels to gradually increase taxes on fossil fuels to promote more energy efficient mobility solutions.

- Taxation of fossil fuels remains a powerful instrument to **generate revenues** for road infrastructure and its maintenance. In developing countries, fuel prices can be a crucial element in financing road maintenance. The high fuel prices during May and August 2008 as well as the current fuel price levels confirm that the transport sector is capable of bearing higher fuel prices. For example a **US 10 cent duty earmarked for road maintenance** in developing countries as advocated by SSATP (Sub-Saharan African Policy Programme), is feasible and will not lead to major economic distortions.
- Fuel price increases —or the removal of subsidies— can have negative impacts on the poor. They may limit the choices for poor and disadvantaged people to participate in public life, to pursue job opportunities and to access medical and education services. This needs to be addressed in a smart and effective manner without compromising the objective of a non-subsidised, energy-efficient and low carbon transport system. However, the potential impacts on the poor should not serve as an argument against the removal of subsidies (or low fuel prices) because

those who mainly benefit from low fuel prices are the rich (*i.e.* those who can afford to buy cars).

- Summarising these observations and experiences, GTZ reiterates its four basic principles of fuel pricing: 1) Fuel prices should cover production and distribution costs, 2) fuel taxes should help finance the transport sector, according to the user pays principle, 3) fuel taxes should help internalise external costs and incentivise energy efficiency in the transport sector and 4) fuel taxes should contribute to general revenues, *e.g.* the normal VAT shall be levied.
- Besides the actual level of fuel prices and its tax components, the question of how and how often prices are adjusted is of considerable interest in many countries. As for taxation principles, pricing mechanisms should be accountable and transparent as well as sustainable in terms of limited fiscal impact and low political costs. Based on the presentation of the three basic forms of fuel pricing namely **ad hoc pricing**, (formula-based) **regular price adjustment** and **liberalised markets**, GTZ suggests that countries should aim to have a transparent and accountable system of regular price adjustments.
- In this context the phases of low crude oil and petroleum product prices offer a unique opportunity for a critical review of fuel pricing policies. For countries currently using ad hoc pricing mechanisms, it may be a good **opportunity to move to regular price reviews (if applicable based on automatic formulae)** at a relatively low political cost.
- Global and national debates on fuel pricing and taxation as well as approaches and policies on energy efficiency are hampered by the lack of data on fuel prices and subsidies and information on pricing mechanisms. Further, non-transparent mechanisms and taxation policies are a major source of public discontent. Therefore, we strongly urge decision-makers to:
 - ❖ Make fuel price information public and easily accessible;
 - ❖ Disclose information on taxation levels and composition of fuel prices;
 - ❖ Provide information on determinants for pricing, frequency of updates and underlying formula if automatic mechanisms are applied.
- The current edition of GTZ International Fuel Prices is based on our survey in mid-November 2008 and provides a snapshot based on the crude oil price level of USD 48 per barrel — a very low figure compared to the overall trend in the past two years (2007/2008).

Box 1: Our survey at a glance

- Survey conducted in mid-November 2008.
- Super gasoline and diesel prices in more than 170 countries.
- Price data reflect crude oil price (Brent) of USD 48 per barrel.
- Fuel price data are mainly based on the global network of regional GTZ offices. Further data sources include German embassies/consulates worldwide and the German Automobile Association (ADAC) besides others.
- Crude oil prices and exchange rates:

	Brent Crude Oil Price Trend		Exchange Rate
	USD/barrel	US¢/litre	USD 1 =
Mid-November 2004	42.84	27	EUR 0.77
15–17 November 2006	60.21	38	EUR 0.78
17–21 November 2008	48.00	30	EUR 0.79

- On the reference day of the survey the crude oil price had decreased by 20 % compared to 2006. Converted, a price decrease of US 8 cents per litre was registered. At its highest, the crude oil price briefly touched USD 148 per barrel in August 2008, at its lowest the price fell to the 2004 level of USD 36 per barrel in December 2008.
- There was virtually no change in the dollar-euro exchange rate between November 2006 (USD 1 = EUR 0.78) and November 2008 (USD 1 = EUR 0.79).
- 4 country categories were introduced to benchmark transport and energy policies:

Very High Subsidies

(below red benchmark line)

Retail price of gasoline and diesel below price of crude oil on world market.

Subsidies

(below green benchmark line)

Retail price of gasoline and diesel above price of crude oil on world market and below price level of the United States. Cost-covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents. This fuel price without other Specific Fuel Taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.

Taxation

(below grey benchmark line)

Retail price of gasoline and diesel above price level of the United States and below price level of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15. Prices in EU countries are subject to VAT, specific fuel taxes as well as other country-specific duties and taxes.

Very High Taxation

(above grey benchmark line)

Retail price of gasoline and diesel above price level of Spain. At these levels, countries are effectively using taxes to generate revenues and to encourage energy efficiency in the transport sector.

More information and all previous surveys are available online: <http://www.gtz.de/fuelprices>

- Furthermore, the publication includes several case studies of African countries. This chapter complements the quantitative data of our survey and aims to offer an insight into the consequences of rising international crude oil prices on the local level. It mainly focuses on the questions of how people and administrations cope with soaring fuel prices and the existing barriers to implementing sustainable policies. Access to updated fuel price data for selected countries is provided in Chapter 2.

- ‘GTZ International Fuel Prices’ is a long-standing effort by GTZ (the German Technical Cooperation) on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ) to provide decision-makers with data on global fuel prices. It continues to provide the only available summary of developing countries’ fuel prices worldwide.



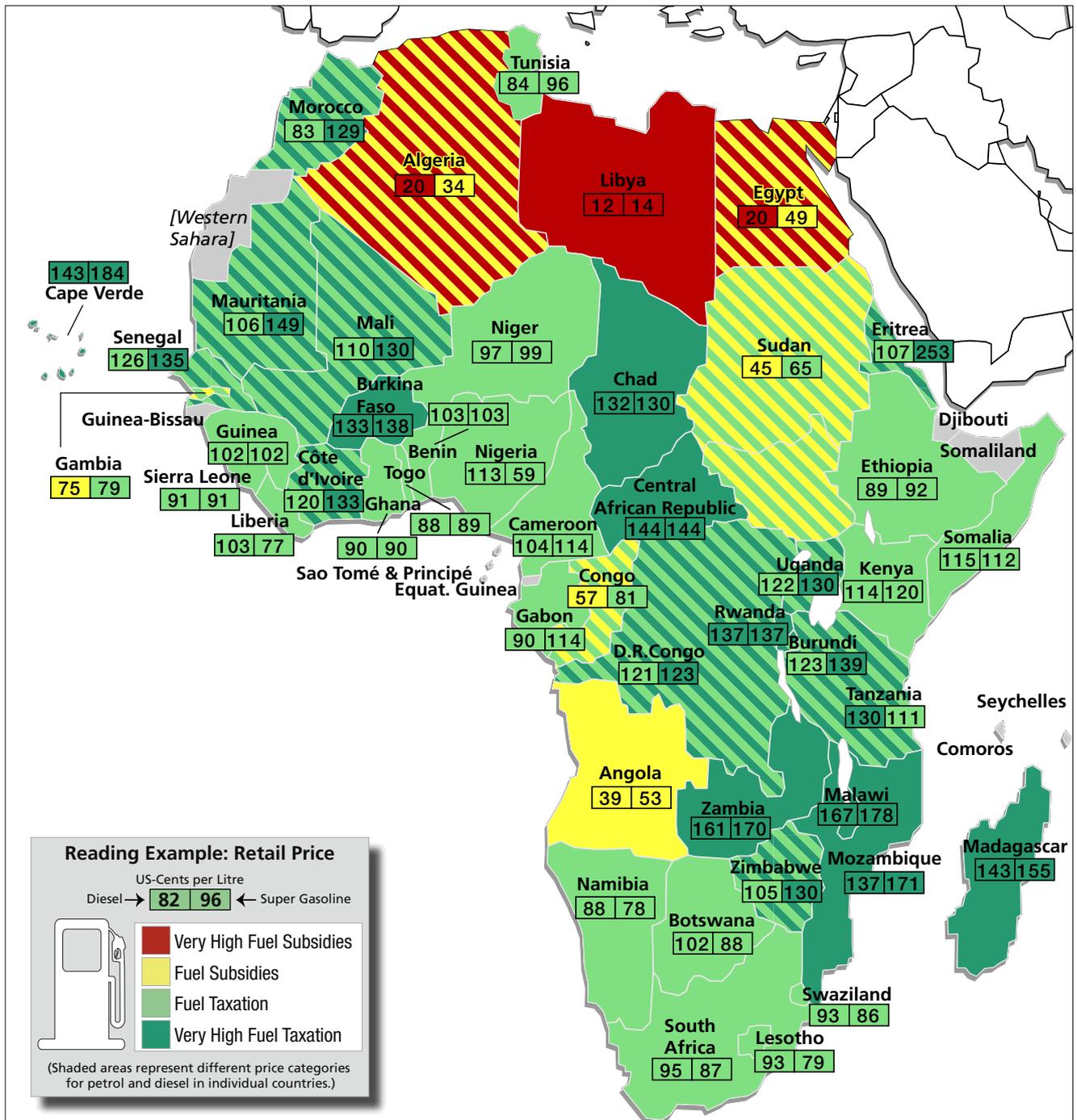
2. Fuel prices by continent



2.1 Fuel prices in Africa

- *Retail fuel prices in Africa*
- *Comparison of retail fuel prices in Africa*
- *Time series of retail fuel prices in Africa*
- *Detailed time series of fuel prices in Africa*

2.1.1 Retail fuel prices in Africa as of November 2008 (in US cents/litre)



Fuel Taxation Category 1: Very High Fuel Subsidies

The retail price of fuel (average of Diesel and Super Gasoline) is below the price for crude oil on world market.

Fuel Taxation Category 2: Fuel Subsidies

The retail price of fuel is above the price for crude oil on world market and below the price level of the United States.

Note: The fuel prices of the United States are average cost-covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for the 2 road funds (federal and state). This fuel price may be considered as the international minimum benchmark for a non-subsidised road transport policy.

Fuel Taxation Category 3: Fuel Taxation

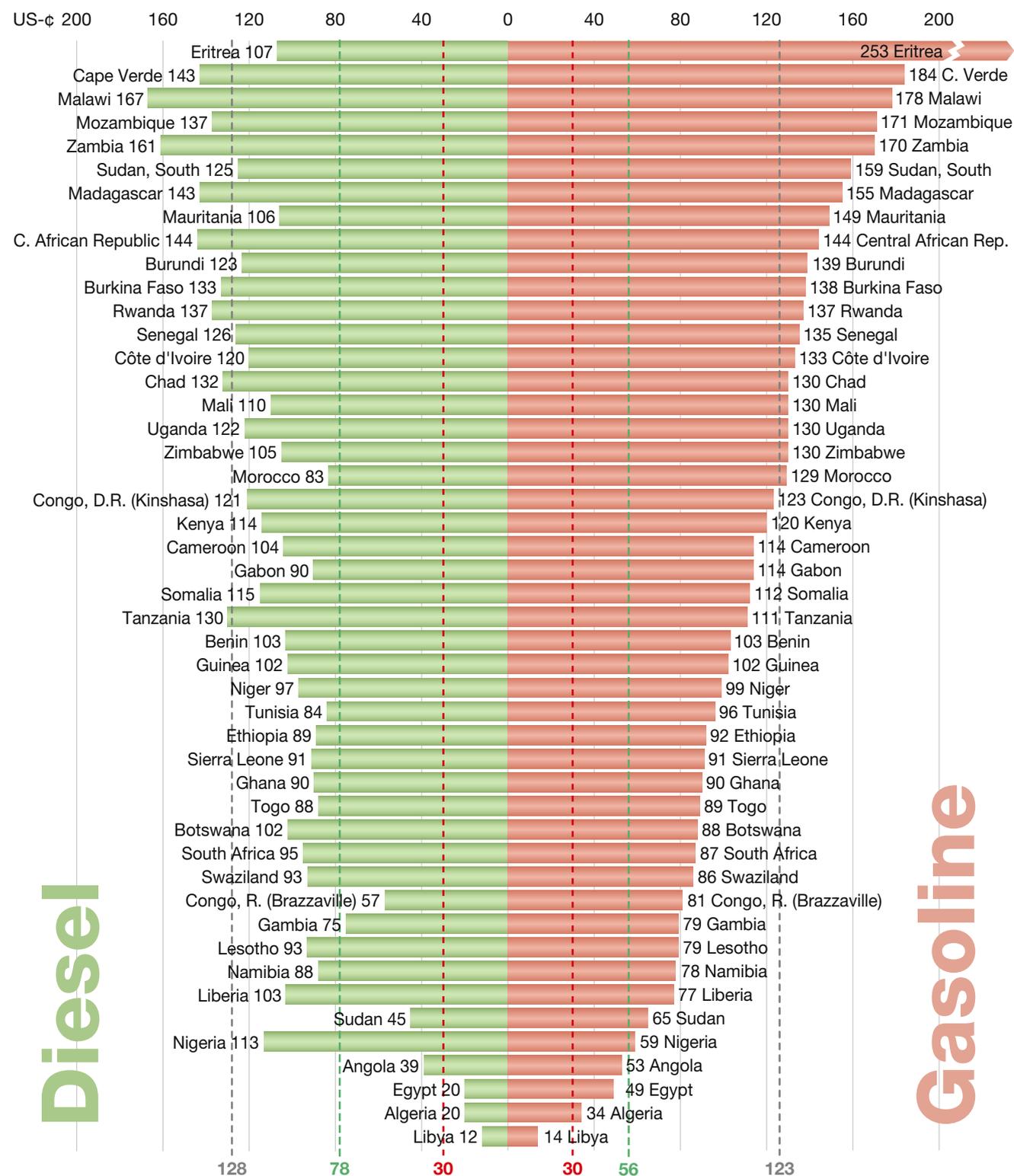
The retail price of fuel is above the price level of the United States and below the price level of Spain.

Note: In November 2008, fuel prices in Spain were the lowest in EU-15. Prices in EU countries are subject to VAT, fuel taxes as well as other country-specific duties and taxes.

Fuel Taxation Category 4: Very High Fuel Taxation

The retail price of fuel is above the price level of Spain.

2.1.2 Comparison of retail fuel prices in Africa as of November 2008 (in US cents/litre)



Grey Benchmark Line: Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.

Green Benchmark Line: Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.

Red Benchmark Line: Price of crude oil on world market.

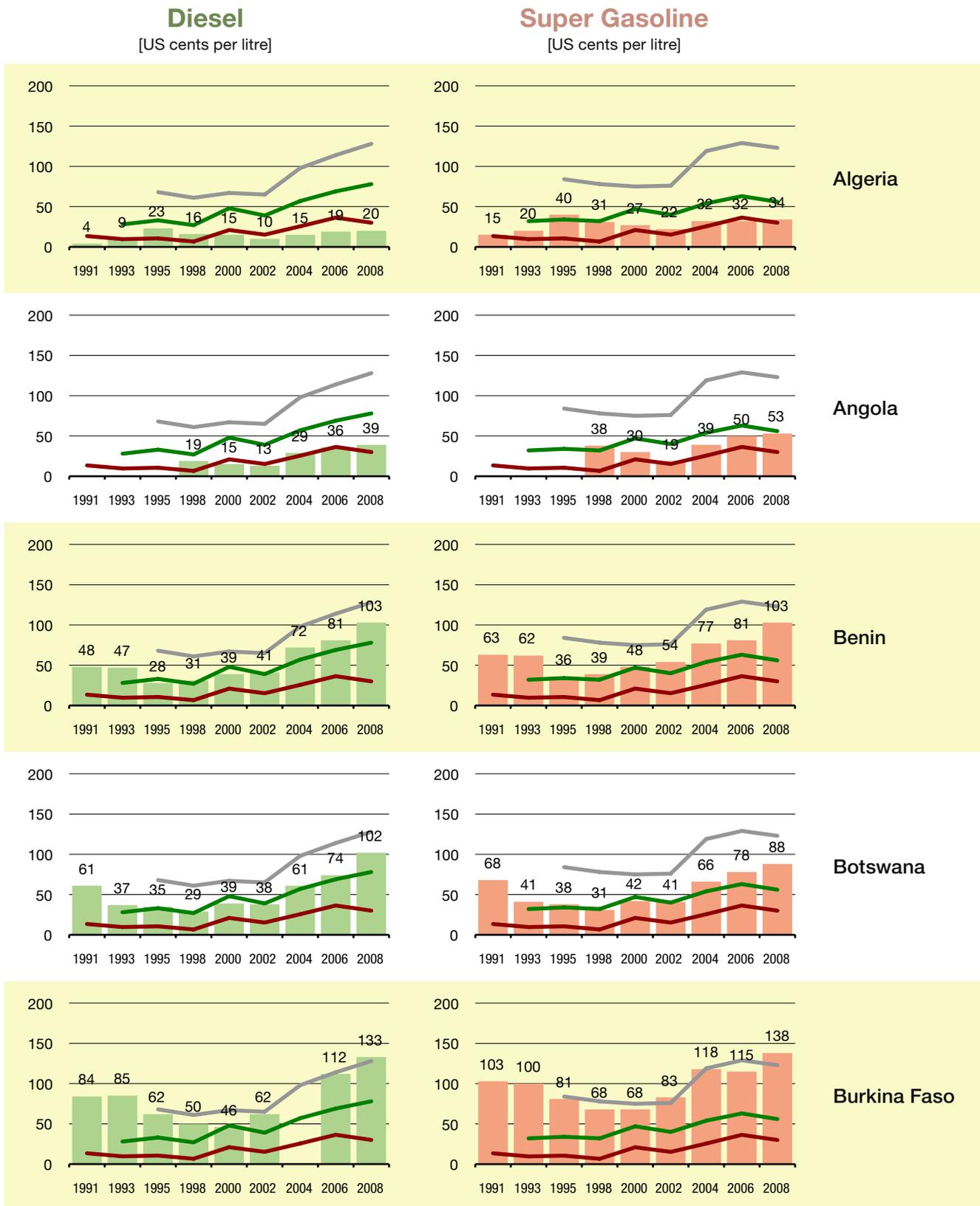
2.1.3 Time Series of retail fuel prices in Africa
in US cent per litre (last survey 15–17 November 2008)

Country	Diesel [US cents/litre]									Super Gasoline [US cents/litre]								
	1991	1993	1995	1998	2000	2002	2004	2006	2008	1991	1993	1995	1998	2000	2002	2004	2006	2008
Algeria	4	9	23	16	15	10	15	19	20	15	20	40	31	27	22	32	32	34
Angola				19	15	13	29	36	39				38	30	19	39	50	53
Benin	48	47	28	31	39	41	72	81	103	63	62	36	39	48	54	77	81	103
Botswana	61	37	35	29	39	38	61	74	102	68	41	38	31	42	41	66	78	88
Burkina Faso	84	85	62	50	46	62	94	112	133	103	100	81	68	68	83	118	115	138
Burundi	61	54	48	66	71	54	108	122	123	63	59	52	72	101	58	104	120	139
Cameroon	58	58	50	48	47	57	83	107	104	68	69	68	64	56	68	95	114	114
Cape Verde	40			43	39		81		143	68			81	59		140		184
Central African R.	99	98	64	65		87	114	127	144	133	128	82	81		100	129	137	144
Chad	97	95	70	61	60	77	101	120	132	105	102	80	70	68	79	117	131	130
Congo, D. R. (Kin)	73	67	70	50	93	69	81	100	121	81	74	73	50	100	70	92	94	123
Congo, R. (Braz)	71			40	30	48	59	67	57	105			72	53	69	87	96	81
Côte d'Ivoire	115	86	56	45	51	60	95	106	120	124	123	83	74	76	85	114	120	133
Djibouti	38	56	40	40	53	54	35	89		77	61	93	91	105	98	52	145	
Egypt	7	9	12	12	10	8	10	12	20	29	30	29	29	26	19	28	30	49
Eritrea		29	19	23	33	25	40	81	107 ¹		50	40	37	56	36	80	190	253 ¹
Ethiopia	14	19	24	25	27	32	42	62	89	27	26	32	36	46	52	60	93	92
Gabon	83	70		39	37	53	69	39	90	118	116		63	53	69	90	64	114
Gambia	52	48		63	47	40	73	101	75	73	67		83	64	46	75	108	79
Ghana	43	45	33	30	19	23	43	84	90	53	53	38	32	20	28	49	86	90
Guinea	61	56		56	69	56	69	82	102	67	61		68	85	66	75	79	102
Guinea-Bissau	61	56								30	27							
Kenya	37	33	43	54	60	56	76	98	114	53	40	56	70	71	70	92	112	120
Lesotho				38	47		68	88	93				39	50		73	89	79
Liberia							77	85	103							75	79	77
Libya				17	16	8	8	13	12				22	25	10	9	13	14
Madagascar	25	31	32	33	45	65	79	100	143	43	54	47	47	76	108	105	115	155
Malawi	56	67	55	45	68	62	88	112	167	64	71	65	51	69	66	95	117	178
Mali	74	74	57	48	43	55	90	104	110	112	114	82	77	70	69	116	122	130
Mauritania	53	43		31	40	39	59	84	106	86	85		59	67	63	80	97	149
Morocco	45	41	47	47	53	55	70	87	83	82	75	94	79	82	87	110	122	129
Mozambique	26	21	32	41	54	43	79	106	137	74	48	53	55	56	46	88	115	171
Namibia	41	38		36	44	43	65	87	88	46	42		38	47	45	68	87	78
Niger	81	60	55	52	48	55	91	111	97	94	92	79	76	68	77	102	114	99
Nigeria	4	1	3	10	27	19	45	66	113	5	2	13	13	27	20	39	51	59
Rwanda	79	88		72	84	84	99	108	137	81	93		72	89	84	98	111	137
São Tomé & Princ.					71									90				
Senegal	74	88	62	48	52	53	90	109	126	119	123	94	71	73	75	110	131	135
Seychelles									91 ²								135	91 ²
Sierra Leone	43	44		53		50	89	98	115	45	49		61		51	76	98	112
Somalia						29	89	67							35	136	74	
Somaliland	15						49	69	95	21						63	72	87
South Africa		52	46	39	50	40	80	84	45		52	51	43	50	43	81	85	65
Sudan	6	58	25	26	24	24	29	49	125	7	58	50	33	28	30	47	72	159
Swaziland	41	40		36	44		73	85	93	46	43		37	47		76	80	86
Tanzania	25	30	44	57	73	61	87	99	130	42	43	56	63	75	67	93	104	111
Togo	66	63	40	37	40	46	83	101	88	81	72	47	42	48	56	85	103	89
Tunisia	33	31	44	33	29	19	39	57	84	58	52	64	60	49	29	68	83	96
Uganda	55	71	85	68	75	70	88	101	122	69	79	98	86	86	83	102	117	130
Zambia	24	66	57	49		60	98	122	161	40	72	60	53		72	110	131	170
Zimbabwe	37	28	29	22	72	5	65		105 ³	68	47	38	26	85	5	61		130 ³

¹ Rationing, ² Source: ADAC, ³ Hyper Inflation,

Note: Survey data of mid November of each year

2.1.4 Detailed time series of fuel prices in Africa 1991 – 2008 (from Algeria to Burkina Faso)

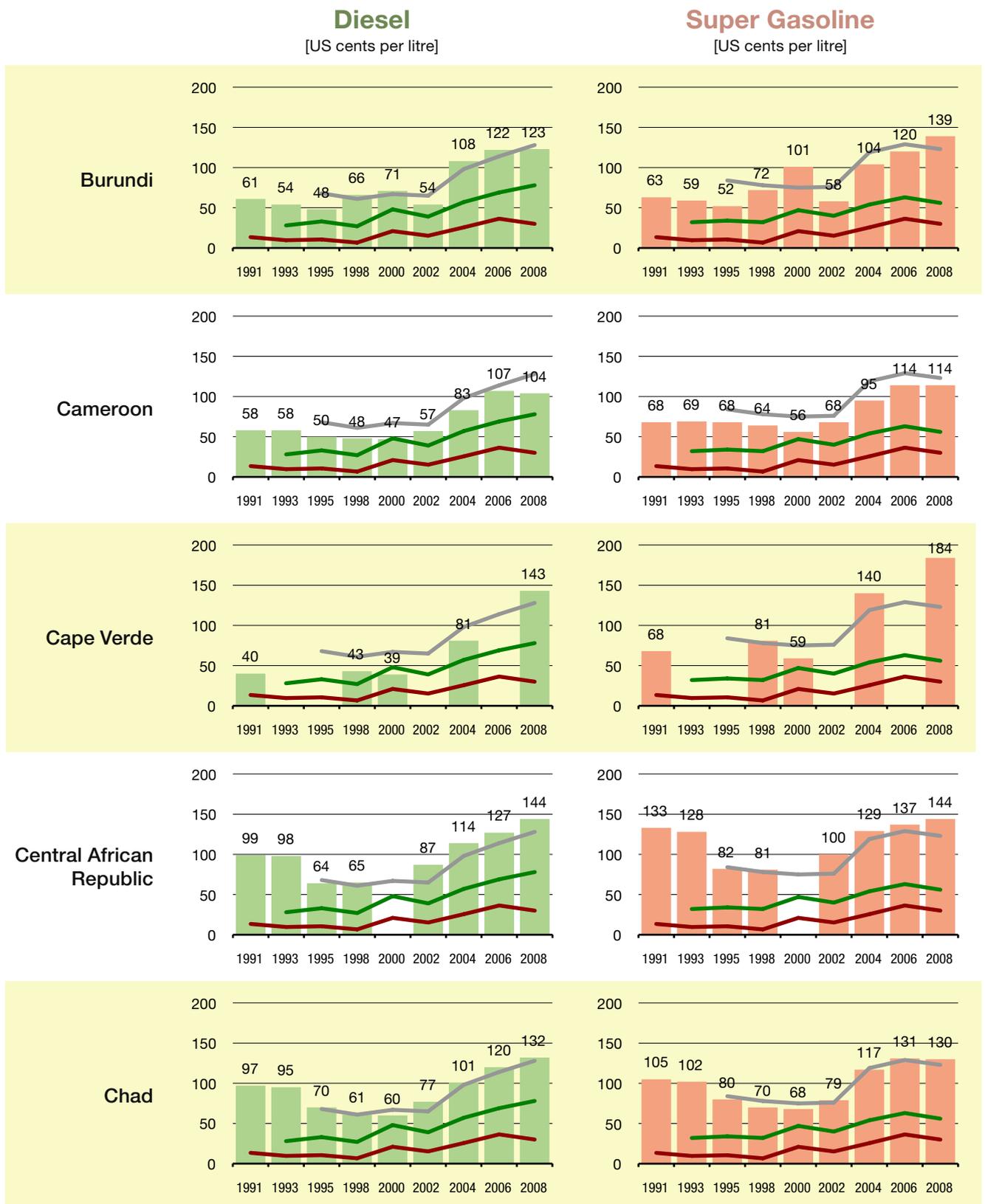


Grey Benchmark Line: Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.

Green Benchmark Line: Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.

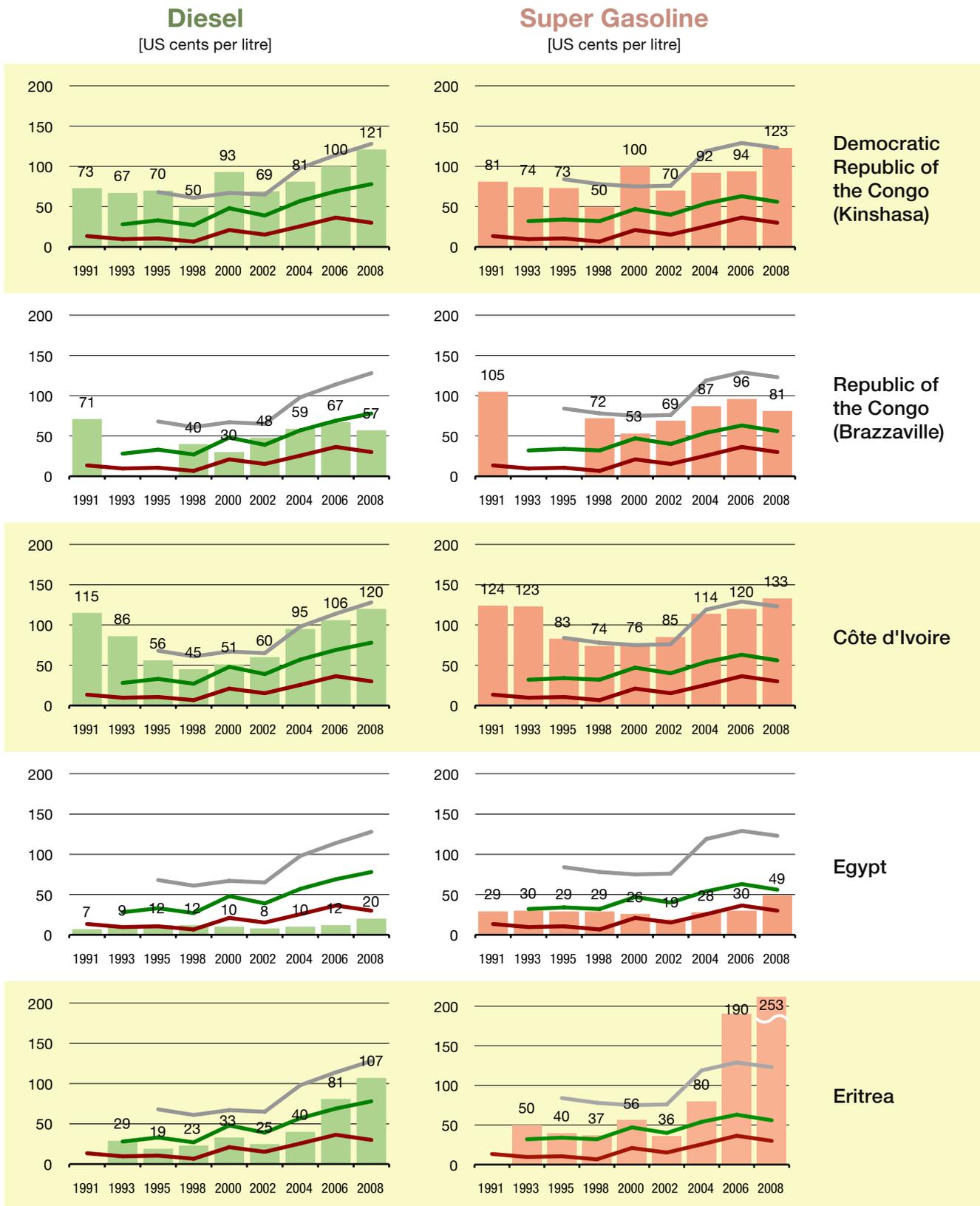
Red Benchmark Line: Price of crude oil on world market.

2.1.4 Detailed time series of fuel prices in Africa 1991 – 2008 (from Burundi to Chad)



- Grey Benchmark Line:** Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.
- Green Benchmark Line:** Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.
- Red Benchmark Line:** Price of crude oil on world market.

2.1.4 Detailed time series of fuel prices in Africa
1991 – 2008 (from Democratic Republic of the Congo to Eritrea)

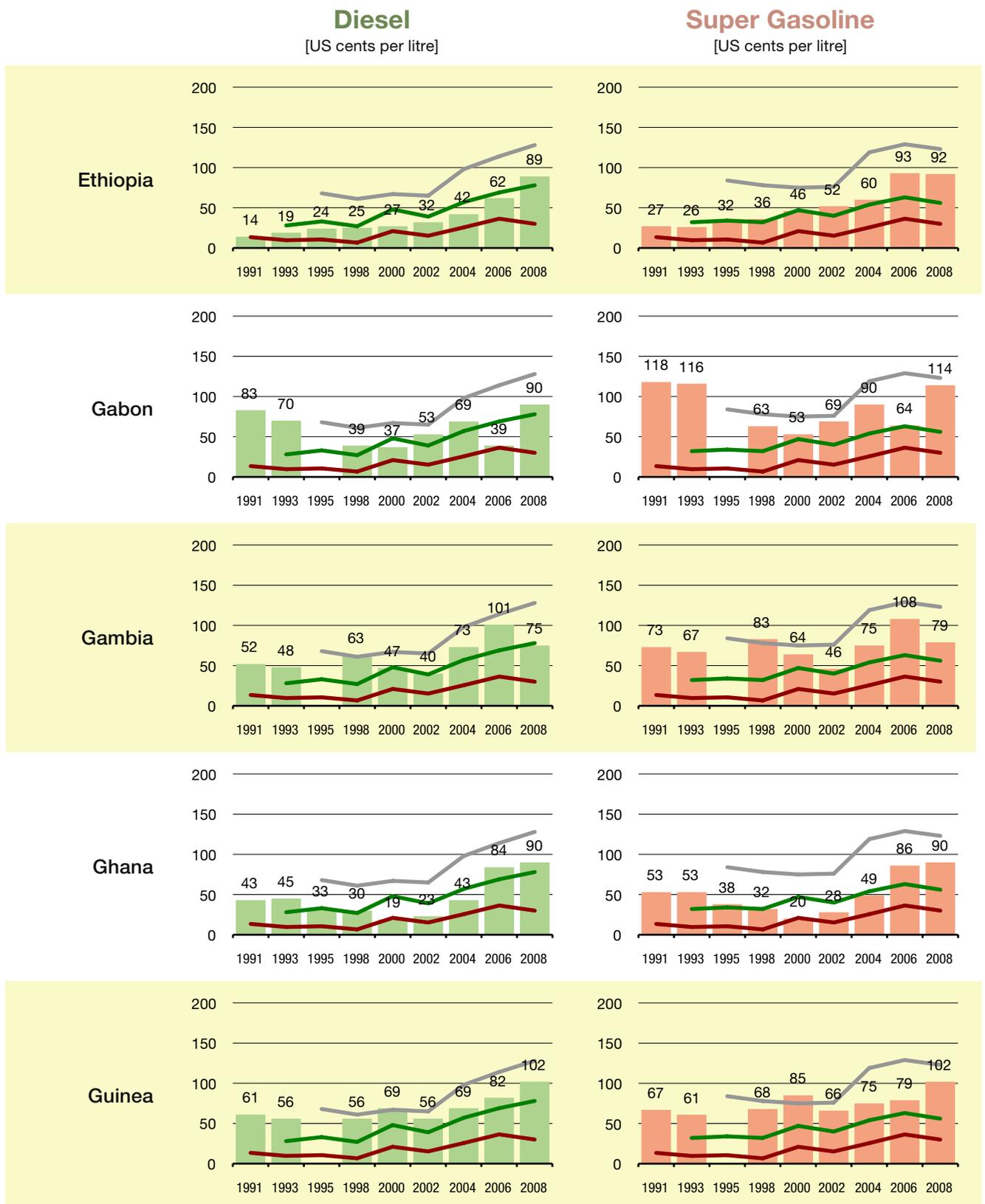


Grey Benchmark Line: Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.

Green Benchmark Line: Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.

Red Benchmark Line: Price of crude oil on world market.

2.1.4 Detailed time series of fuel prices in Africa 1991 – 2008 (from Ethiopia to Guinea)

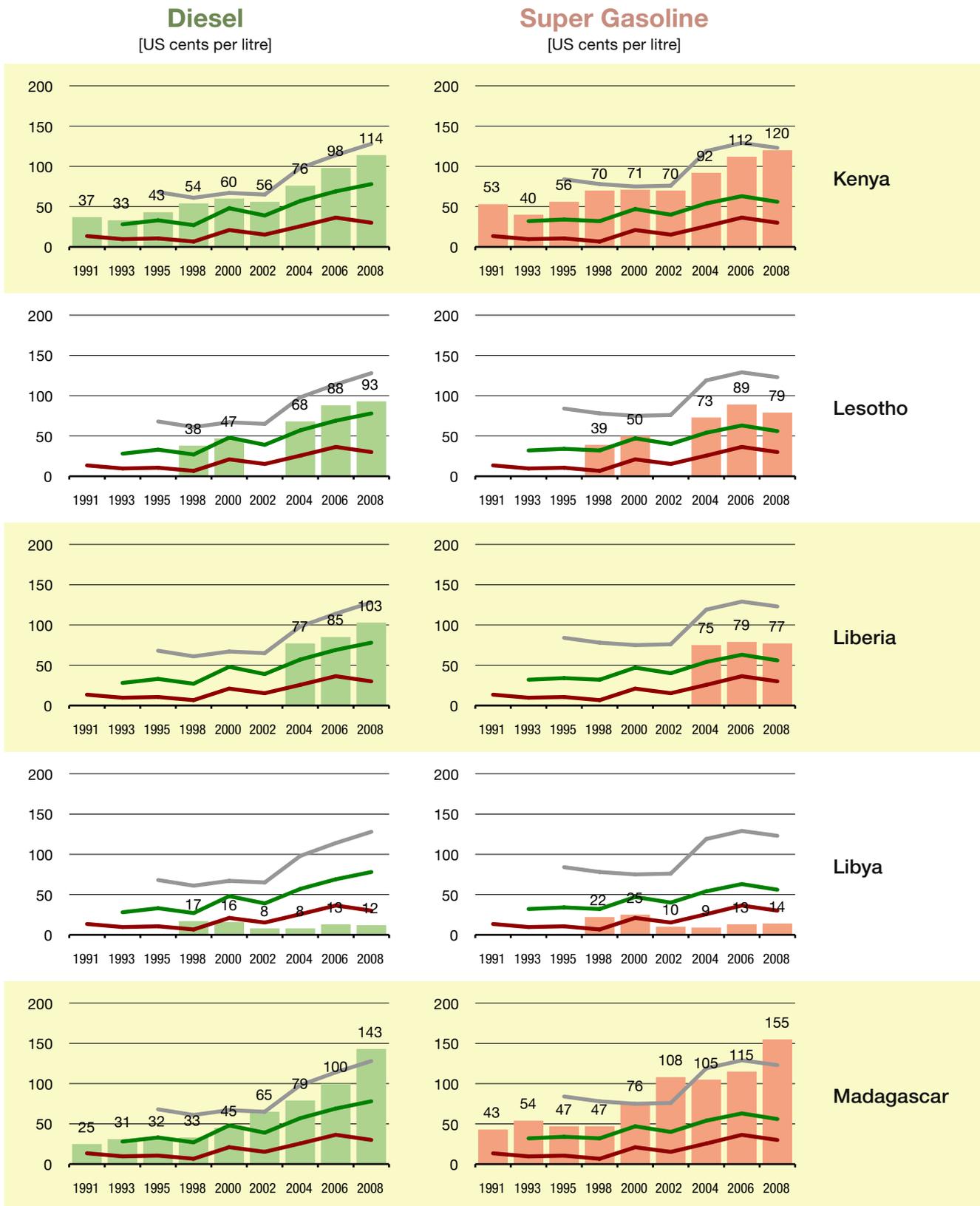


Grey Benchmark Line: Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.

Green Benchmark Line: Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.

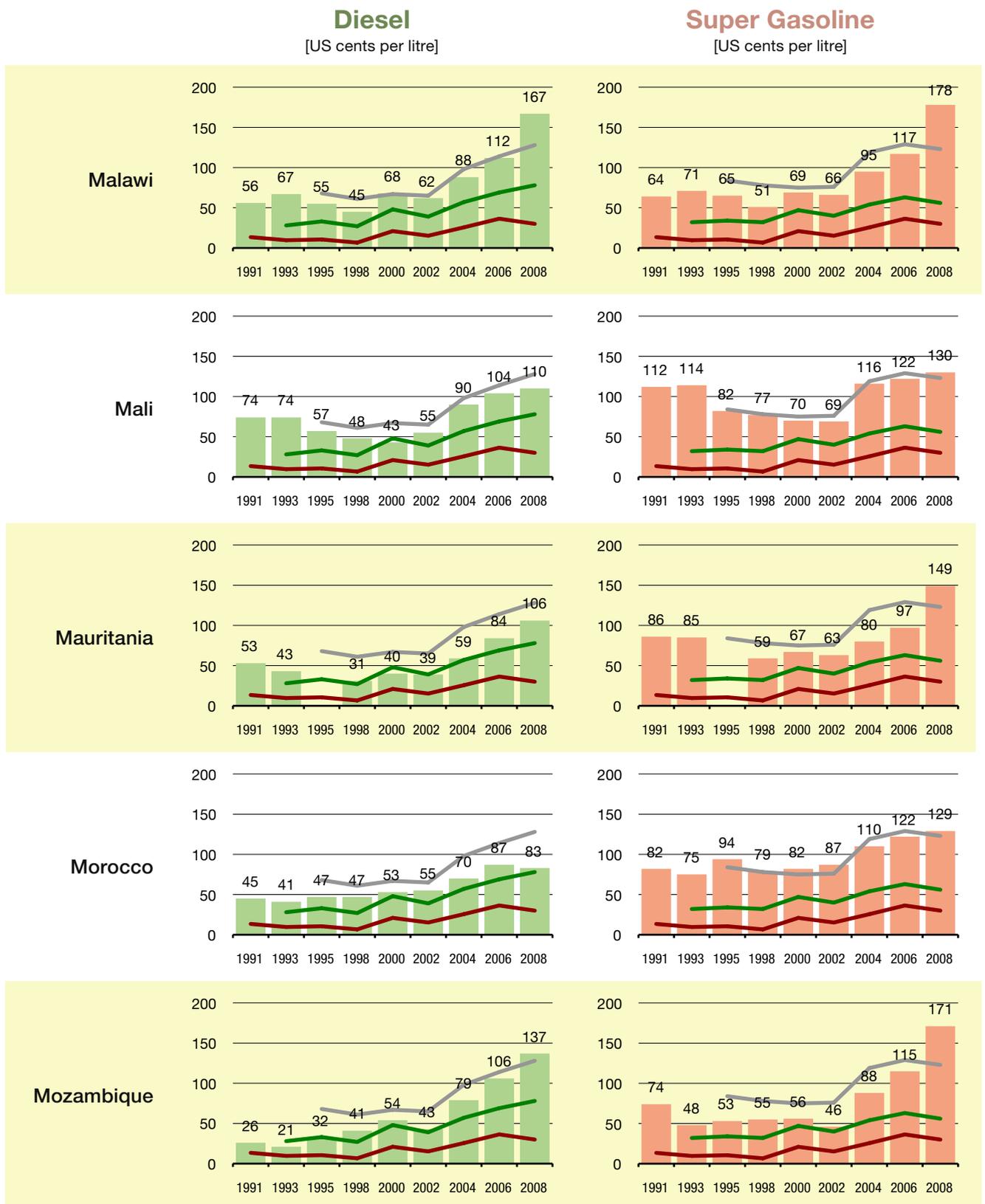
Red Benchmark Line: Price of crude oil on world market.

2.1.4 Detailed time series of fuel prices in Africa 1991 – 2008 (from Kenya to Madagascar)



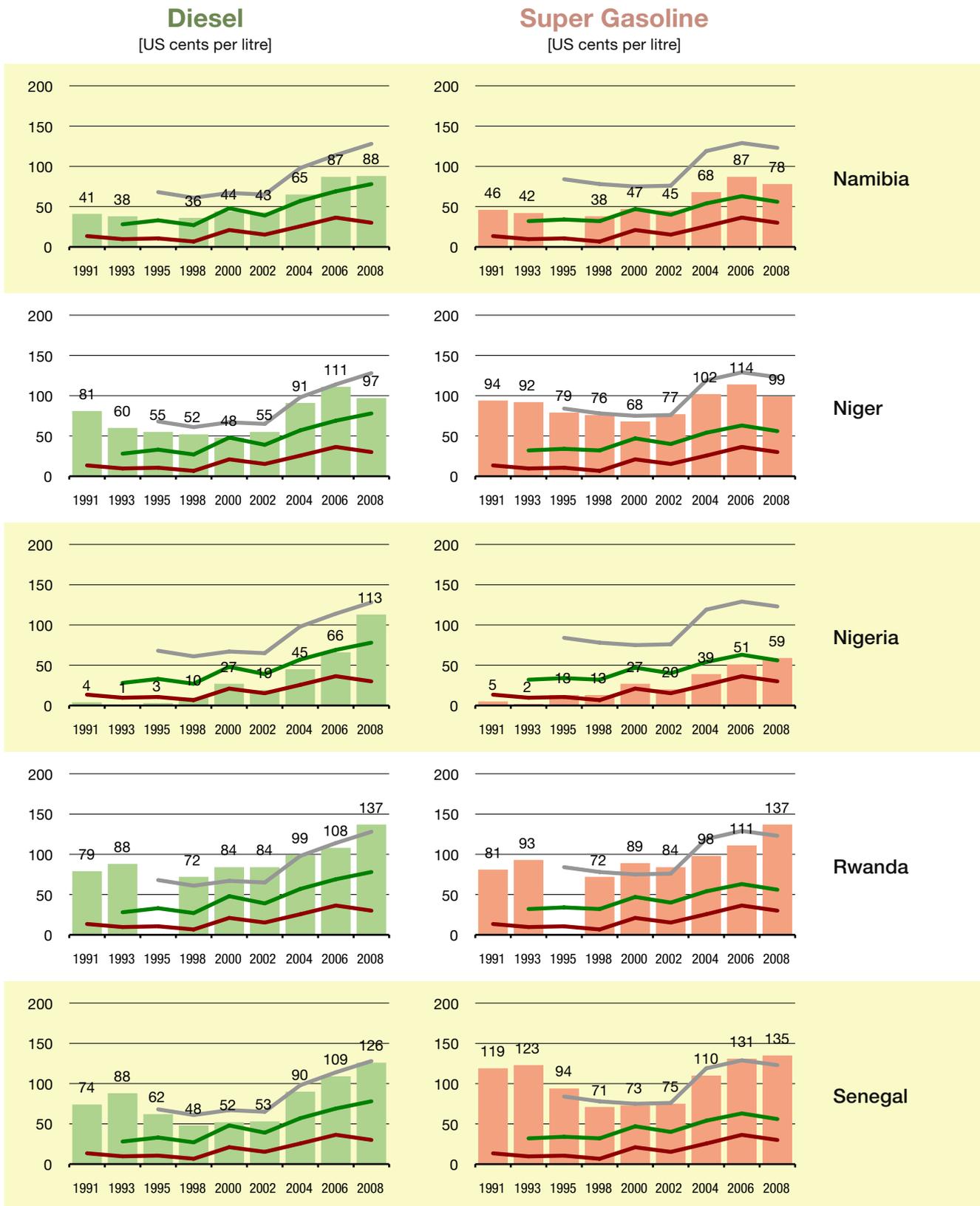
- Grey Benchmark Line:** Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.
- Green Benchmark Line:** Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.
- Red Benchmark Line:** Price of crude oil on world market.

2.1.4 Detailed time series of fuel prices in Africa 1991 – 2008 (from Malawi to Mozambique)



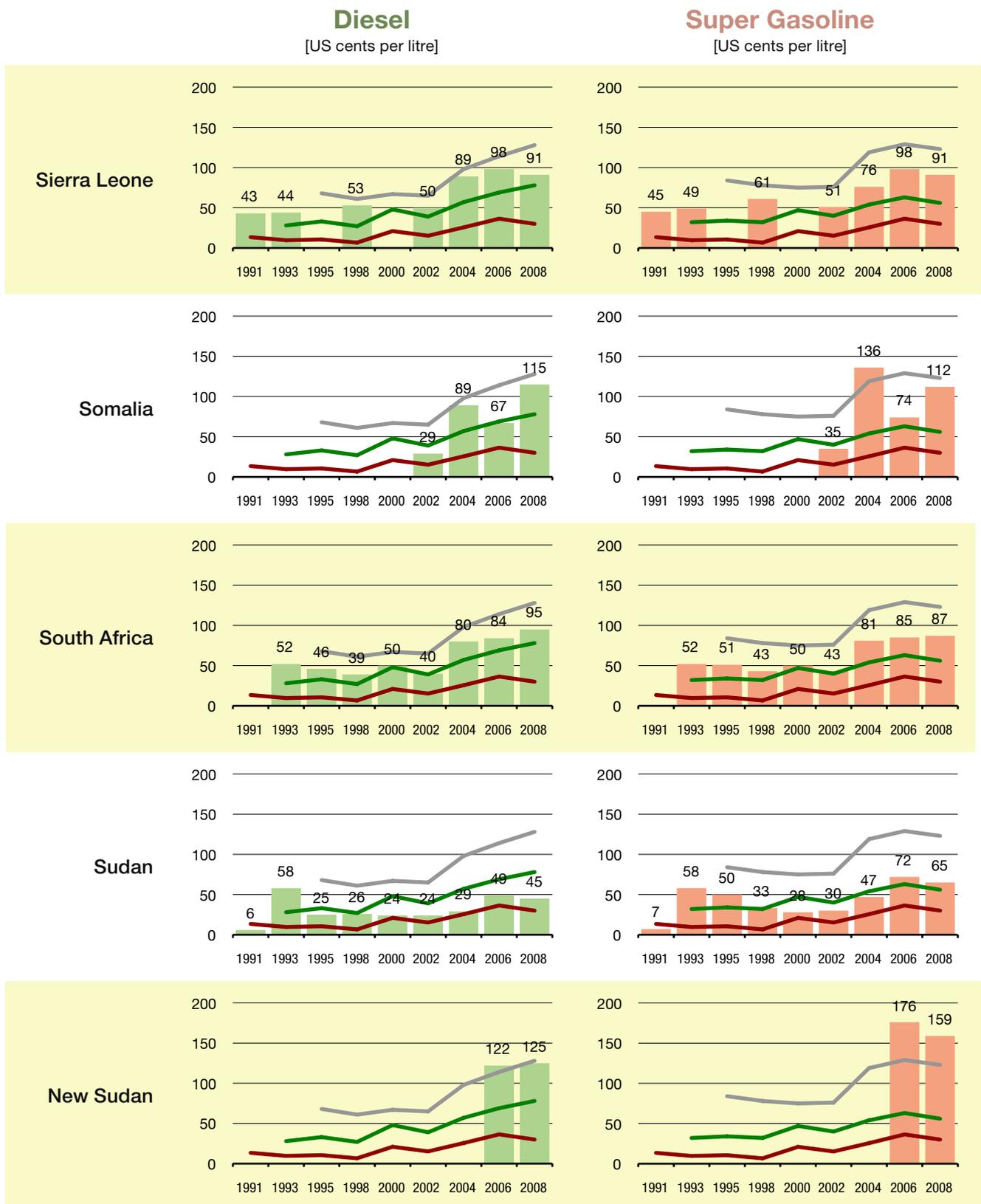
- Grey Benchmark Line:** Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.
- Green Benchmark Line:** Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.
- Red Benchmark Line:** Price of crude oil on world market.

2.1.4 Detailed time series of fuel prices in Africa 1991 – 2008 (from Namibia to Senegal)



- Grey Benchmark Line:** Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.
- Green Benchmark Line:** Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.
- Red Benchmark Line:** Price of crude oil on world market.

2.1.4 Detailed time series of fuel prices in Africa 1991 – 2008 (from Sierra Leone to New Sudan)

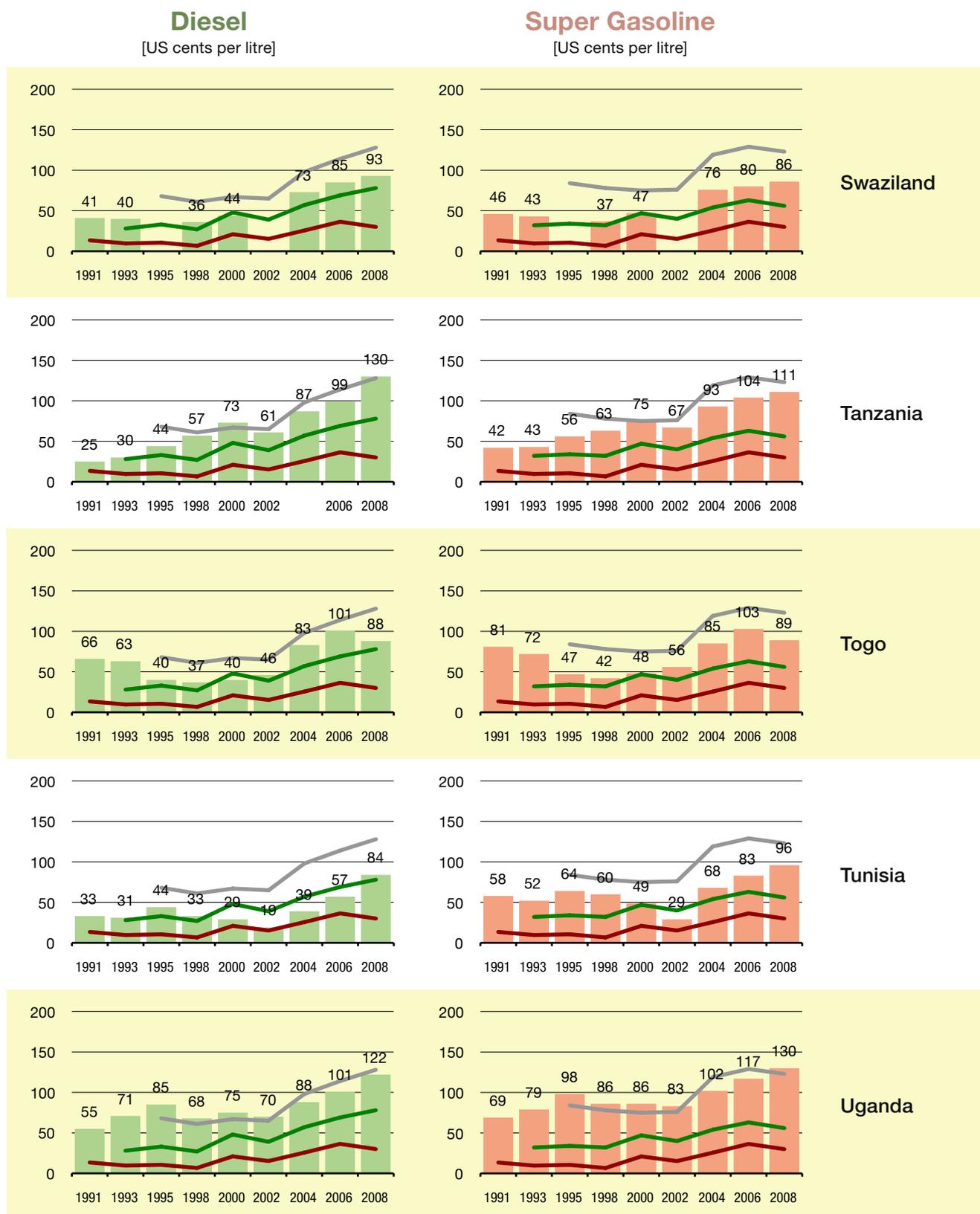


Grey Benchmark Line: Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.

Green Benchmark Line: Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.

Red Benchmark Line: Price of crude oil on world market.

2.1.4 Detailed time series of fuel prices in Africa 1991 – 2008 (from Swaziland to Uganda)

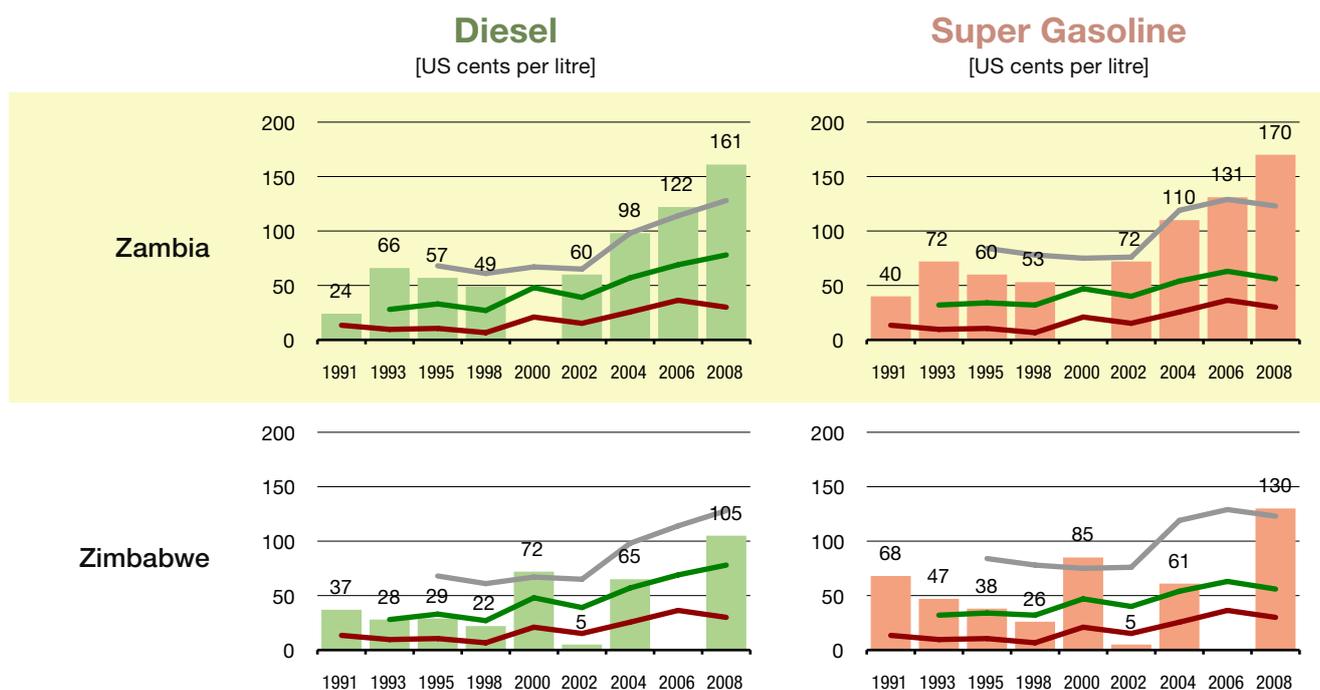


Grey Benchmark Line: Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.

Green Benchmark Line: Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.

Red Benchmark Line: Price of crude oil on world market.

2.1.4 Detailed time series of fuel prices in Africa 1991 – 2008 (from Zambia to Zimbabwe)



— **Grey Benchmark Line:** Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.

— **Green Benchmark Line:** Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.

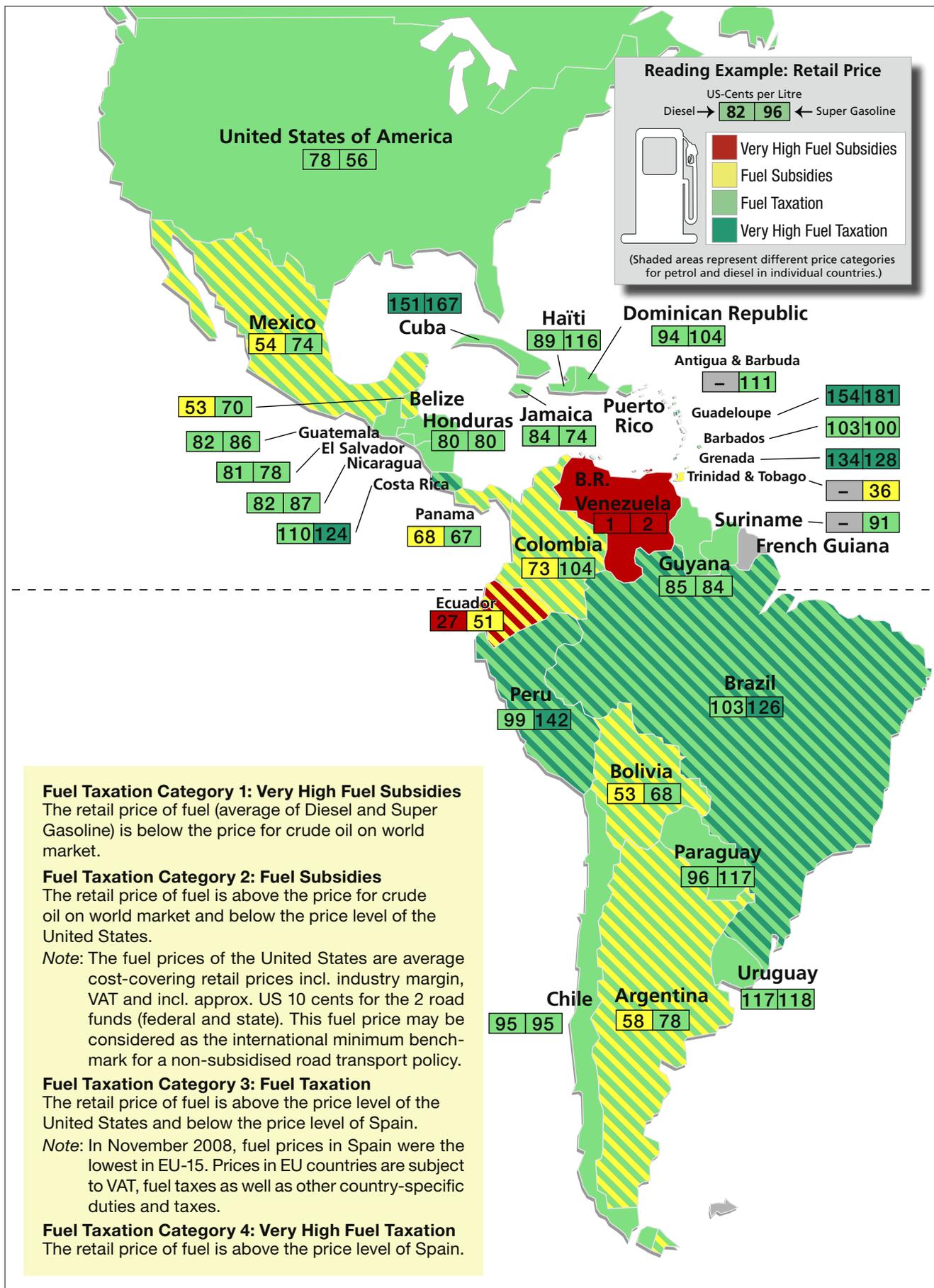
— **Red Benchmark Line:** Price of crude oil on world market.



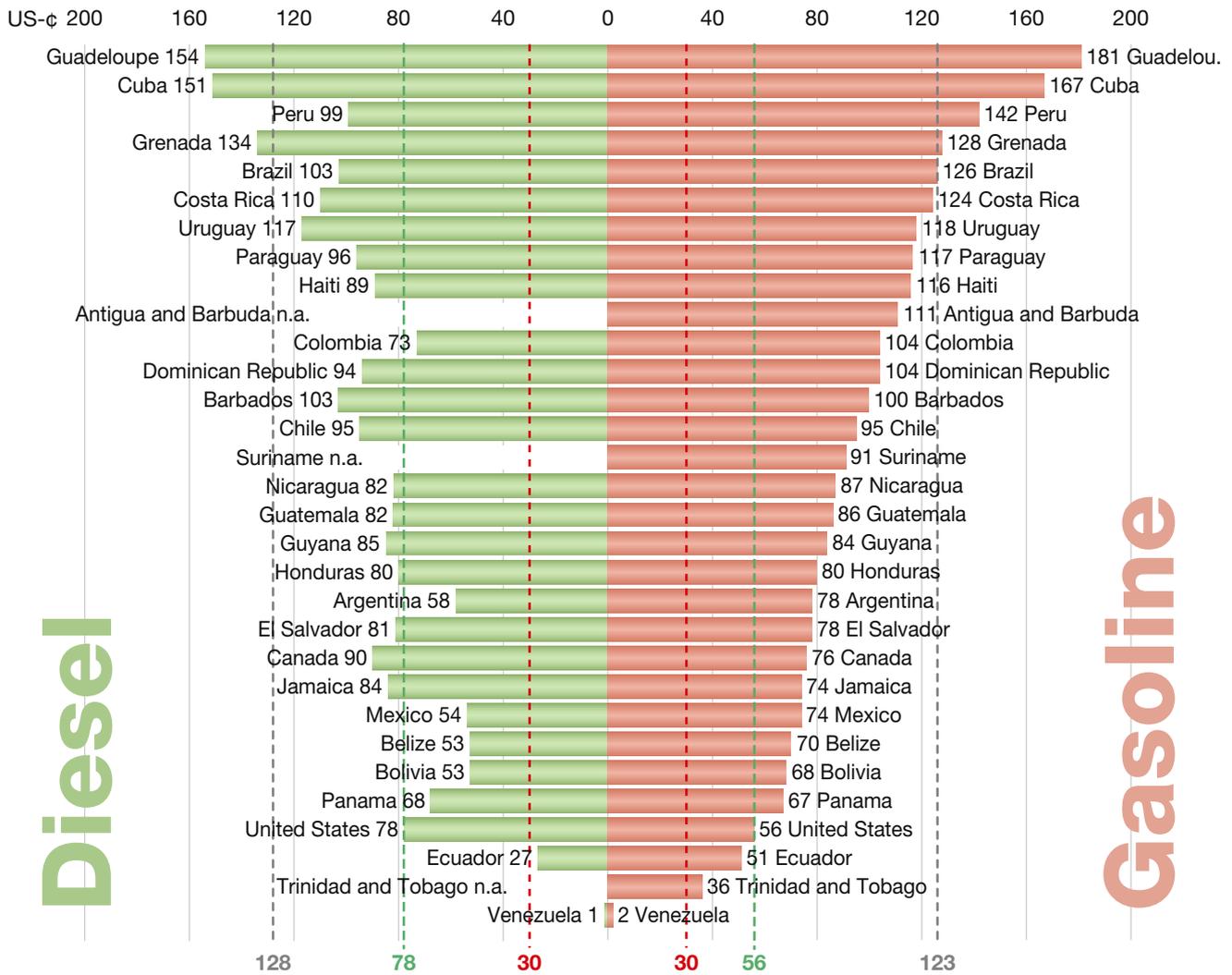
2.2 Fuel prices in America

- *Retail fuel prices in America*
- *Comparison of retail fuel prices in America*
- *Time Series of retail fuel prices in America*
- *Detailed time series of fuel prices in America*

2.2.1 Retail fuel prices in America
as of November 2008 (in US cents/litre)



2.2.2 Comparison of retail fuel prices in America
as of November 2008 (in US cents/litre)



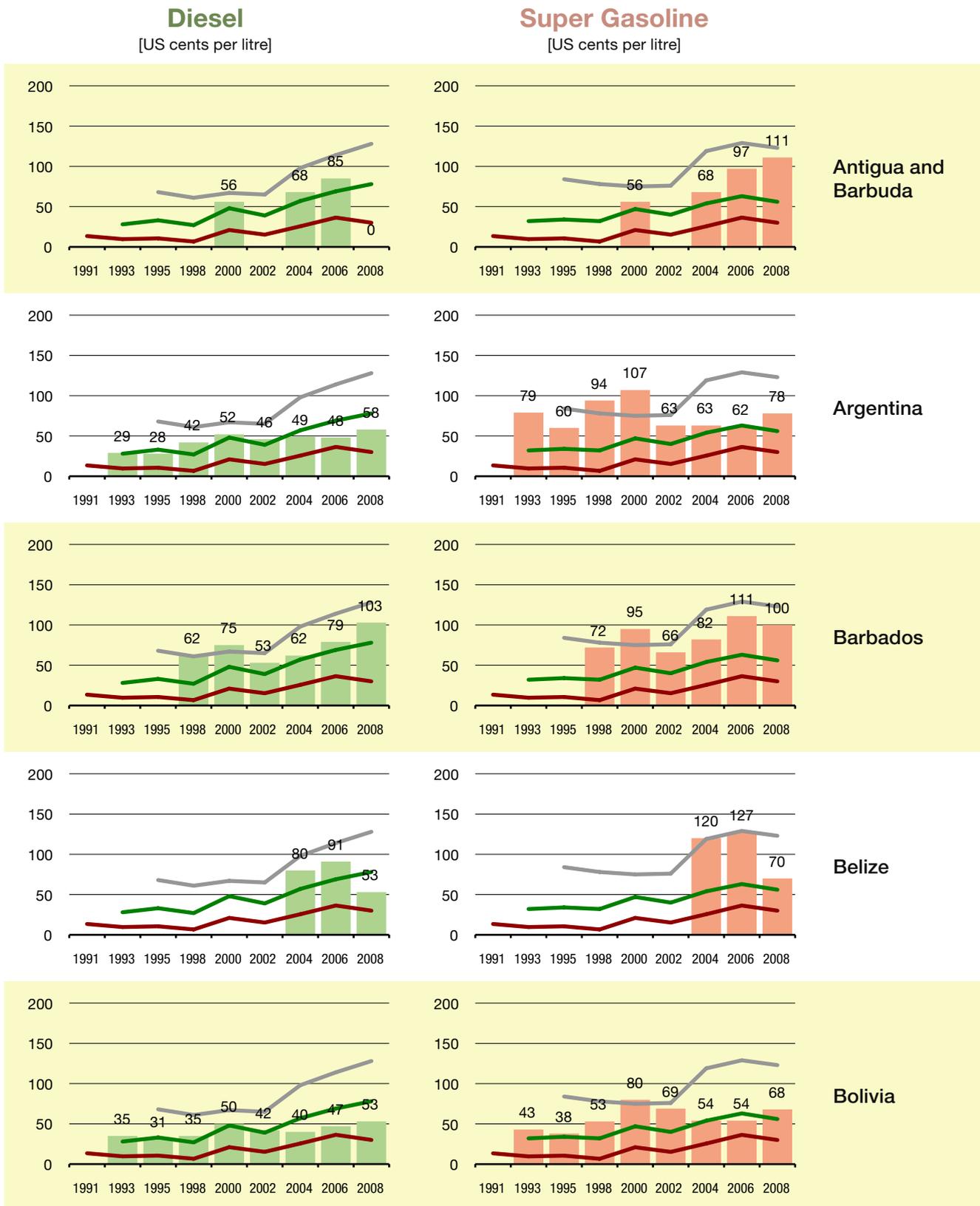
- Grey Benchmark Line:** Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.
- Green Benchmark Line:** Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.
- Red Benchmark Line:** Price of crude oil on world market.

2.2.3 Time series of retail fuel prices in America
in US cent per litre (last survey 15–17 November 2008)

Country	Diesel [US cents/litre]									Super Gasoline [US cents/litre]									
	1991	1993	1995	1998	2000	2002	2004	2006	2008	1991	1993	1995	1998	2000	2002	2004	2006	2008	
Antigua & Barbuda					56		68	85						56		68	97	111	
Argentina		29	28	42	52	46	49	48	58		79	60	94	107	63	63	62	78	
Barbados				62	75	53	62	79	103				72	95	66	82	111	100	
Belize							80	91	53							120	127	70	
Bolivia		35	31	35	50	42	40	47	53		43	38	53	80	69	54	54	68	
Brazil		38	39	34	34	31	49	84	103		53	63	80	92	55	84	126	126	
Canada		39	36	39	47	43	68	78	90		47	45	41	58	51	68	84	76	
Chile		31	33	29	47	39	64	86	95		43	53	49	64	58	85	109	95	
Colombia		19	27	20	35	24	36	57	73		23	35	24	49	44	72	98	104	
Costa Rica						44	56	67	110						64	78	98	124	
Cuba				18		45	55	91	151				50		90	95	110	167	
Dominican Rep.			28	22	39	27	61	75	94			40	40	71	49	85	103	104	
Ecuador		19	28	24	18	27	27	39	27		31	33	38	31	55	54	47	51	
El Salvador				30	40	33	58	80	81				54	67	46	65	82	78	
Grenada				41	41	41	68	89	134				54	54	54	73	89	128	
Guadeloupe									154									181	
Guatemala		25	28	32	42	32	63	64	82		32	39	41	53	48	68	78	86	
Guyana				27	37	27	61		85				30	37	31	74		84	
Haiti				36	35	30	60		89				59	64	54	88		116	
Honduras		26	25	30	46	46	66	73	80		41	35	50	62	63	81	89	80	
Jamaica				33	49	44	57	75	84				37	62	52	63	82	74	
Mexico		28	25	28	45	47	45	52	54		39	32	36	61	62	59	74	74	
Nicaragua		30	31	35	54	41	64	58	82		69	62	47	62	54	69	67	87	
Panama		30		28	41	36	48	60	68		43		41	53	51	54	70	67	
Paraguay		27	28	24	34	34	51	77	96		43	44	47	72	56	62	97	117	
Peru		32	43	33	54	48	76	86	99		56	68	55	80	74	112	122	142	
Puerto Rico				32			52	78					34			51	65		
Suriname				41	41	41	50	94					56	56	56	50	94	91	
Trinidad & Tobago				20	20	21	24	24					39	39	40	35	43	36	
United States		28	33	27	48	39	57	69	78		32	34	32	47	40	54	63	56	
Uruguay			38	42	53	20	71	94	117			89	90	119	46	113	123	118	
Venezuela			1	8	6	5	2	2	1				3	14	12	5	4	3	2

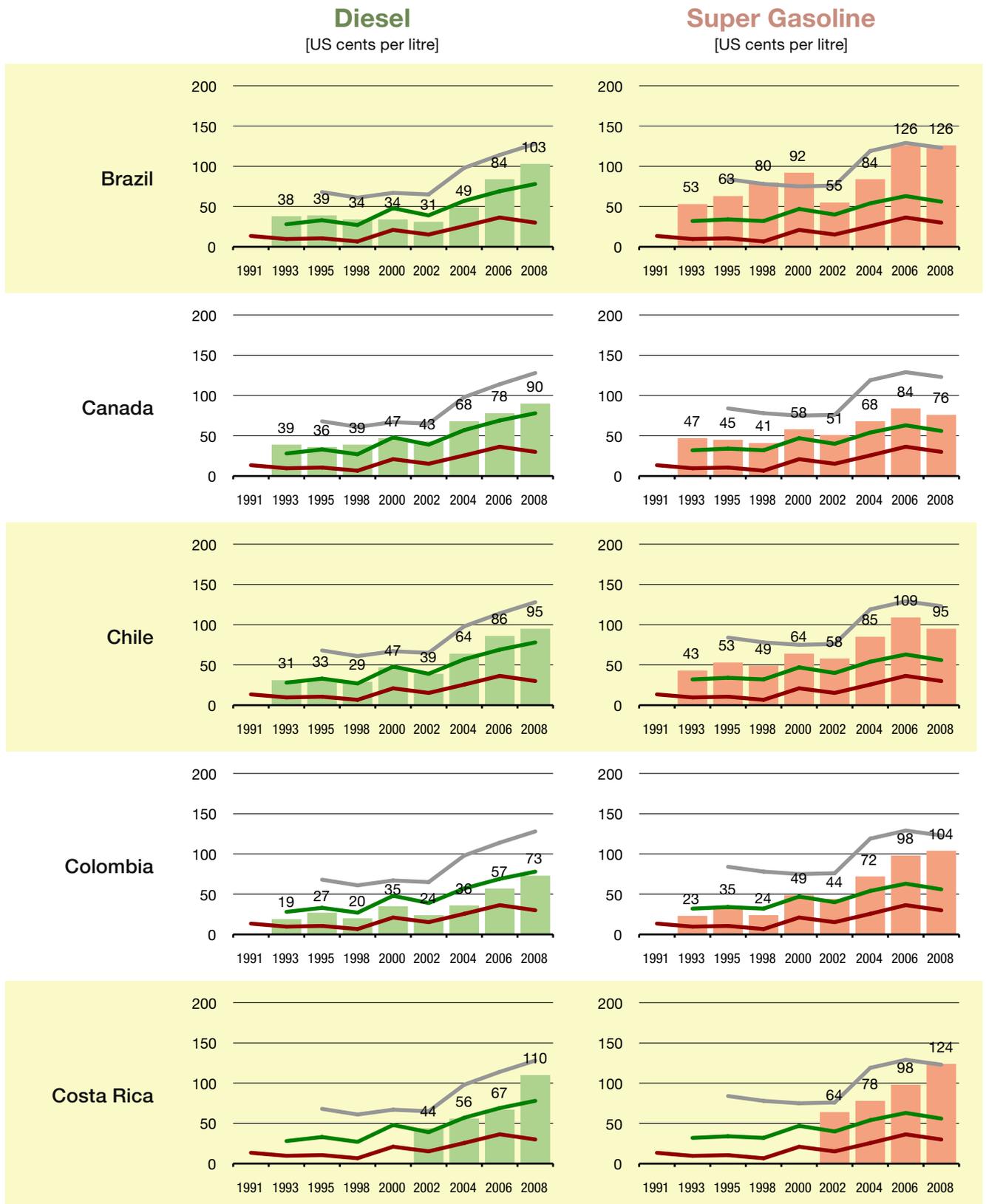
Note: Survey data of mid November of each year

2.2.4 Detailed time series of fuel prices in America 1991 – 2008 (from Antigua and Barbuda to Bolivia)



- Grey Benchmark Line:** Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.
- Green Benchmark Line:** Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.
- Red Benchmark Line:** Price of crude oil on world market.

2.2.4 Detailed time series of fuel prices in America 1991 – 2008 (from Brazil to Costa Rica)

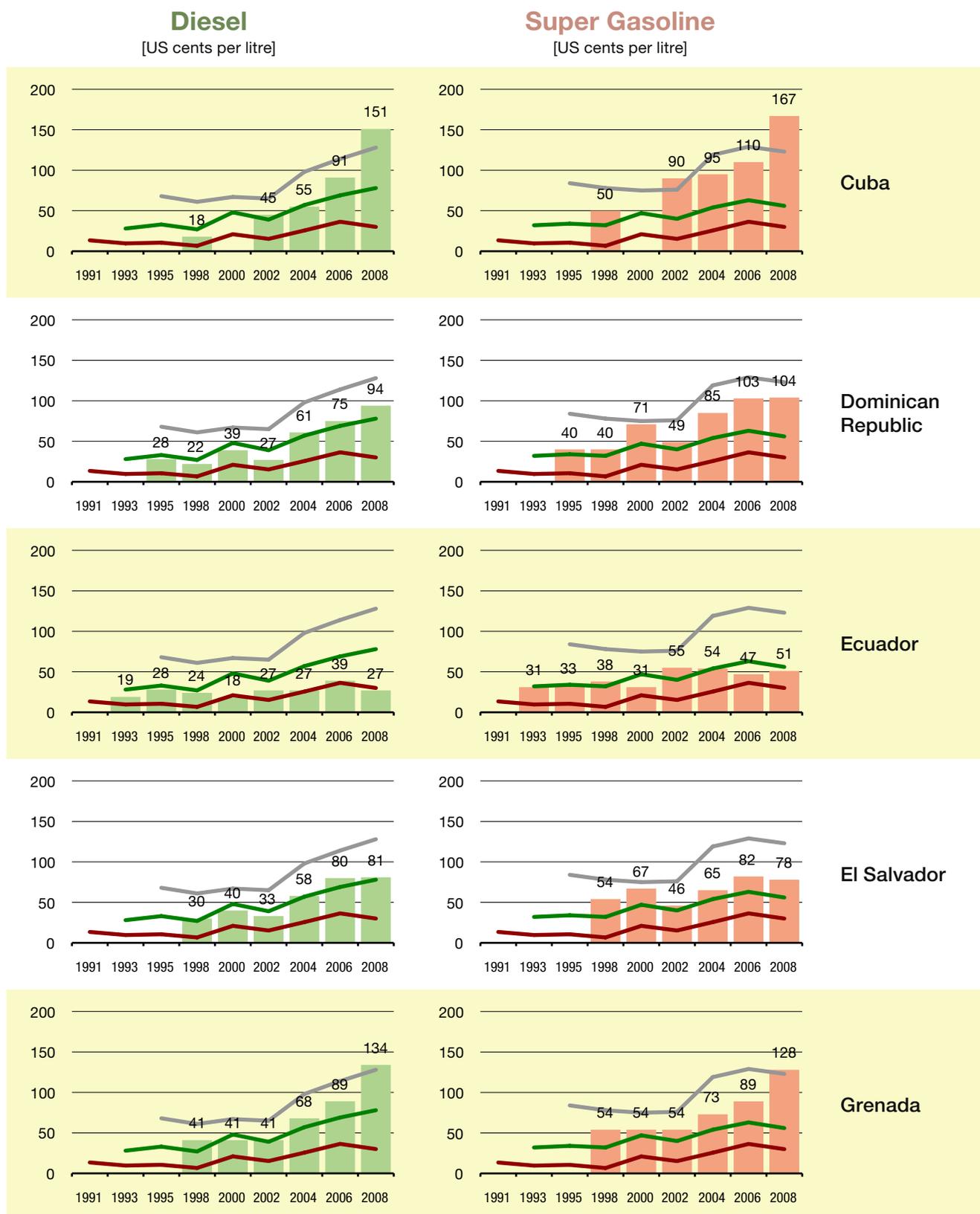


Grey Benchmark Line: Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.

Green Benchmark Line: Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.

Red Benchmark Line: Price of crude oil on world market.

2.2.4 Detailed time series of fuel prices in America 1991 – 2008 (from Cuba to Grenada)

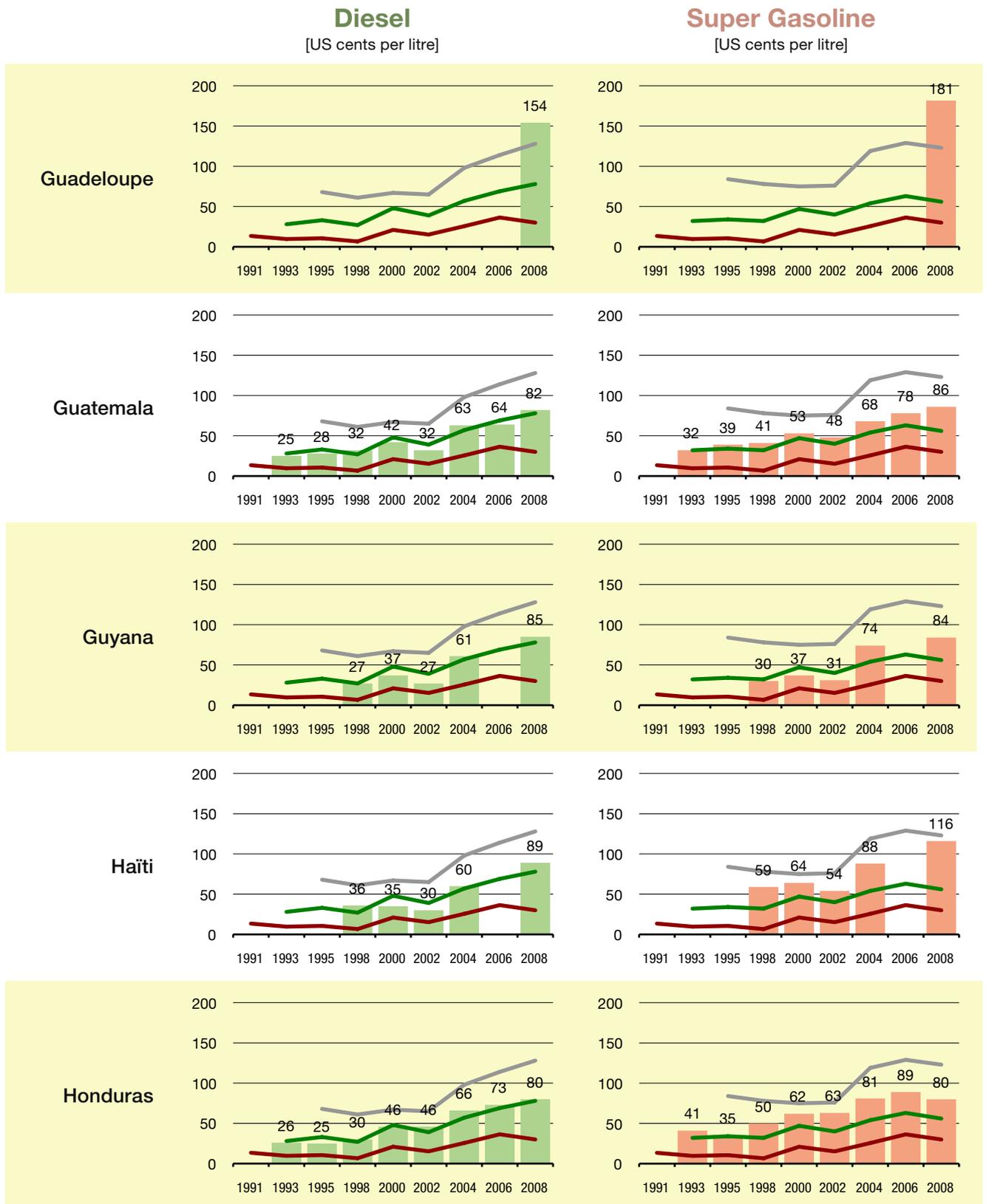


Grey Benchmark Line: Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.

Green Benchmark Line: Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.

Red Benchmark Line: Price of crude oil on world market.

2.2.4 Detailed time series of fuel prices in America 1991 – 2008 (from Guadeloupe to Honduras)

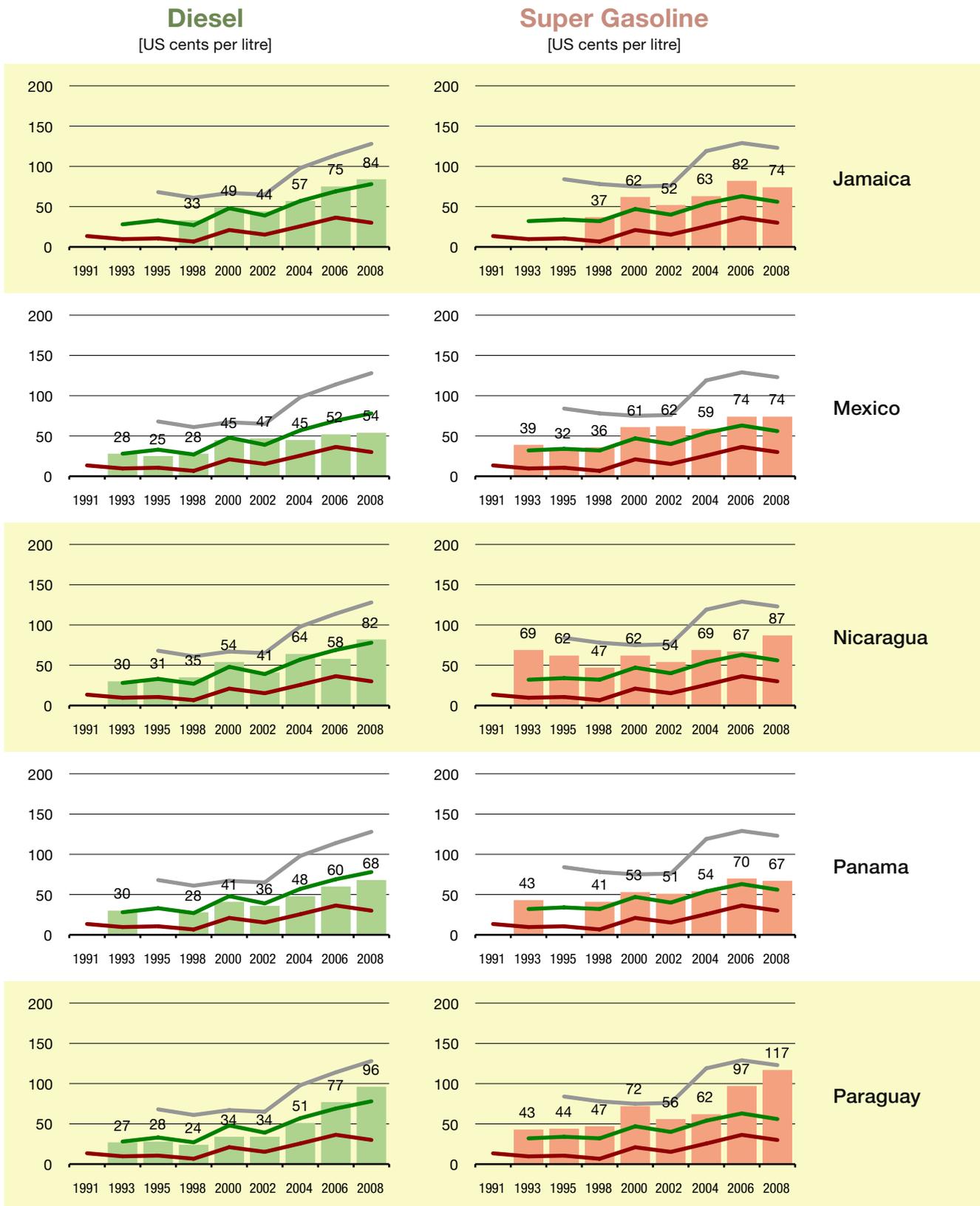


Grey Benchmark Line: Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.

Green Benchmark Line: Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.

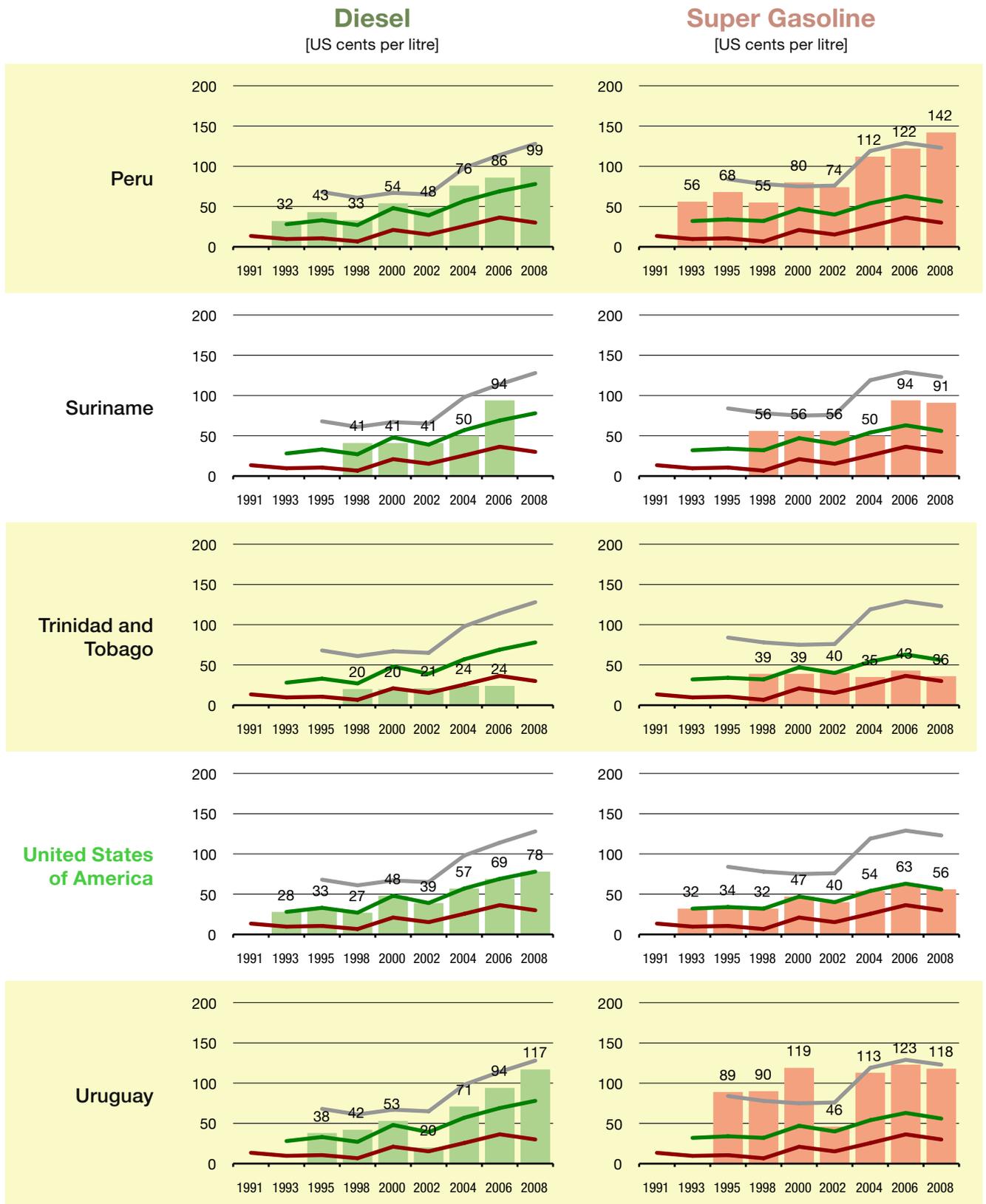
Red Benchmark Line: Price of crude oil on world market.

2.2.4 Detailed time series of fuel prices in America 1991 – 2008 (from Jamaica to Paraguay)



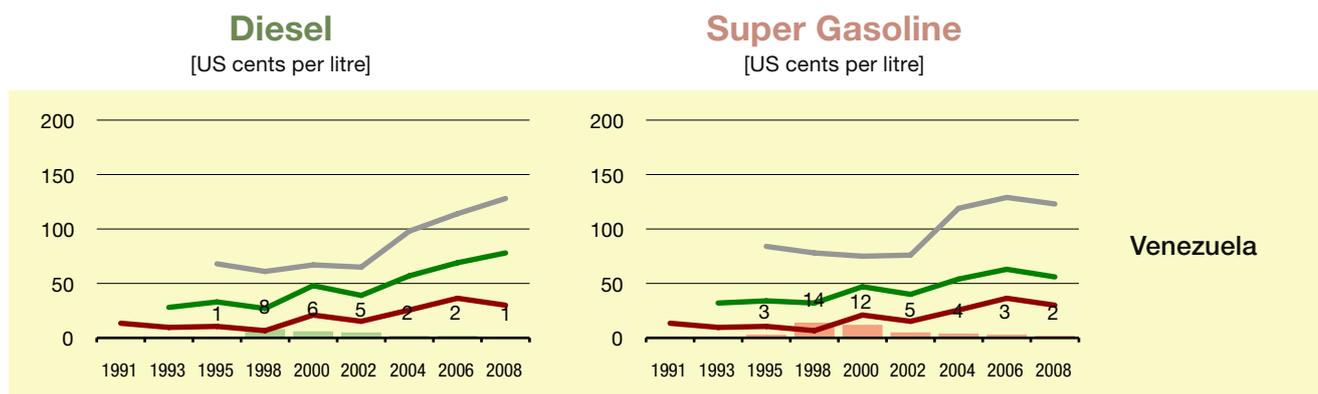
- Grey Benchmark Line:** Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.
- Green Benchmark Line:** Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.
- Red Benchmark Line:** Price of crude oil on world market.

2.2.4 Detailed time series of fuel prices in America 1991 – 2008 (from Peru to Uruguay)



- Grey Benchmark Line:** Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.
- Green Benchmark Line:** Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.
- Red Benchmark Line:** Price of crude oil on world market.

2.2.4 Detailed time series of fuel prices in America 1991 – 2008 (Venezuela)



- **Grey Benchmark Line:** Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.
- **Green Benchmark Line:** Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.
- **Red Benchmark Line:** Price of crude oil on world market.

بترولوم

صحراء

Esso

24/24

غسل

تفتيش

الخدمات

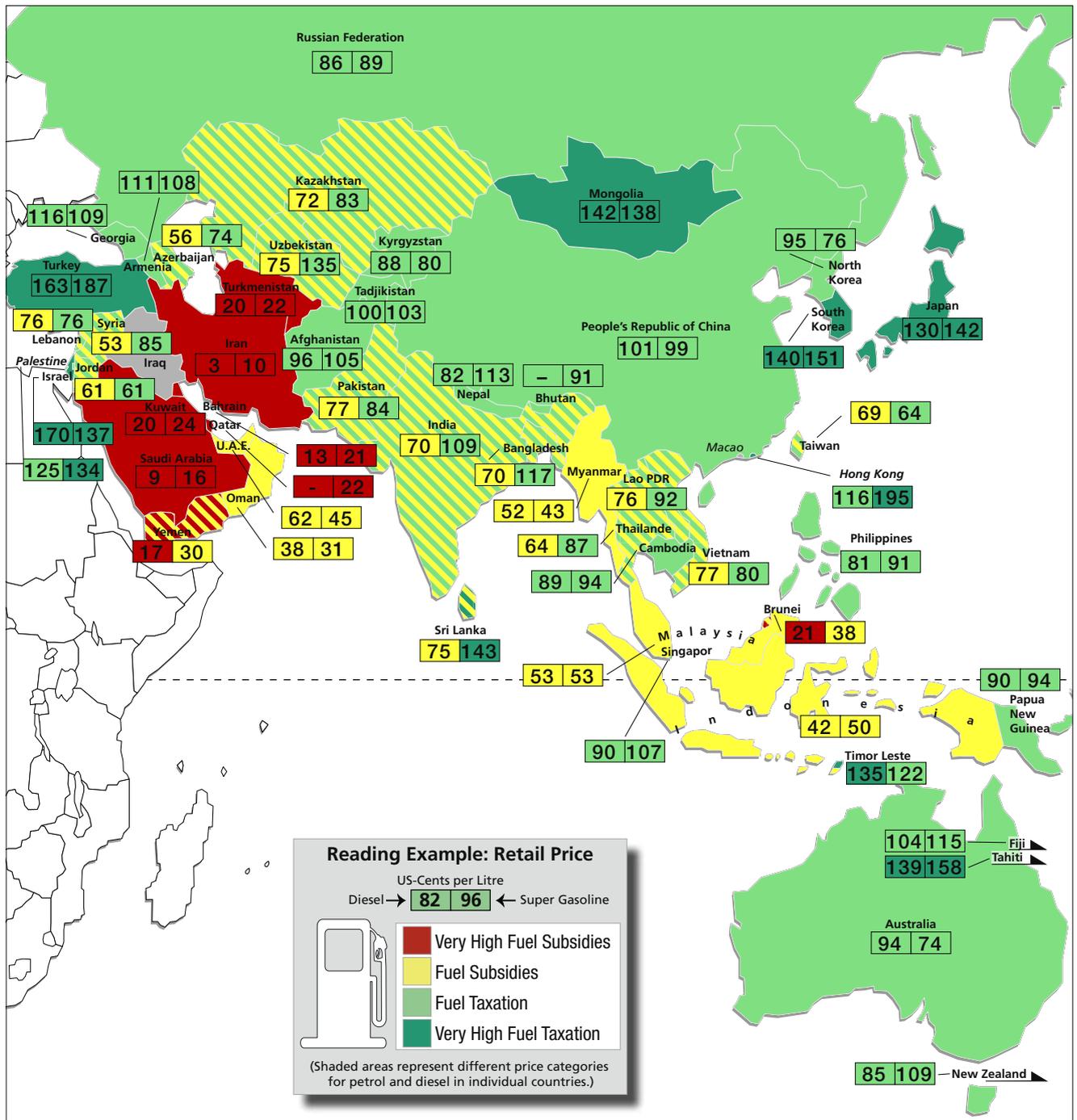




2.3 Fuel prices in Asia, Australia and Pacific

- *Retail fuel prices in Asia, Australia and Pacific*
- *Comparison of retail fuel prices in Asia, Australia and Pacific*
- *Time Series of retail fuel prices in Asia, Australia and Pacific*
- *Detailed time series of fuel prices in Asia, Australia and Pacific*

2.3.1 Retail fuel prices in Asia, Australia and Pacific as of November 2008 (in US cents/litre)



Fuel Taxation Category 1: Very High Fuel Subsidies

The retail price of fuel (average of Diesel and Super Gasoline) is below the price for crude oil on world market.

Fuel Taxation Category 2: Fuel Subsidies

The retail price of fuel is above the price for crude oil on world market and below the price level of the United States.

Note: The fuel prices of the United States are average cost-covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for the 2 road funds (federal and state). This fuel price may be considered as the international minimum benchmark for a non-subsidised road transport policy.

Fuel Taxation Category 3: Fuel Taxation

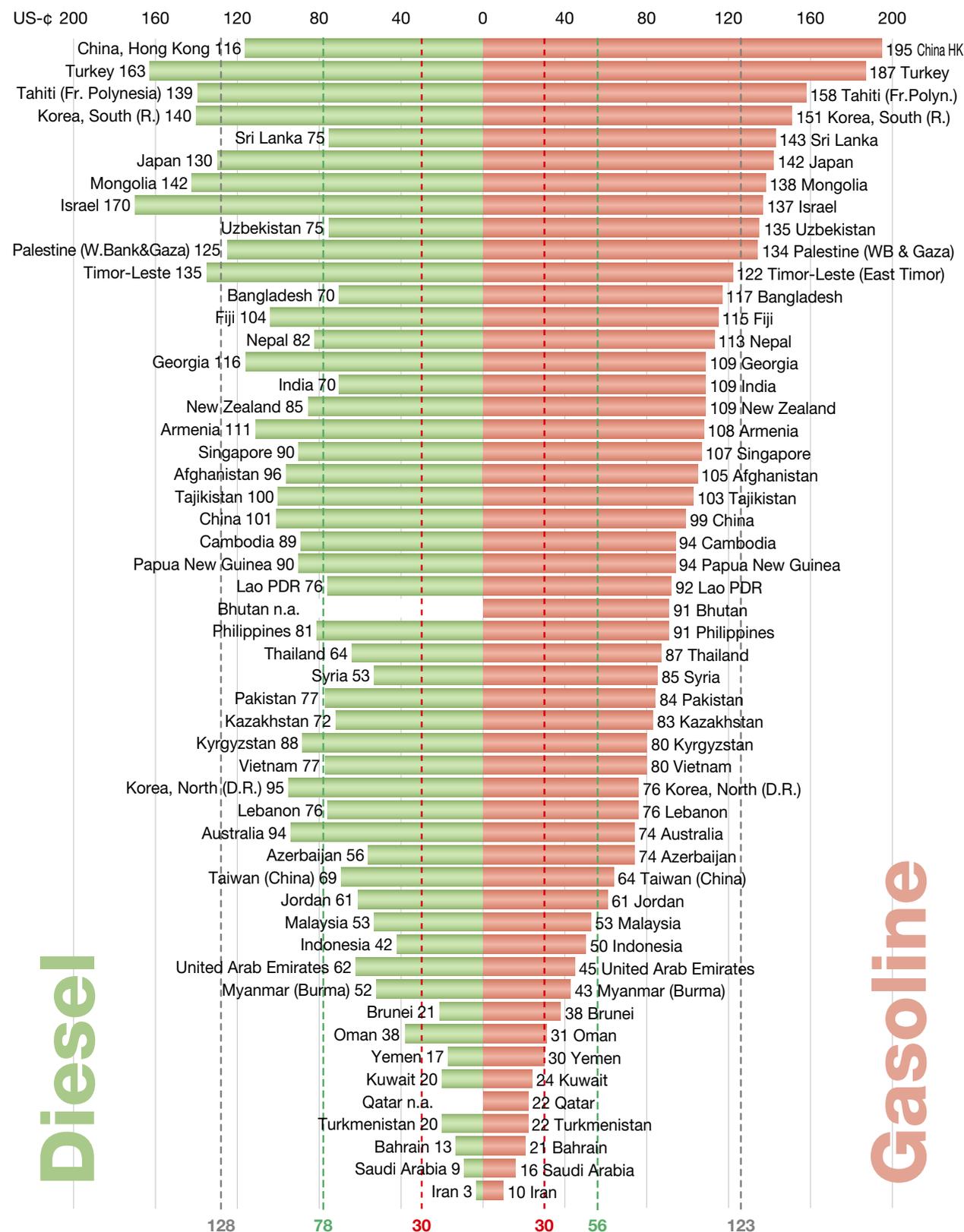
The retail price of fuel is above the price level of the United States and below the price level of Spain.

Note: In November 2008, fuel prices in Spain were the lowest in EU-15. Prices in EU countries are subject to VAT, fuel taxes as well as other country-specific duties and taxes.

Fuel Taxation Category 4: Very High Fuel Taxation

The retail price of fuel is above the price level of Spain.

2.3.2 Comparison of retail fuel prices in Asia, Australia and Pacific as of November 2008 (in US cents/litre)



Grey Benchmark Line: Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.

Green Benchmark Line: Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.

Red Benchmark Line: Price of crude oil on world market.

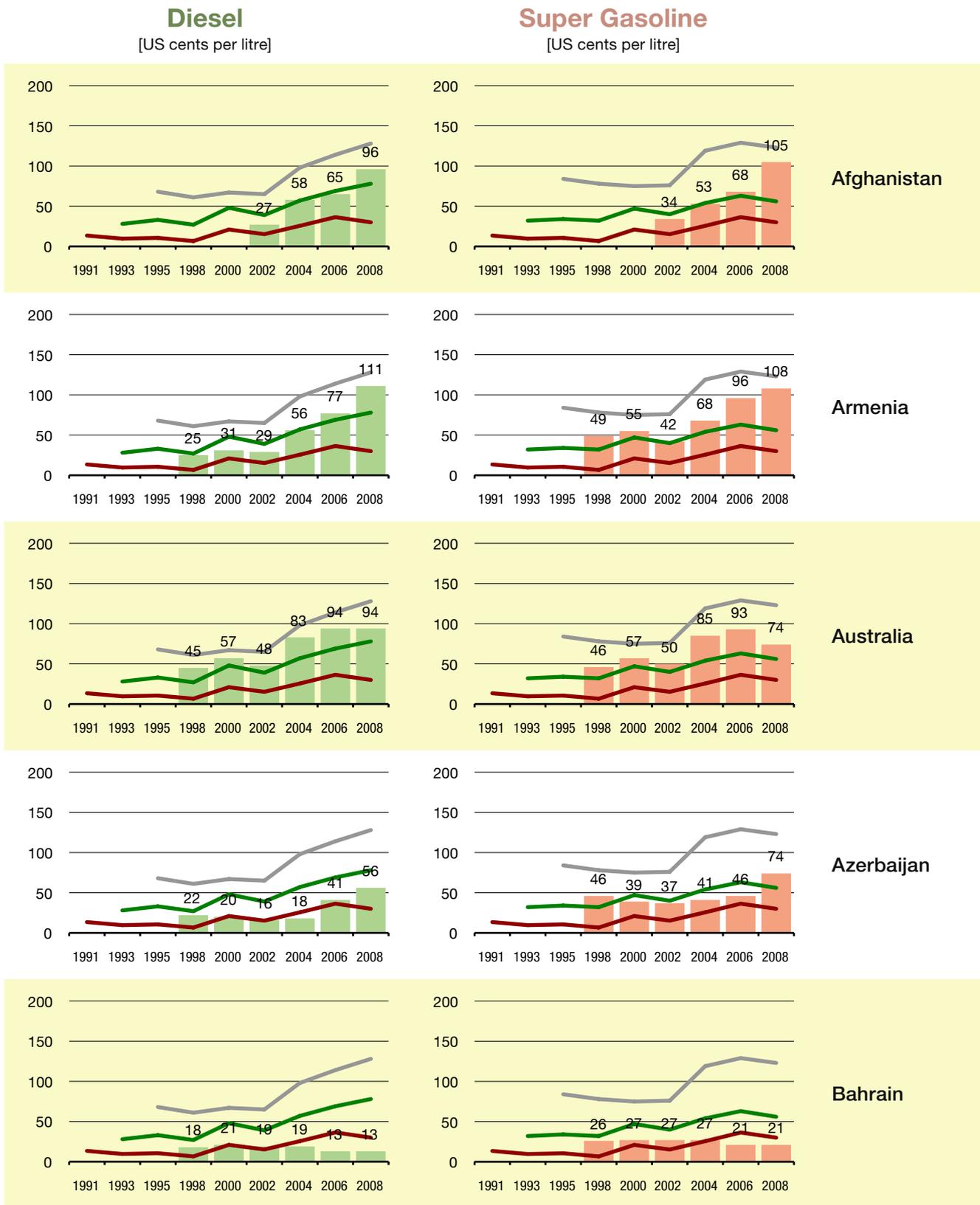
2.3.3 Time Series of retail fuel prices in Asia, Australia and Pacific
in US cent per litre (last survey 15–17 November 2008)

Country	Diesel [US cents/litre]									Super Gasoline [US cents/litre]								
	1991	1993	1995	1998	2000	2002	2004	2006	2008	1991	1993	1995	1998	2000	2002	2004	2006	2008
Afghanistan						27	58	65	96						34	53	68	105
Armenia				25	31	29	56	77	111				49	55	42	68	96	108
Australia				45	57	48	83	94	94				46	57	50	85	93	74
Azerbaijan				22	20	16	18	41	56				46	39	37	41	46	74
Bahrain				18	21	19	19	13	13				26	27	27	27	21	21
Bangladesh			31	26	29	29	34	45	70			36	47	46	52	59	79	117
Bhutan				26	38		59						59	58		78		91
Brunei				18	18	18	19	21	21				34	31	30	32	34	38
Cambodia				28	44	44	61	78	89				47	61	63	79	101	94
China			24	25	45	37	43	61	101			27	28	40	42	48	69	99
China, Hong Kong	57		74	85	80	77	100	106	116	82		119	136	146	147	154	169	195
China, Macao				51	50			102					74	73			117	
Fiji				37			73	94	104				50			91	107	115
Georgia				25		41	67	89	116				46		48	73	86	109
Hawaii								88									76	
India	23		19	21	39	41	62	75	70	56		48	56	60	66	87	101	109
Indonesia	13		20	7	6	19	18	44	42	24		44	16	17	27	27	57	50
Iran				1	2	2	2	3	3				8	5	7	9	9	10
Iraq				1	3	1	1						1	3	2	3		
Israel			31	31	64	62	80	127	170			73	86	114	90	105	147	137
Japan			75	69	76	66	95	90	130			125	102	106	91	126	109	142
Jordan			15	15	15	17	19	45	61			40	42	45	52	61	86	61
Kazakhstan				24	29	29	38	45	72			30	30	36	35	52	70	83
Korea, North (D.R.)				41	35	41	61	79	95				73	55	55	78	71	76
Korea, South (R.)	25		33	41	66	64	95	133	140	54		79	93	92	109	135	165	151
Kuwait				13	18	18	24	21	20				17	21	20	24	22	24
Kyrgyzstan				27	33	25	43	54	88				47	44	39	48	64	80
Lao PDR				24	32	30	48	73	76				31	41	36	54	86	92
Lebanon				22	31	25	43	62	76				35	53	65	71	74	76
Malaysia	22		26	17	16	19	22	40	53	40		42	28	28	35	37	53	53
Mongolia				22	38	37	67	87	142				23	38	38	61	88	138
Myanmar (Burma)				12	12	28	10	75	52				13	33	36	12	66	43
Nepal	31		22	24	37	34	49	73	82	65		52	59	63	66	72	94	113
New Zealand			32	39	34	33	41	70	85			61	64	48	55	77	98	109
Oman				26	29	26	26	39	38				31	31	31	31	31	31
Pakistan			20	19	27	35	41	64	77			47	46	53	52	62	101	84
Palestine (WB+Gaza)				31	61	52	70	98	125				86	108	99	117	129	134
Papua New Guinea				28	34		64		90				41	53		94		94
Philippines	25		27	22	28	27	34	67	81	40		34	34	37	35	52	76	91
Qatar				15			16	19					16			21	19	22
Russian Federation			28	18	29	25	45	66	86			35	28	33	35	55	77	89
Samoa								82									81	
Saudi Arabia			9	10	10	10	10	7	9			16	16	24	24	24	16	16
Singapore	28		33	36	38	38	55	63	90	61		85	72	84	85	89	92	107
Sri Lanka	27		23	30	27	31	41	55	75	75		75	84	66	54	72	88	143
Syria				14	13	18	13	13	53				45	44	53	46	60	85
Tahiti (French Polyn.)								119	139								149	158
Taiwan (China)	48		38	41	50	41	55	71	69	69		59	57	61	51	71	83	64
Tajikistan				13	55	24	59	74	100				26	45	36	67	80	103
Thailand	26		30	27	35	32	37	65	64	36		34	30	39	36	54	70	87
Timor-Leste							65	88	135							65	98	122
Tonga								109									103	
Turkey			37	47	66	78	112	162	163			56	78	88	102	144	188	187
Turkmenistan				5	2	1	1	1	20				9	2	2	2	2	22
Utd. Arab Emirates				15	26	30	28	53	62				23	25	29	28	37	45
Uzbekistan			31	9	9	26	30	54	75			32	11	14	38	35	85	135
Vietnam			25	26	27	27	32	53	77			34	35	38	34	48	67	80
Yemen				7	6	10	9	28	17				26	21	21	19	30	30

⁴ Price 04-2006, ⁵ Normal Price, ⁶ Price 04-2006, ⁷ Price 04-2006, ⁸ Price 04-2006, ⁹ Average Price

Note: Survey data of mid Nov. of each year

2.3.4 Detailed time series of Asia, Australia and Pacific 1991 – 2008 (from Afghanistan to Bahrain)

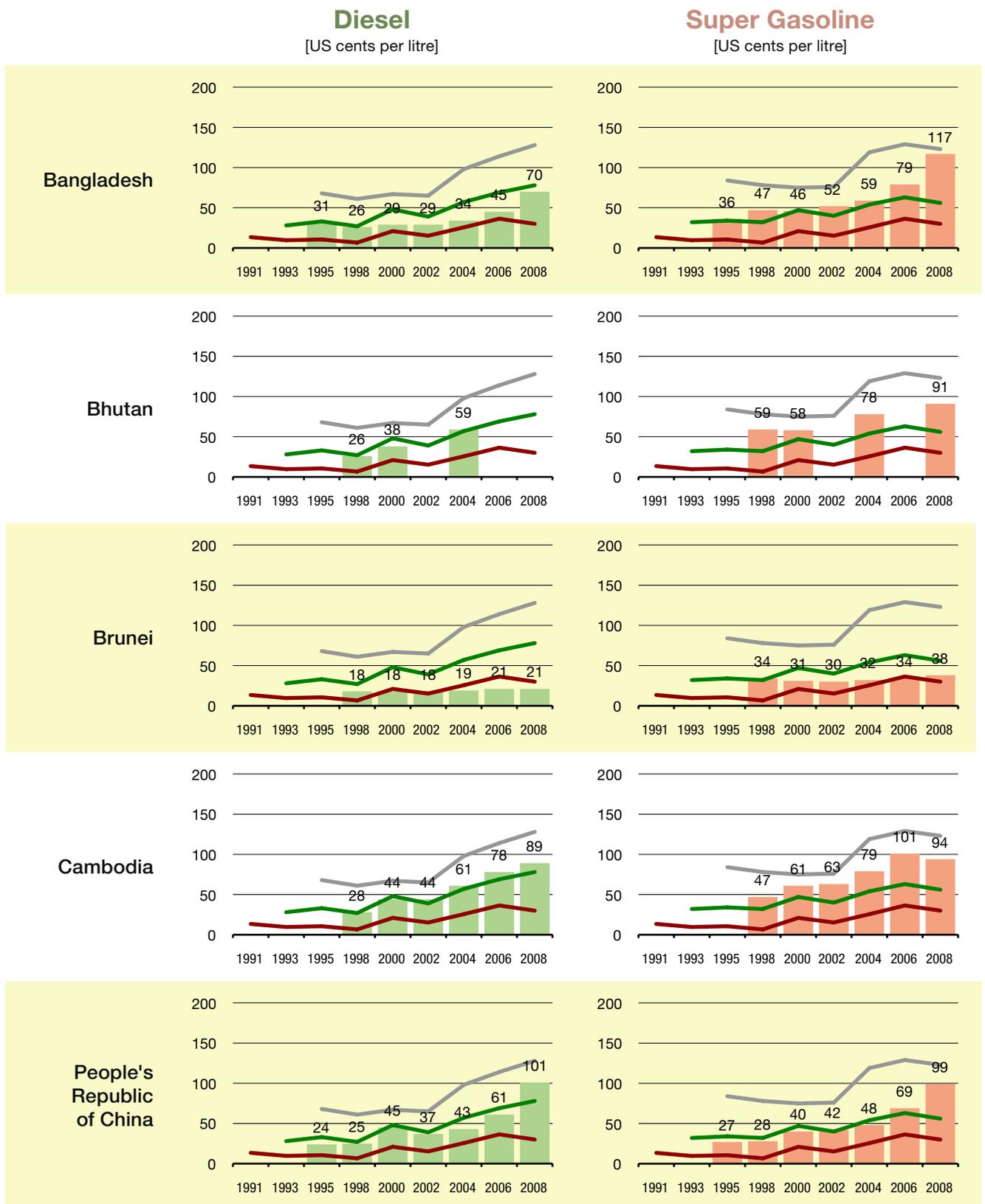


Grey Benchmark Line: Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.

Green Benchmark Line: Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.

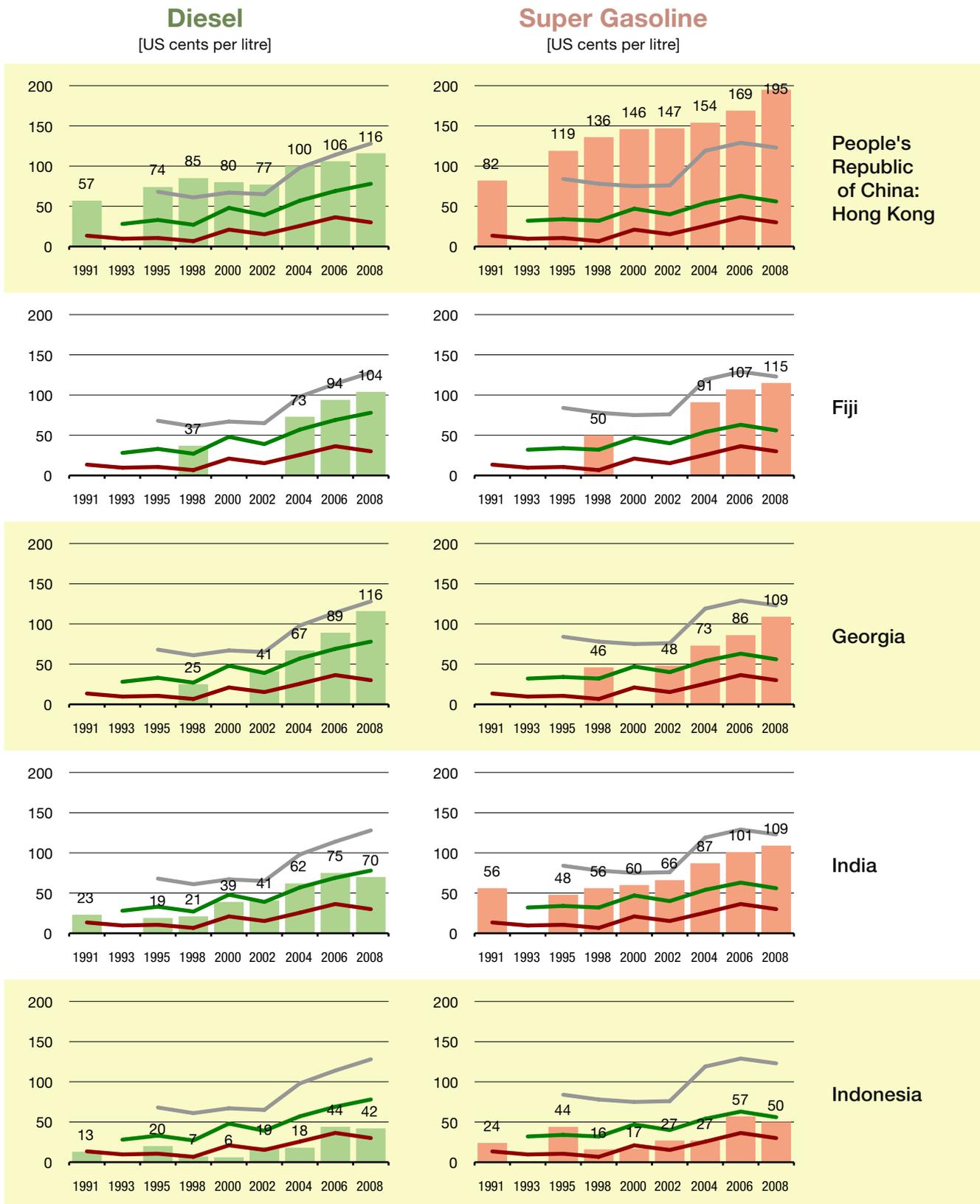
Red Benchmark Line: Price of crude oil on world market.

2.3.4 Detailed time series of Asia, Australia and Pacific 1991 – 2008 (from Bangladesh to People's Republic of China)



- Grey Benchmark Line:** Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.
- Green Benchmark Line:** Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.
- Red Benchmark Line:** Price of crude oil on world market.

2.3.4 Detailed time series of Asia, Australia and Pacific 1991 – 2008 (Hong Kong to Indonesia)

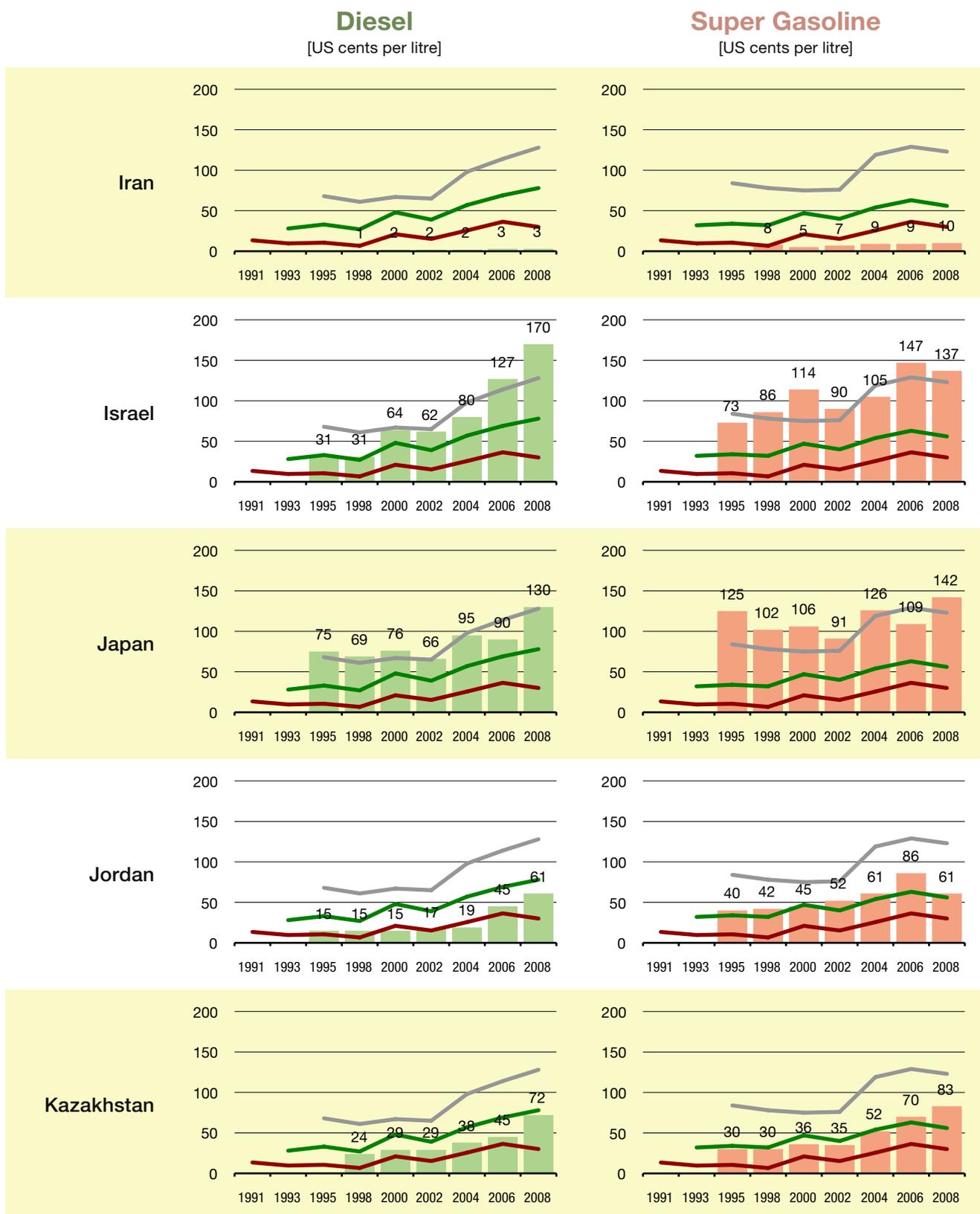


Grey Benchmark Line: Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.

Green Benchmark Line: Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.

Red Benchmark Line: Price of crude oil on world market.

2.3.4 Detailed time series of Asia, Australia and Pacific 1991 – 2008 (from Iran to Kazakhstan)

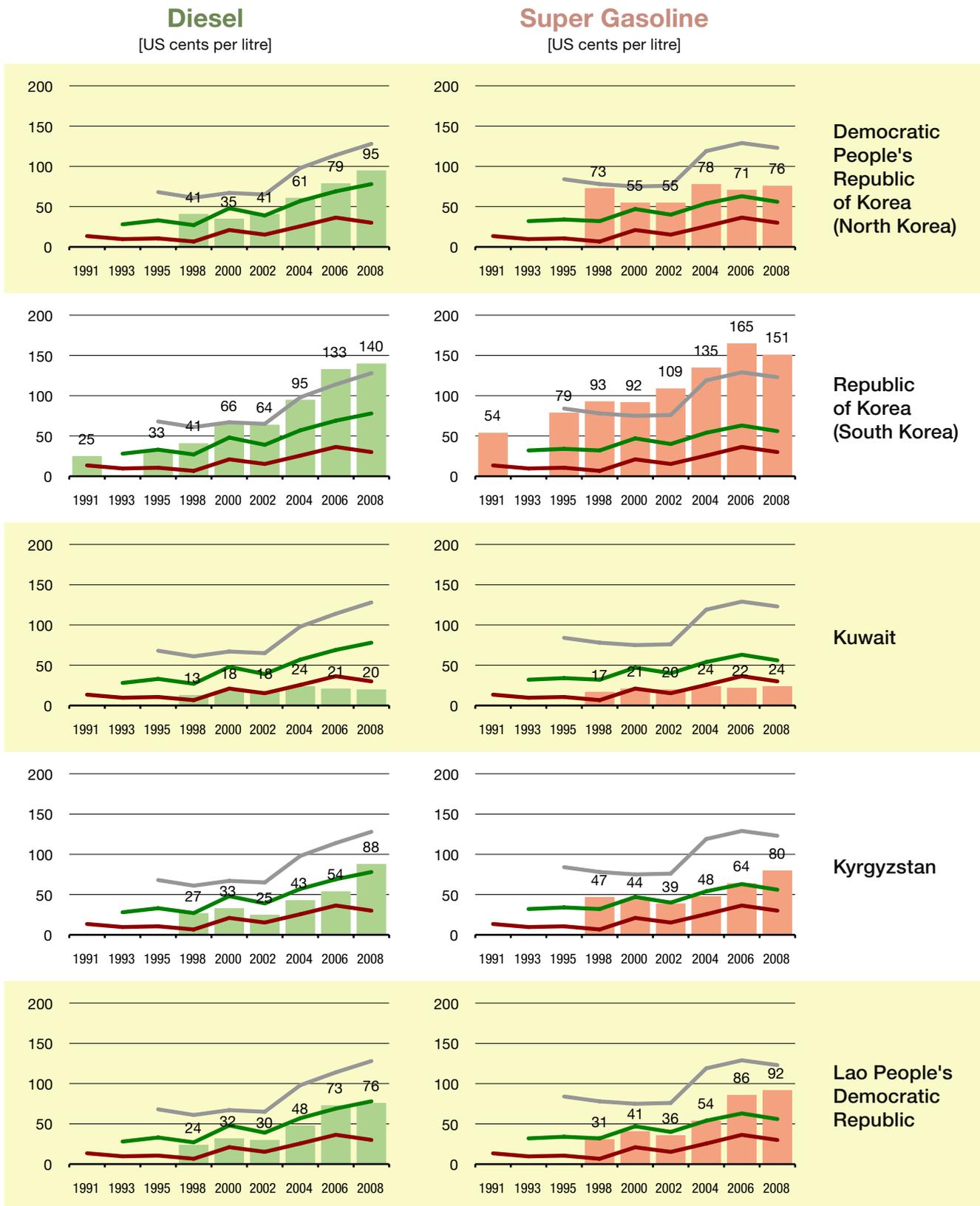


— **Grey Benchmark Line:** Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.

— **Green Benchmark Line:** Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.

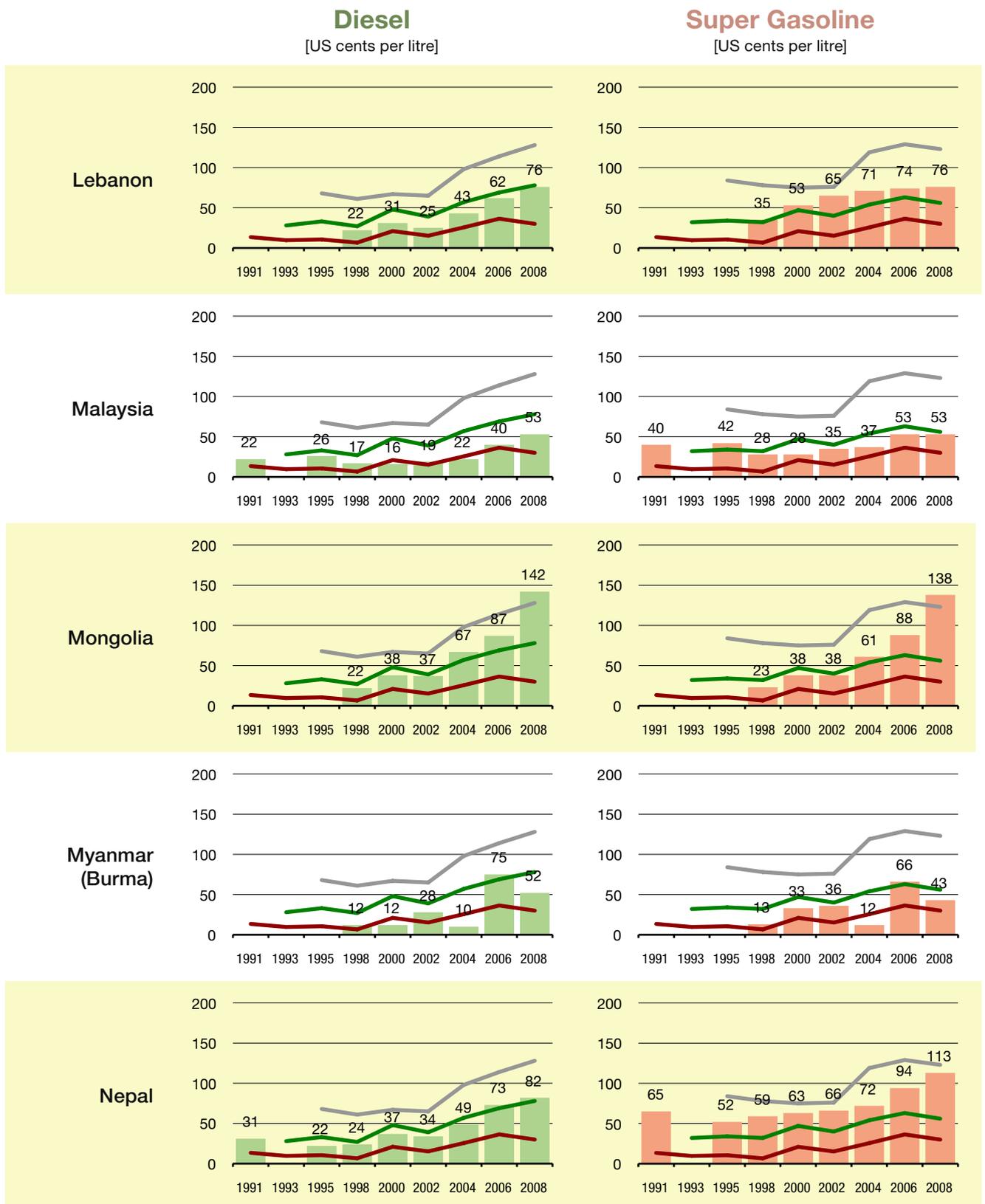
— **Red Benchmark Line:** Price of crude oil on world market.

2.3.4 Detailed time series of Asia, Australia and Pacific 1991 – 2008 (from DPR Korea to Lao PDR)



- Grey Benchmark Line:** Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.
- Green Benchmark Line:** Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.
- Red Benchmark Line:** Price of crude oil on world market.

2.3.4 Detailed time series of Asia, Australia and Pacific 1991 – 2008 (from Lebanon to Nepal)

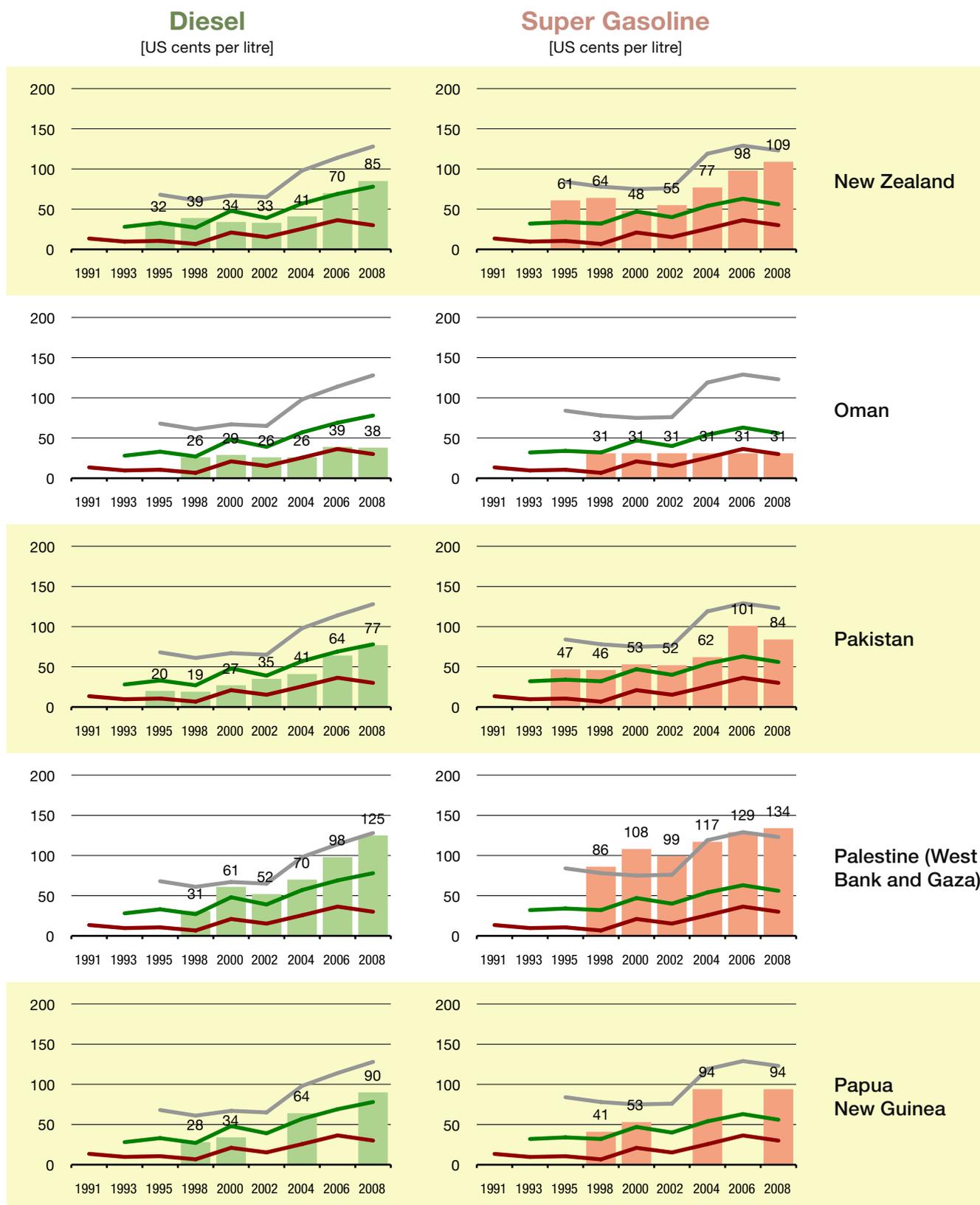


Grey Benchmark Line: Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.

Green Benchmark Line: Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.

Red Benchmark Line: Price of crude oil on world market.

2.3.4 Detailed time series of Asia, Australia and Pacific 1991 – 2008 (from New Zealand to Papua New Guinea)

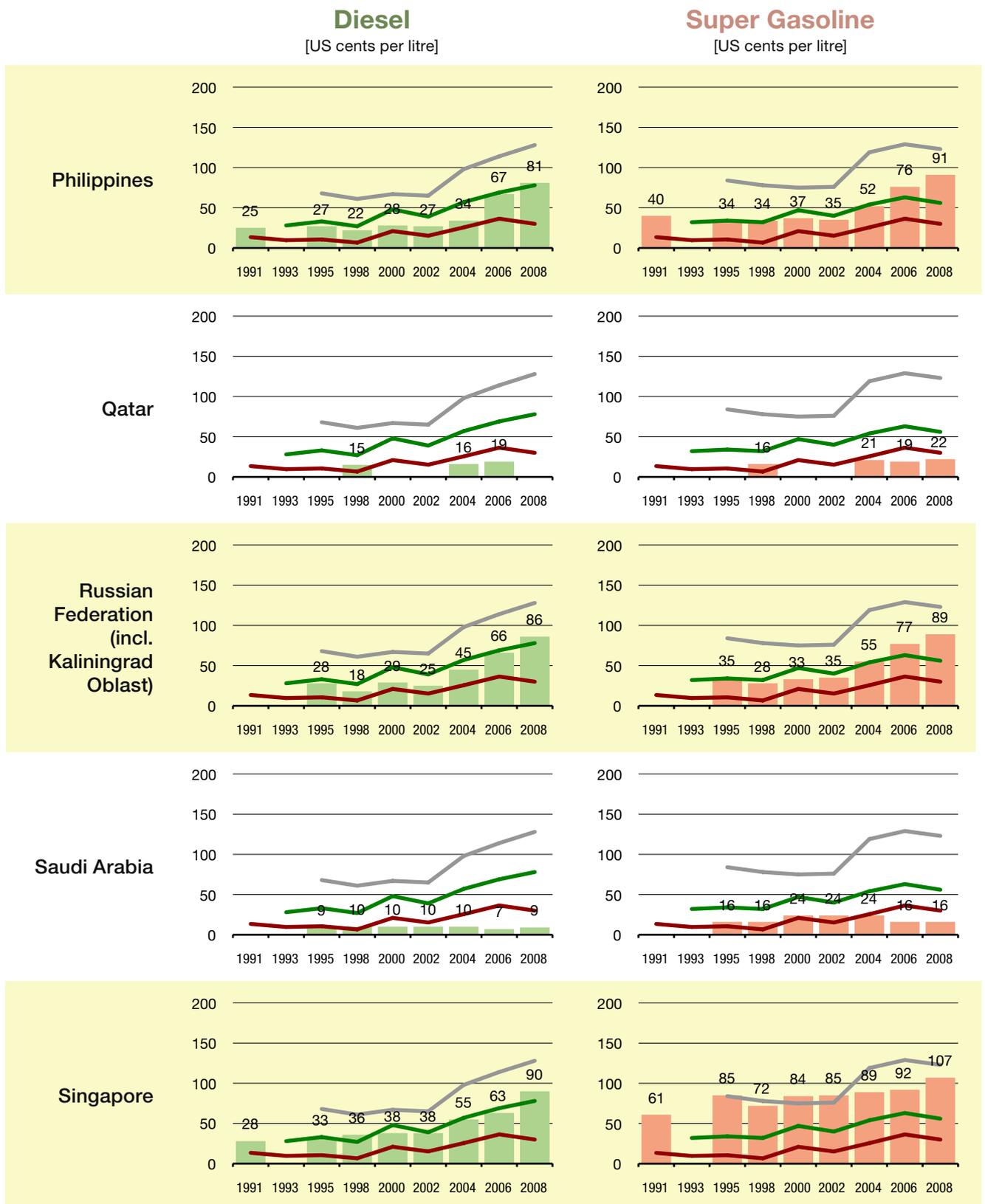


Grey Benchmark Line: Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.

Green Benchmark Line: Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.

Red Benchmark Line: Price of crude oil on world market.

2.3.4 Detailed time series of Asia, Australia and Pacific 1991 – 2008 (from Philippines to Singapore)

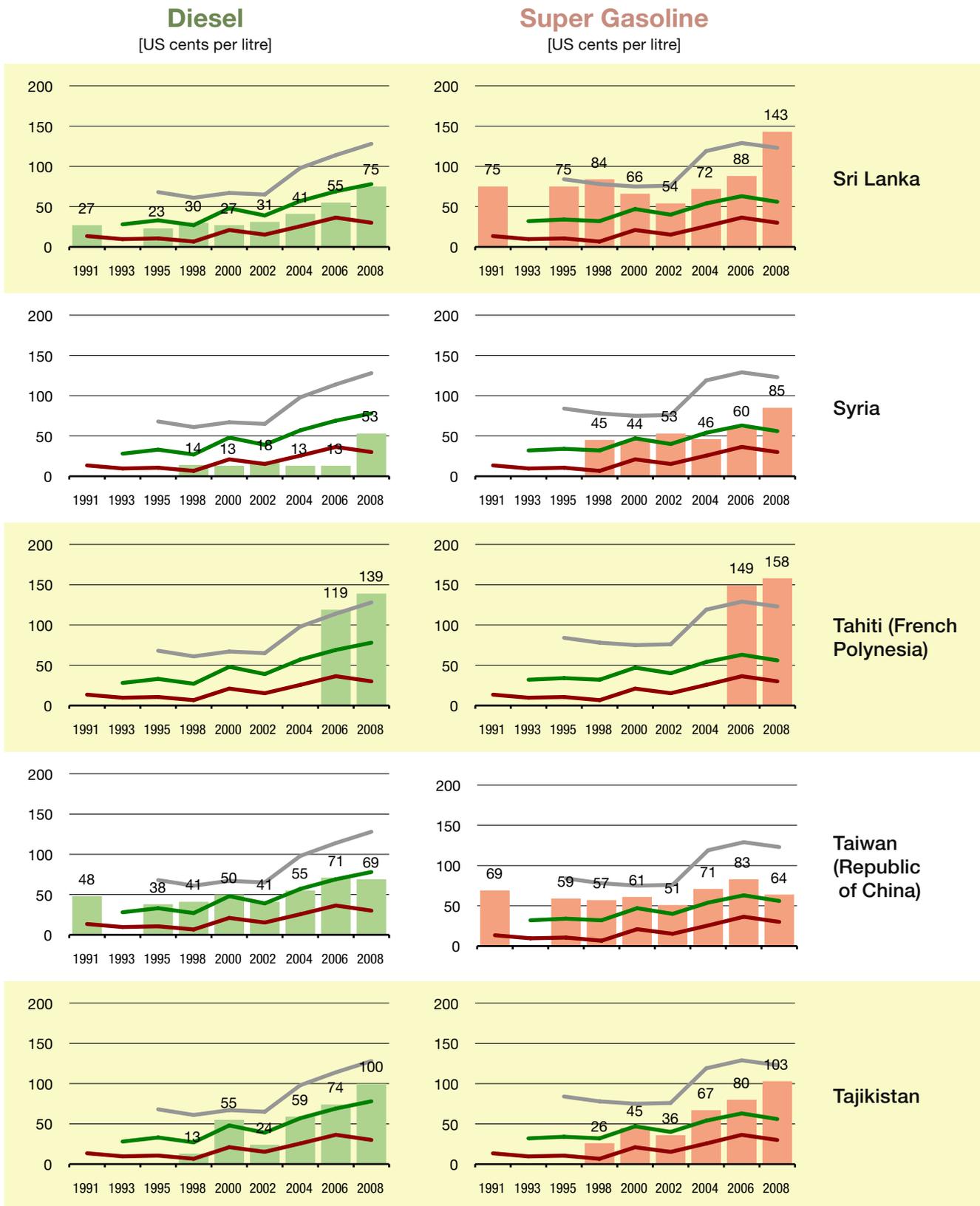


Grey Benchmark Line: Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.

Green Benchmark Line: Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.

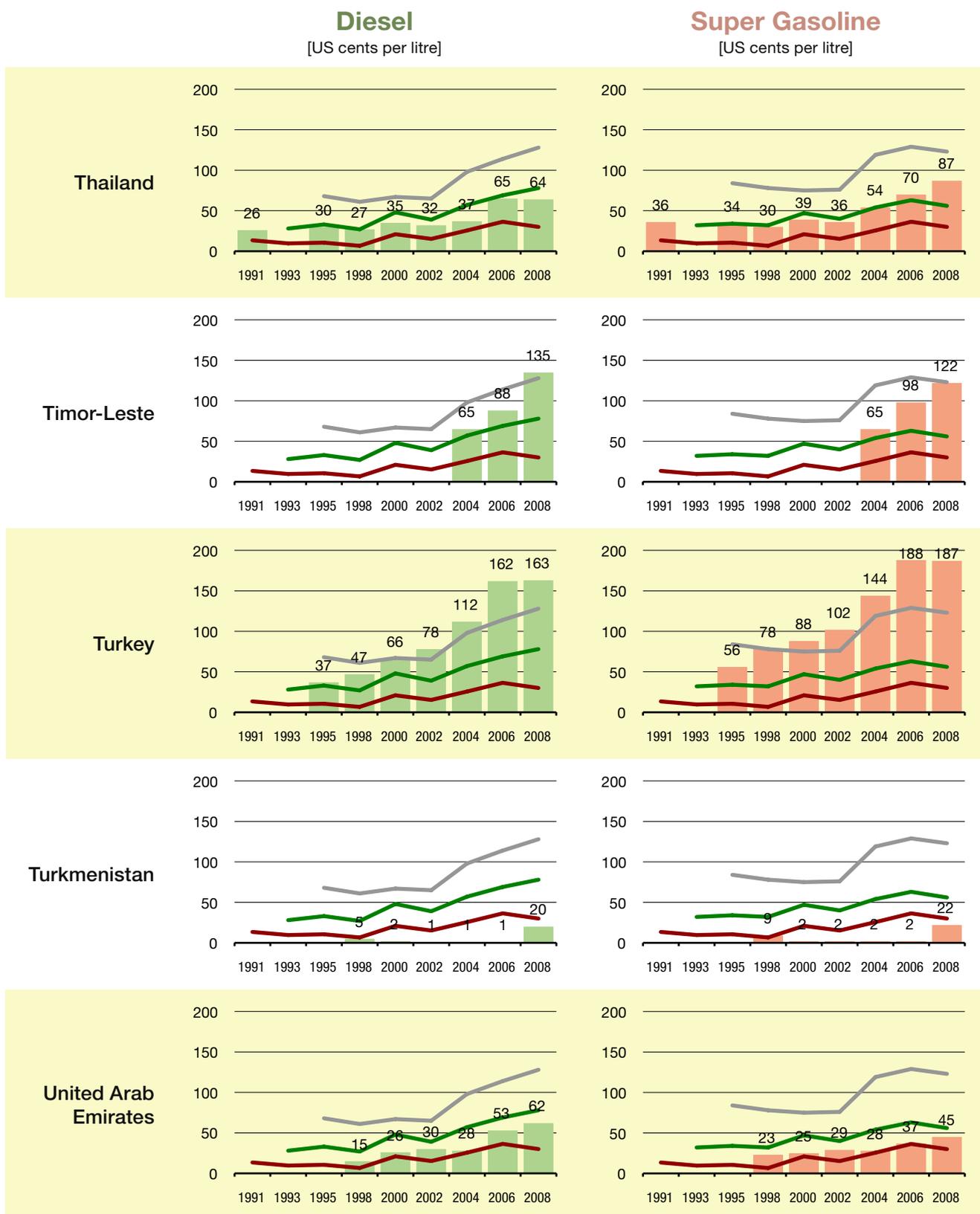
Red Benchmark Line: Price of crude oil on world market.

2.3.4 Detailed time series of Asia, Australia and Pacific 1991 – 2008 (from Sri Lanka to Tajikistan)



- Grey Benchmark Line:** Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.
- Green Benchmark Line:** Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.
- Red Benchmark Line:** Price of crude oil on world market.

2.3.4 Detailed time series of Asia, Australia and Pacific 1991 – 2008 (from Thailand to United Arab Emirates)

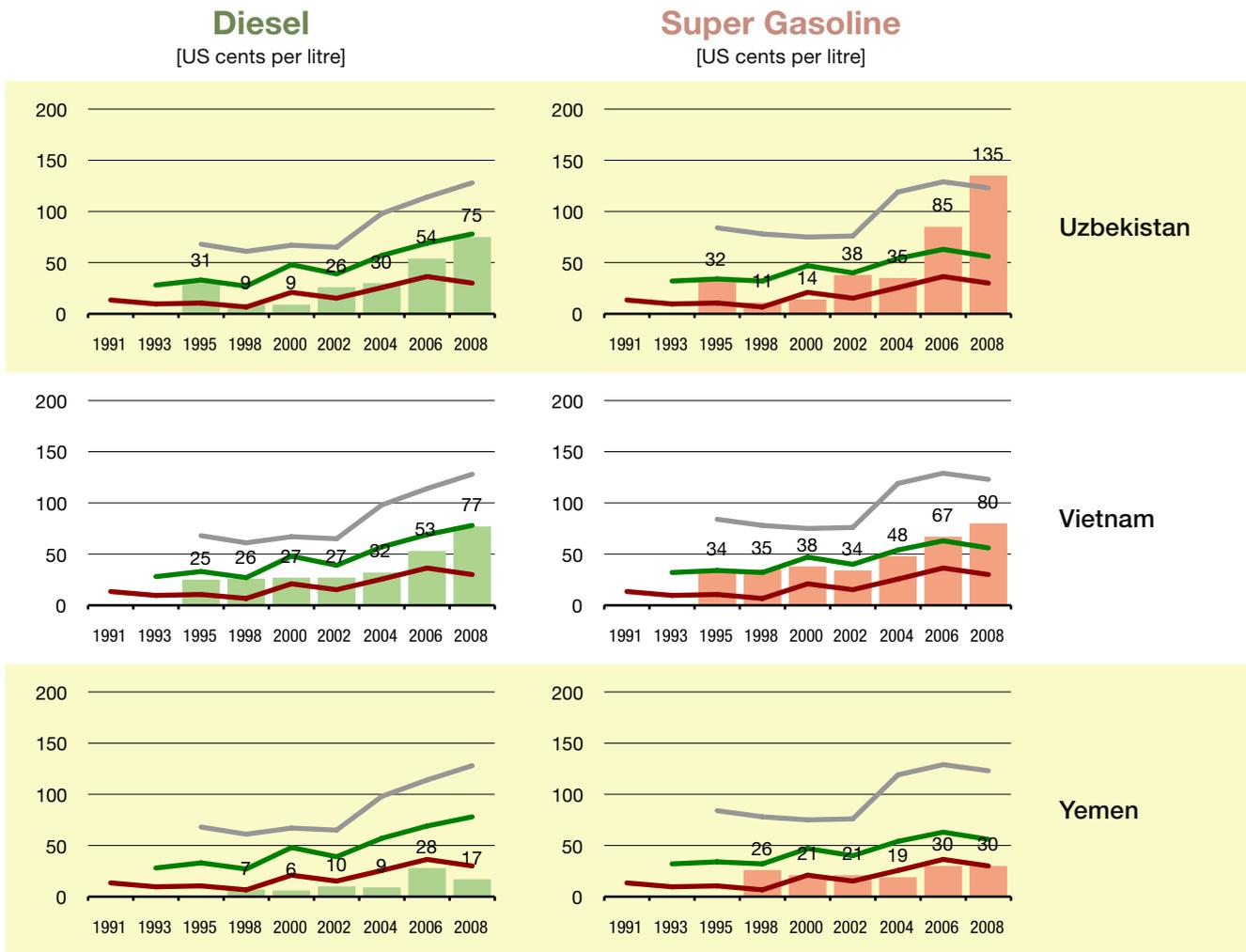


Grey Benchmark Line: Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.

Green Benchmark Line: Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.

Red Benchmark Line: Price of crude oil on world market.

2.3.4 Detailed time series of Asia, Australia and Pacific 1991 – 2008 (from Uzbekistan to Yemen)



- Grey Benchmark Line:** Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.
- Green Benchmark Line:** Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.
- Red Benchmark Line:** Price of crude oil on world market.

95 EURO
VÄÄVLIVABA

12.55

95 EURO
ultima
VÄÄVLIVABA

12.80

98 EURO
ultima
VÄÄVLIVABA

13.05

D* EURO
fortis
VÄÄVLIVABA

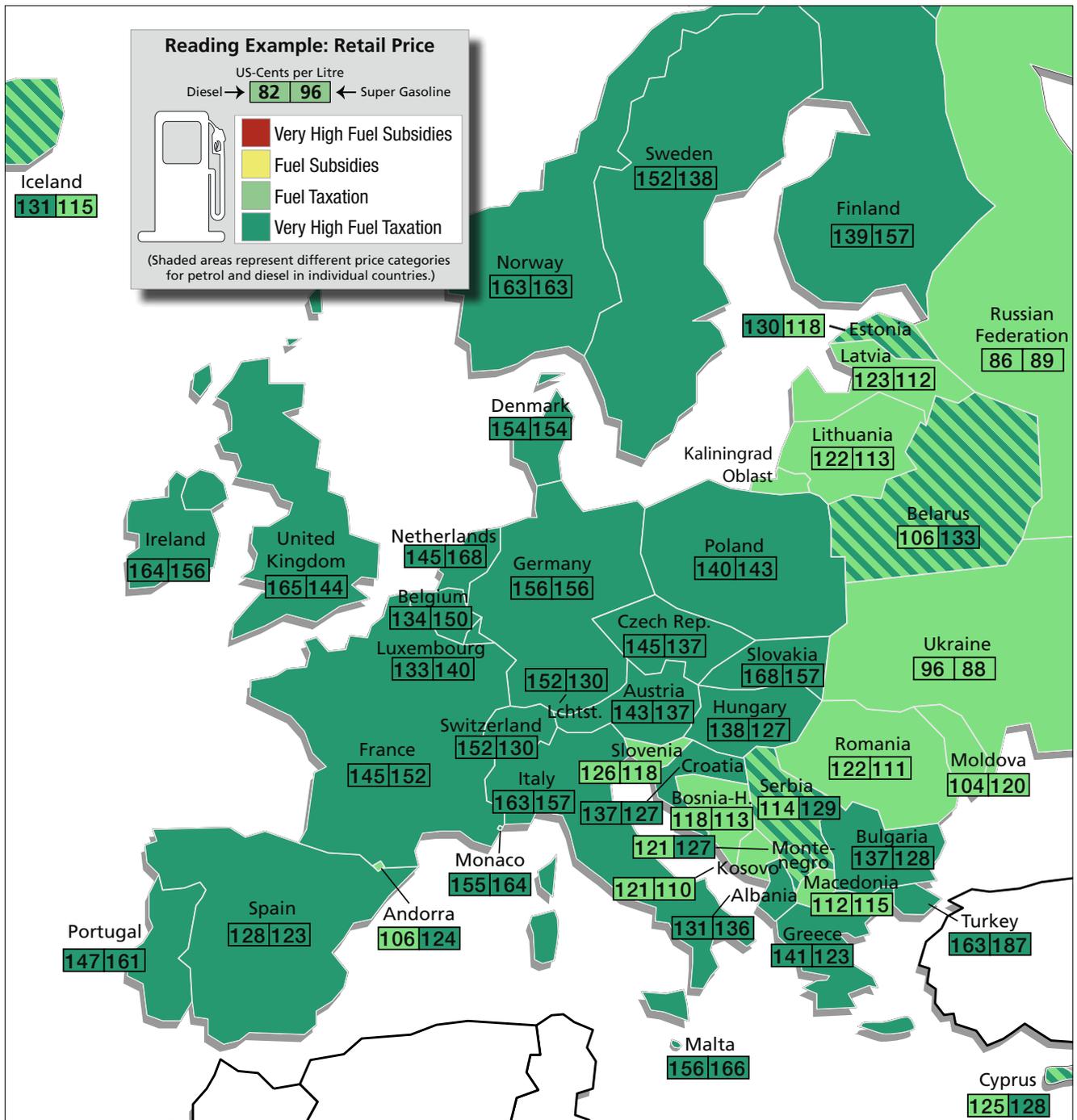
13.05



2.4 Fuel prices in Europe

- *Retail fuel prices in Europe*
- *Comparison of retail fuel prices in Europe*
- *Time series of retail fuel prices in Europe*
- *Detailed time series of fuel prices in Europe*

2.4.1 Retail fuel prices in Europe as of November 2008 (in US cents/litre)



Fuel Taxation Category 1: Very High Fuel Subsidies

The retail price of fuel (average of Diesel and Super Gasoline) is below the price for crude oil on world market.

Fuel Taxation Category 2: Fuel Subsidies

The retail price of fuel is above the price for crude oil on world market and below the price level of the United States.

Note: The fuel prices of the United States are average cost-covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for the 2 road funds (federal and state). This fuel price may be considered as the international minimum benchmark for a non-subsidised road transport policy.

Fuel Taxation Category 3: Fuel Taxation

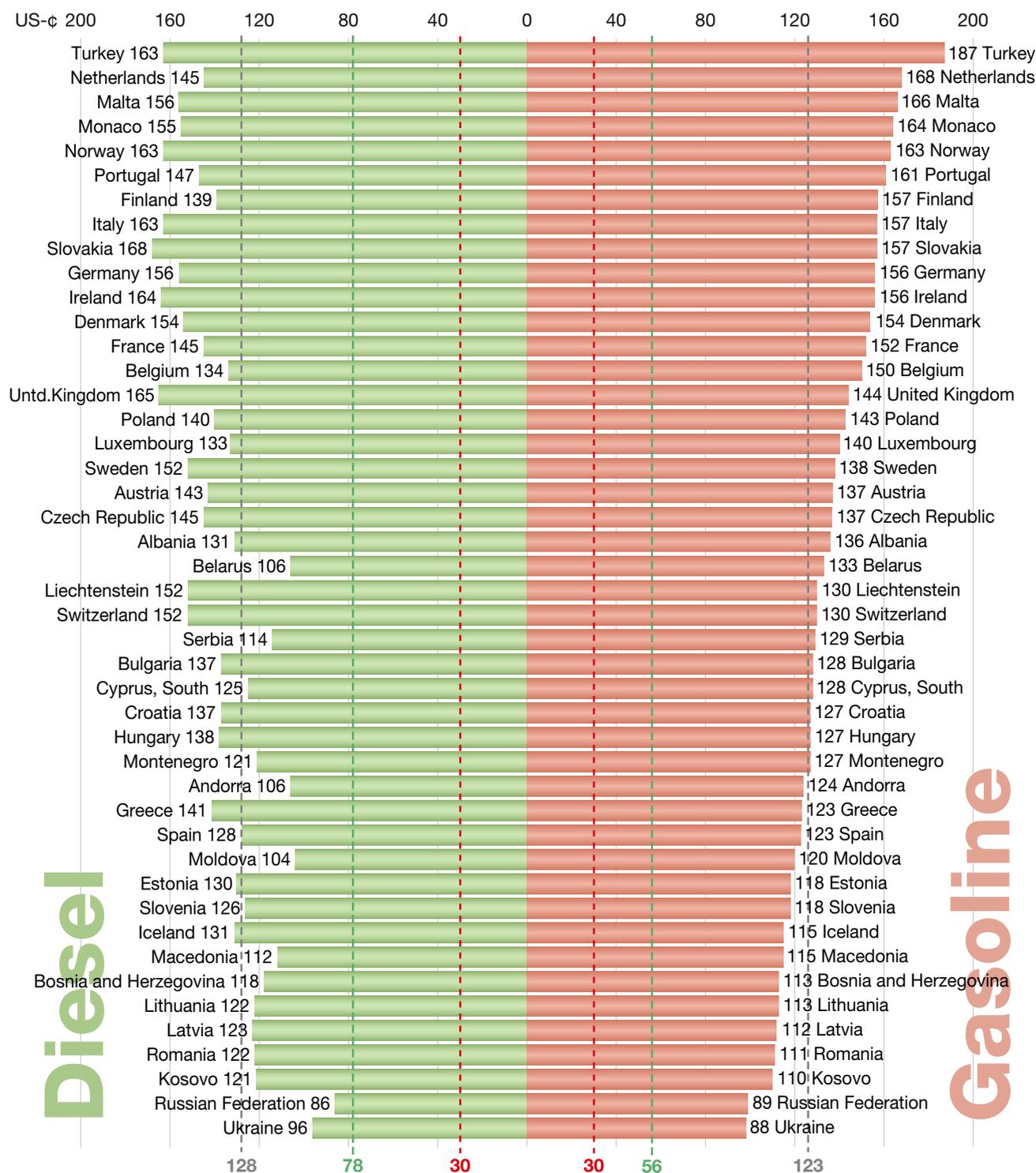
The retail price of fuel is above the price level of the United States and below the price level of Spain.

Note: In November 2008, fuel prices in Spain were the lowest in EU-15. Prices in EU countries are subject to VAT, fuel taxes as well as other country-specific duties and taxes.

Fuel Taxation Category 4: Very High Fuel Taxation

The retail price of fuel is above the price level of Spain.

2.4.2 Comparison of retail fuel prices in Europe as of November 2008 (in US cents/litre)



— **Grey Benchmark Line:** Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.

— **Green Benchmark Line:** Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.

— **Red Benchmark Line:** Price of crude oil on world market.

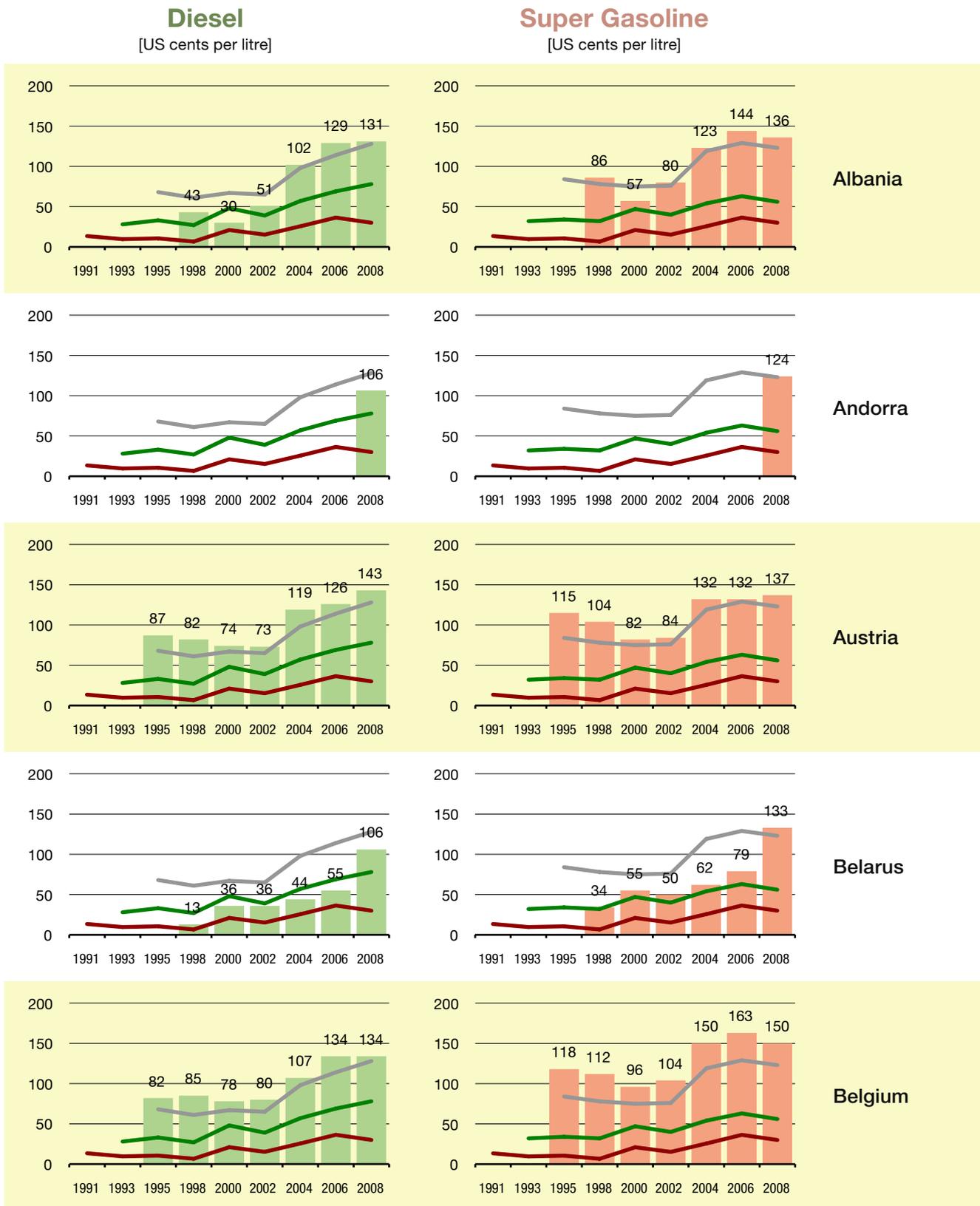
2.4.3 Time series of retail fuel prices in Europe in US cent per litre (last survey 15–17 November 2008)

Country	Diesel [US cents/litre]									Super Gasoline [US cents/litre]								
	1991	1993	1995	1998	2000	2002	2004	2006	2008	1991	1993	1995	1998	2000	2002	2004	2006	2008
Albania				43	30	51	102	129	131				86	57	80	123	144	136
Andorra									106									124
Austria			87	82	74	73	119	126	143			115	104	82	84	132	132	137
Belarus				13	36	36	44	55	106				34	55	50	62	79	133
Belgium			82	85	78	80	107	134	134			118	112	96	104	150	163	150
Bosnia & Herzego.				60	57	74	97	124	118				66	68	74	97	134	113
Bulgaria			26	52	58	59	89	108	137			46	66	70	68	92	105	128
Croatia			64	61	60	74	113	122	137			75	67	76	89	124	134	127
Cyprus, South				25	18	44	95	120	125				78	57	83	108	125	128
Czech Republic			60	60	68	71	107	129	145			85	72	77	81	108	130	137
Denmark			87	85	90	94	135	145	154			108	105	101	109	151	158	154
Estonia			33	36	55	56	94	122	130			33	45	60	58	94	123	118
Finland			85	79	84	80	121	126	139			120	117	106	112	154	155	157
France			78	77	82	80	125	133	145			117	111	99	105	142	148	152
Germany			77	69	78	82	129	138	156			112	96	91	103	146	155	156
Greece			59	40	71	68	123	119	141			88	65	72	78	114	116	123
Hungary			65	64	79	85	122	131	138			74	72	81	94	130	130	127
Iceland				40	45	62	88	178	131				112	105	116	164	186	115
Ireland			87	102	72	80	129	135	164			96	102	72	90	129	134	156
Italy			86	93	83	86	131	149	163			118	119	97	105	153	156	157
Kosovo			84	43	56	66	103	119	121			76	61	56	74	116	122	110
Latvia			34	35	58	65	90	115	123			41	55	67	70	94	120	112
Liechtenstein				89	84	93	137	136	152				85	81	89	129	127	130
Lithuania			30	34	55	59	102	109	122			35	51	66	69	103	108	113
Luxembourg			68	61	67	65	98	114	133			84	78	75	76	119	129	140
Macedonia			59	46	56	63	92	109	112			93	70	76	85	117	123	115
Malta				49	44	53	97	126	156				77	81	87	118	138	166
Moldova				31	40	31	31	86	104 *)				45	45	45		97	120 *)
Monaco									155									164
Montenegro			84	43	56	66	106	127	121			76	61	56	74	120	151	127
Netherlands			82	79	78	81	123	132	145			121	114	103	112	162	170	168
Norway			109	110	115	118	144	166	163			133	121	119	123	161	180	163
Poland			42	44	65	68	109	130	140			55	54	76	83	120	130	143
Portugal				71	54	71	108	110	147				102	77	97	138	156	161
Romania			19	40	35	57	91	124	122			29	53	46	64	96	126	111
Russian Federation			28	18	29	25	45	66	86			35	28	33	35	55	77	89
Serbia			84	43	56	66	85	135	114			76	61	56	74	100	145	129
Slovakia			40	54	68	70	119	143	168			66	61	69	74	117	135	157
Slovenia			50	64	66	67	111	121	126			59	66	63	76	112	123	118
Spain			70	70	65	72	110	110	128			89	84	73	83	121	115	123
Sweden			101	84	80	96	137	144	152			117	109	94	106	151	146	138
Switzerland			101	91	84	93	137	136	152			102	86	78	89	129	127	130
Turkey			37	47	66	78	112	162				56	78	88	102	144	188	
Ukraine				25	30	34	44	87	96				49	37	47	55	81	88
United Kingdom			85	111	122	120	160	173	165			92	111	117	118	156	163	144

*) Moldova: data 2006 = April 2007

Note: Survey data of mid November of each year

2.4.4 Detailed time series of Europe 1991 – 2008 (from Albania to Belgium)



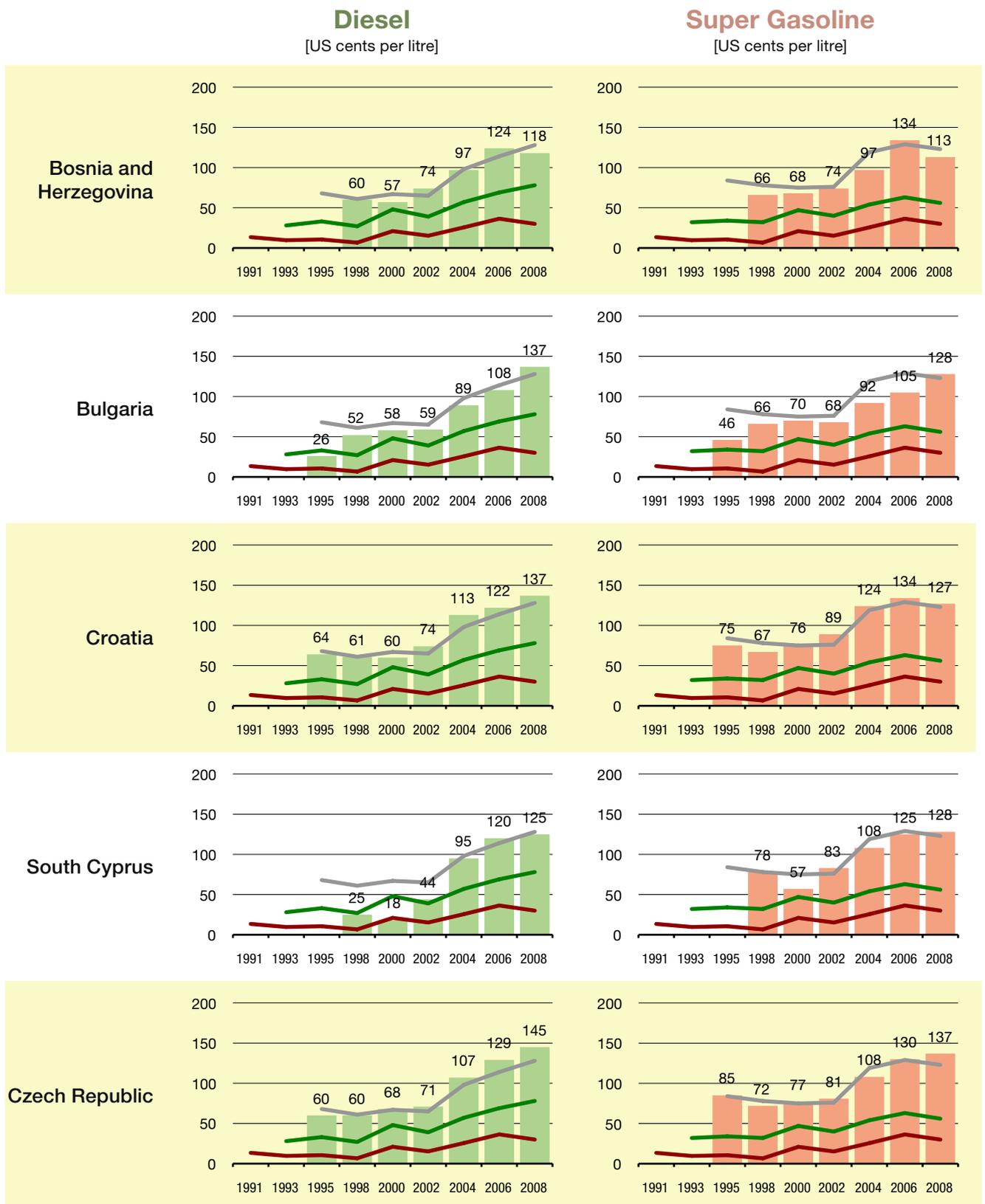
Grey Benchmark Line: Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.

Green Benchmark Line: Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.

Red Benchmark Line: Price of crude oil on world market.

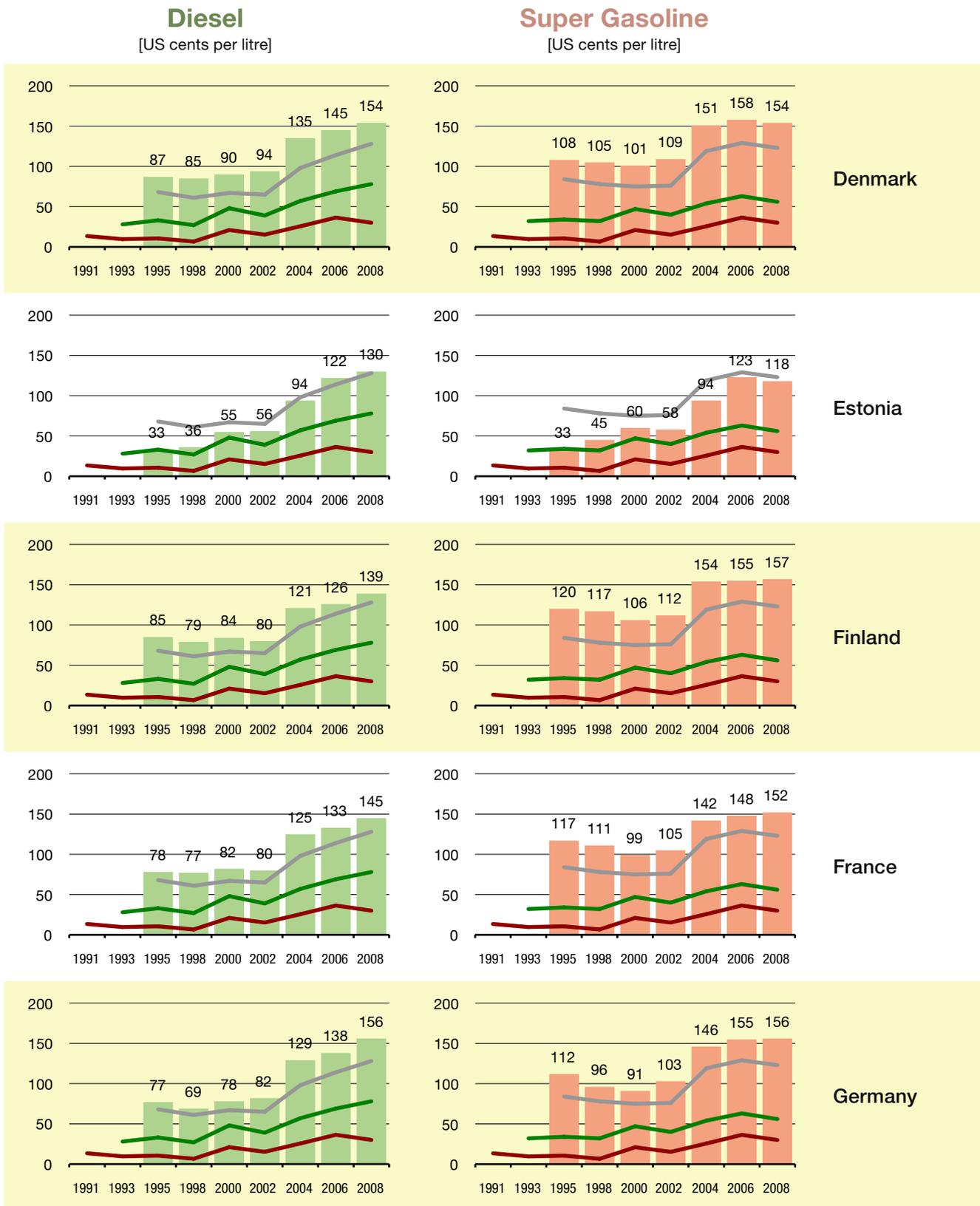
2.4.4 Detailed time series of Europe

1991 – 2008 (from Bosnia and Herzegovina to Czech Republic)



- **Grey Benchmark Line:** Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.
- **Green Benchmark Line:** Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.
- **Red Benchmark Line:** Price of crude oil on world market.

2.4.4 Detailed time series of Europe 1991 – 2008 (from Denmark to Germany)

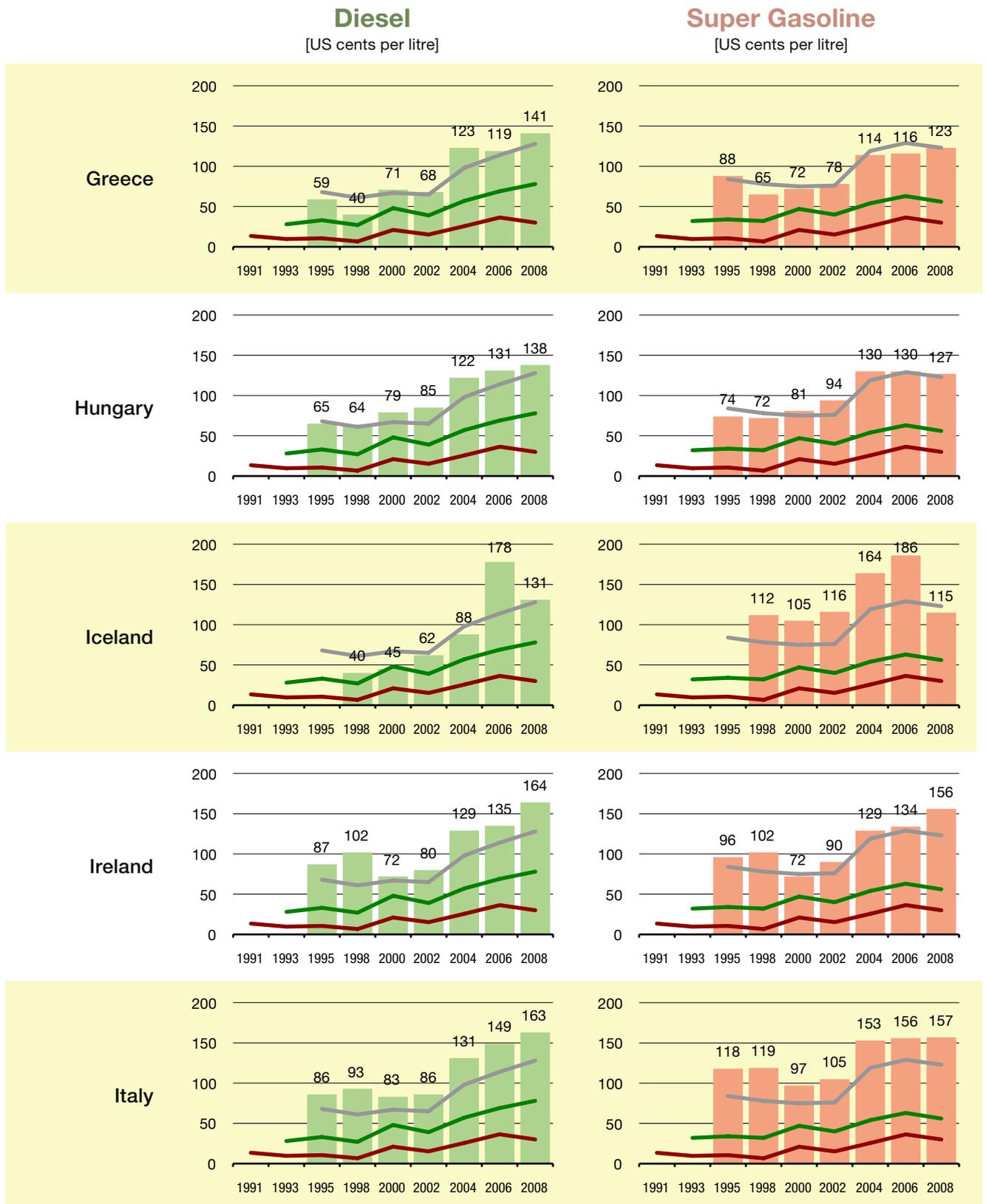


Grey Benchmark Line: Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.

Green Benchmark Line: Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.

Red Benchmark Line: Price of crude oil on world market.

2.4.4 Detailed time series of Europe 1991 – 2008 (from Greece to Italy)

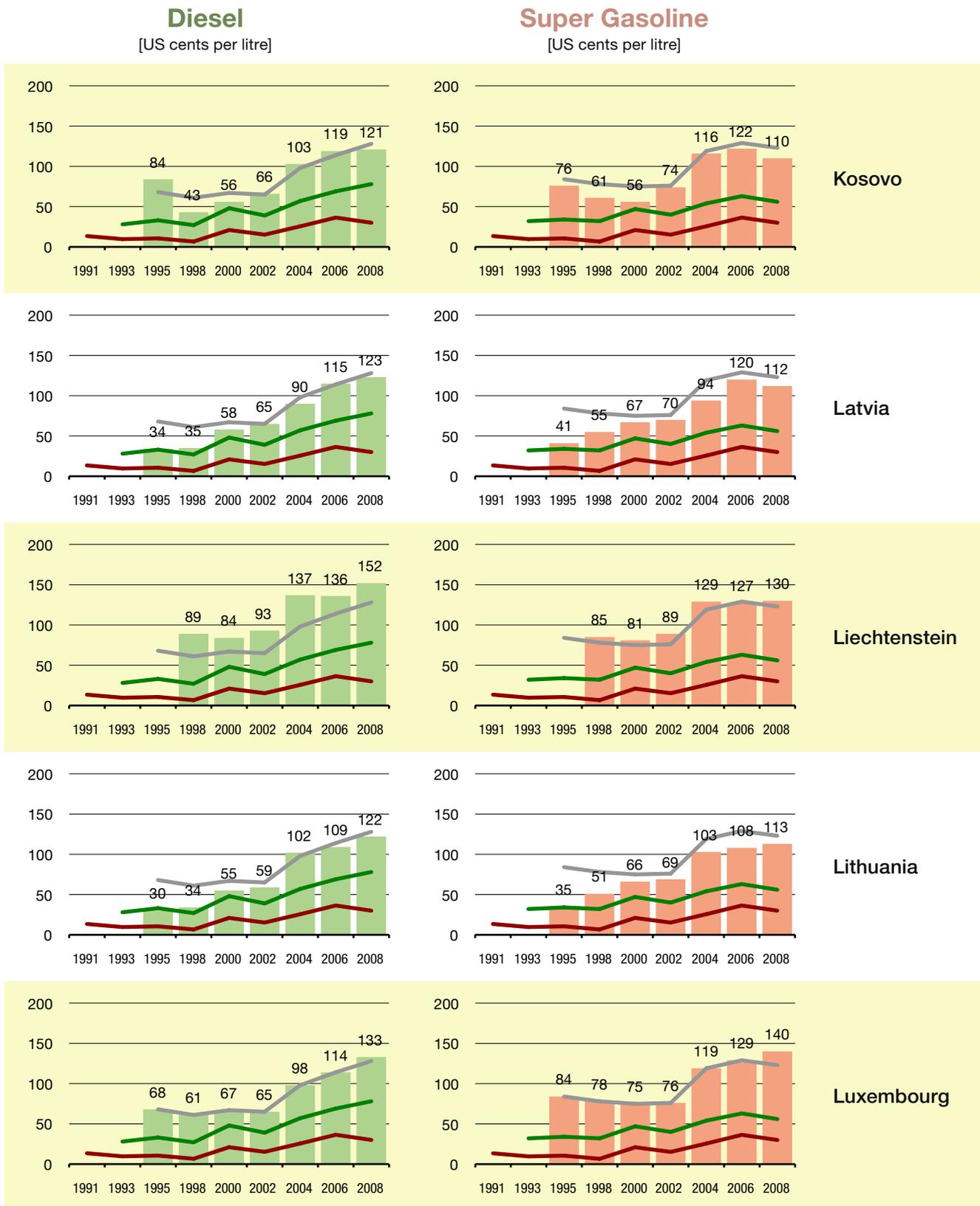


Grey Benchmark Line: Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.

Green Benchmark Line: Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.

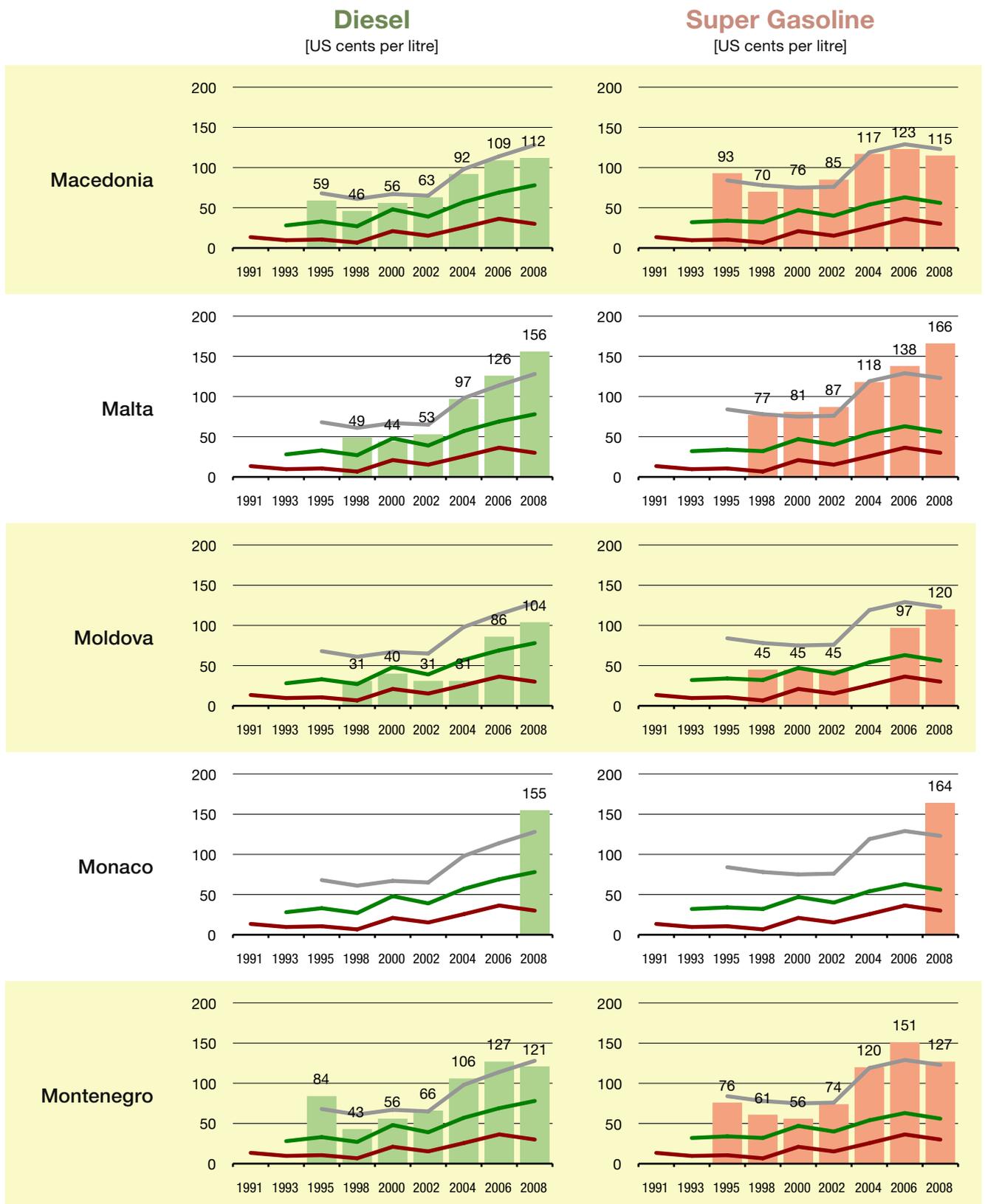
Red Benchmark Line: Price of crude oil on world market.

2.4.4 Detailed time series of Europe 1991 – 2008 (from Kosovo to Luxembourg)



- Grey Benchmark Line:** Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.
- Green Benchmark Line:** Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.
- Red Benchmark Line:** Price of crude oil on world market.

2.4.4 Detailed time series of Europe 1991 – 2008 (from Macedonia to Montenegro)

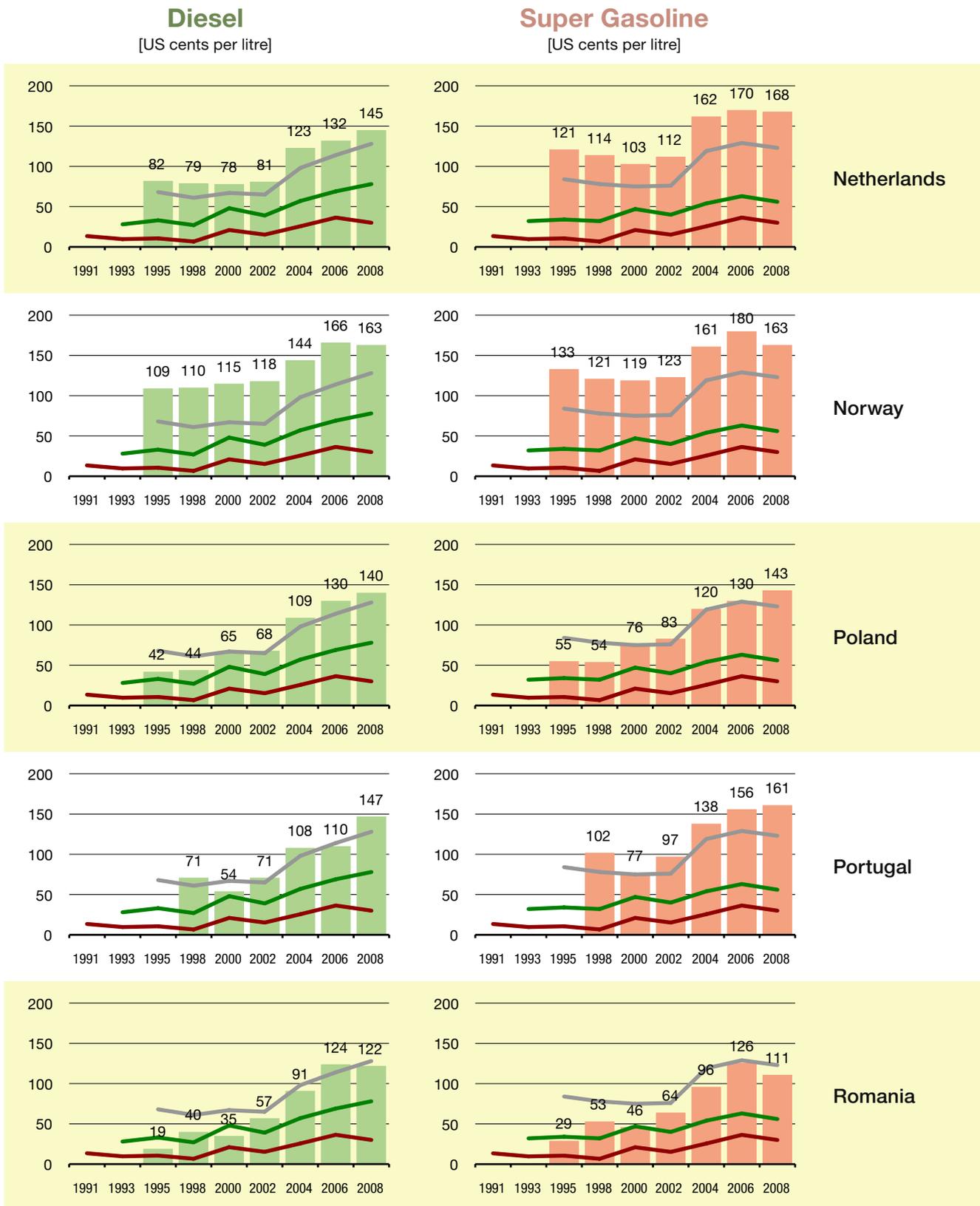


Grey Benchmark Line: Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.

Green Benchmark Line: Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.

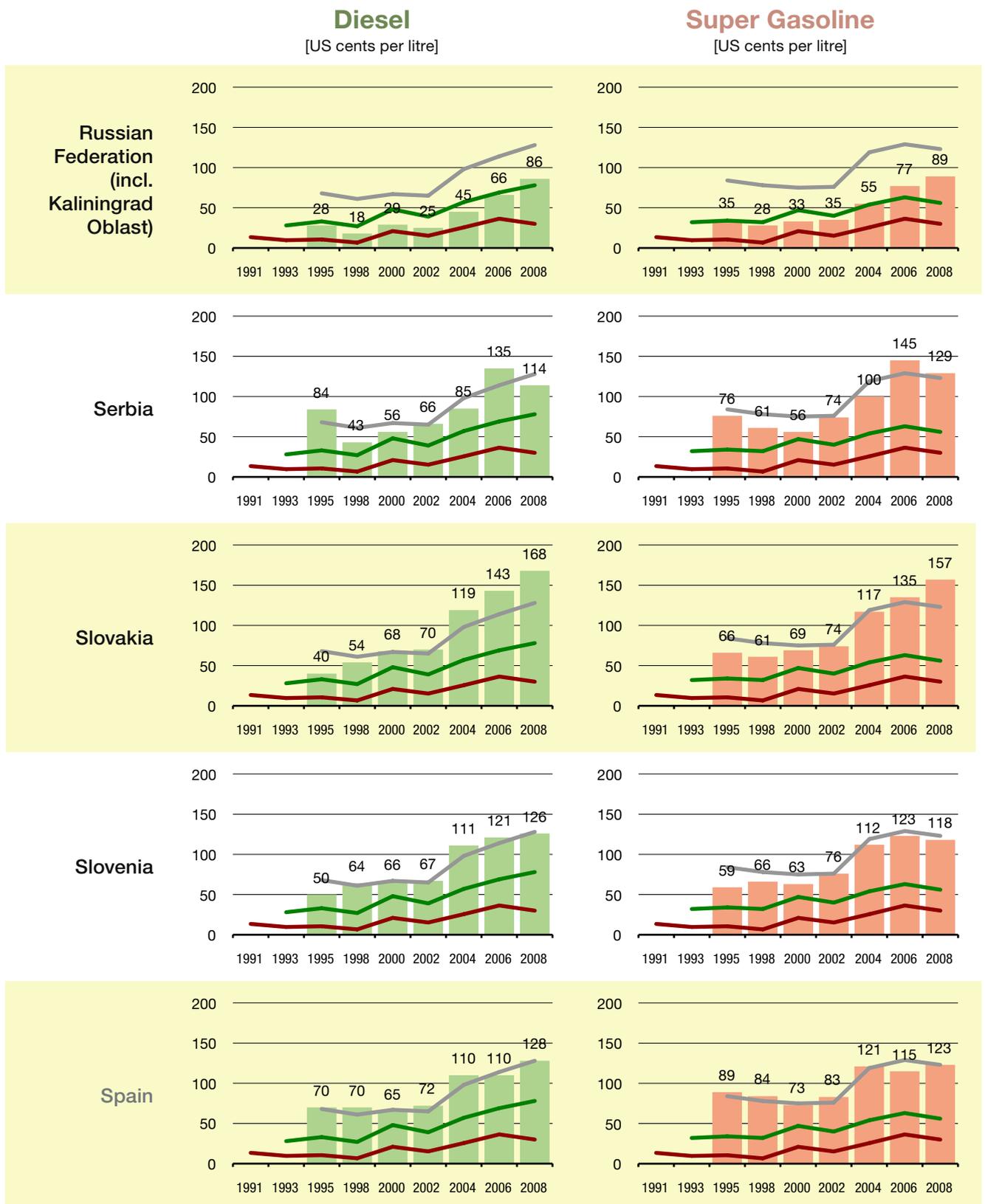
Red Benchmark Line: Price of crude oil on world market.

2.4.4 Detailed time series of Europe 1991 – 2008 (from Netherlands to Romania)



- Grey Benchmark Line:** Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.
- Green Benchmark Line:** Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.
- Red Benchmark Line:** Price of crude oil on world market.

2.4.4 Detailed time series of Europe 1991 – 2008 (from Russian Federation to Spain)

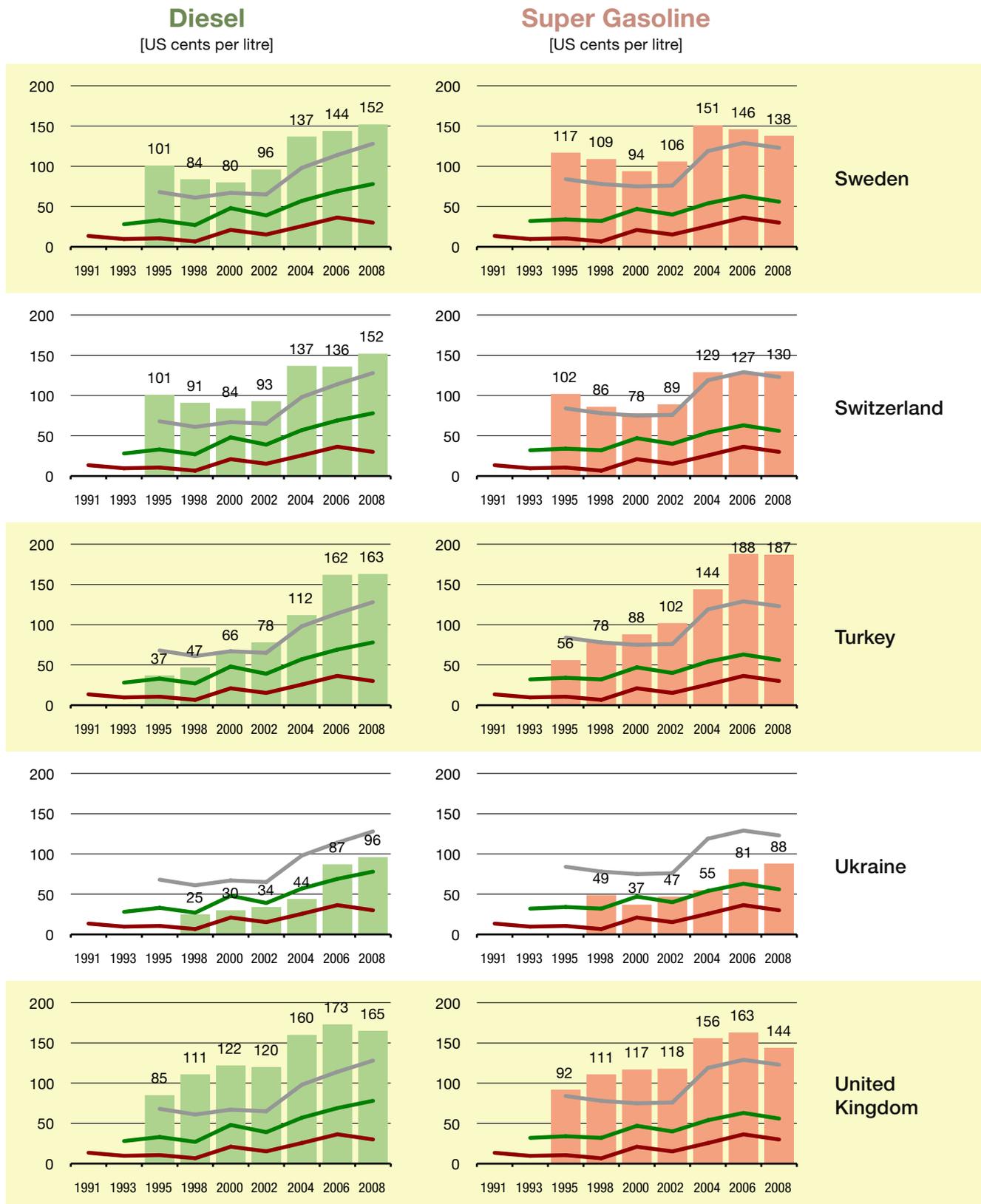


— **Grey Benchmark Line:** Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.

— **Green Benchmark Line:** Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.

— **Red Benchmark Line:** Price of crude oil on world market.

2.4.4 Detailed time series of Europe 1991 – 2008 (from Sweden to United Kingdom)



Grey Benchmark Line: Retail price of gasoline and diesel of Spain. In November 2008, fuel prices in Spain were the lowest in EU-15 (without new accession countries). Prices in EU countries are subject to VAT, specific fuel taxes as well as other country specific duties and taxes.

Green Benchmark Line: Retail price of gasoline and diesel in the United States. Cost-Covering retail prices incl. industry margin, VAT and incl. approx. US 10 cents for 2 Road Funds (Federal and State). This fuel price being without other specific fuel taxes may be considered as the International Minimum Benchmark for a non-subsidised Road Transport Policy.

Red Benchmark Line: Price of crude oil on world market.

dirhams

دراهم

380.00

litres

لترات

073.00

prix du litre

ثمن ال

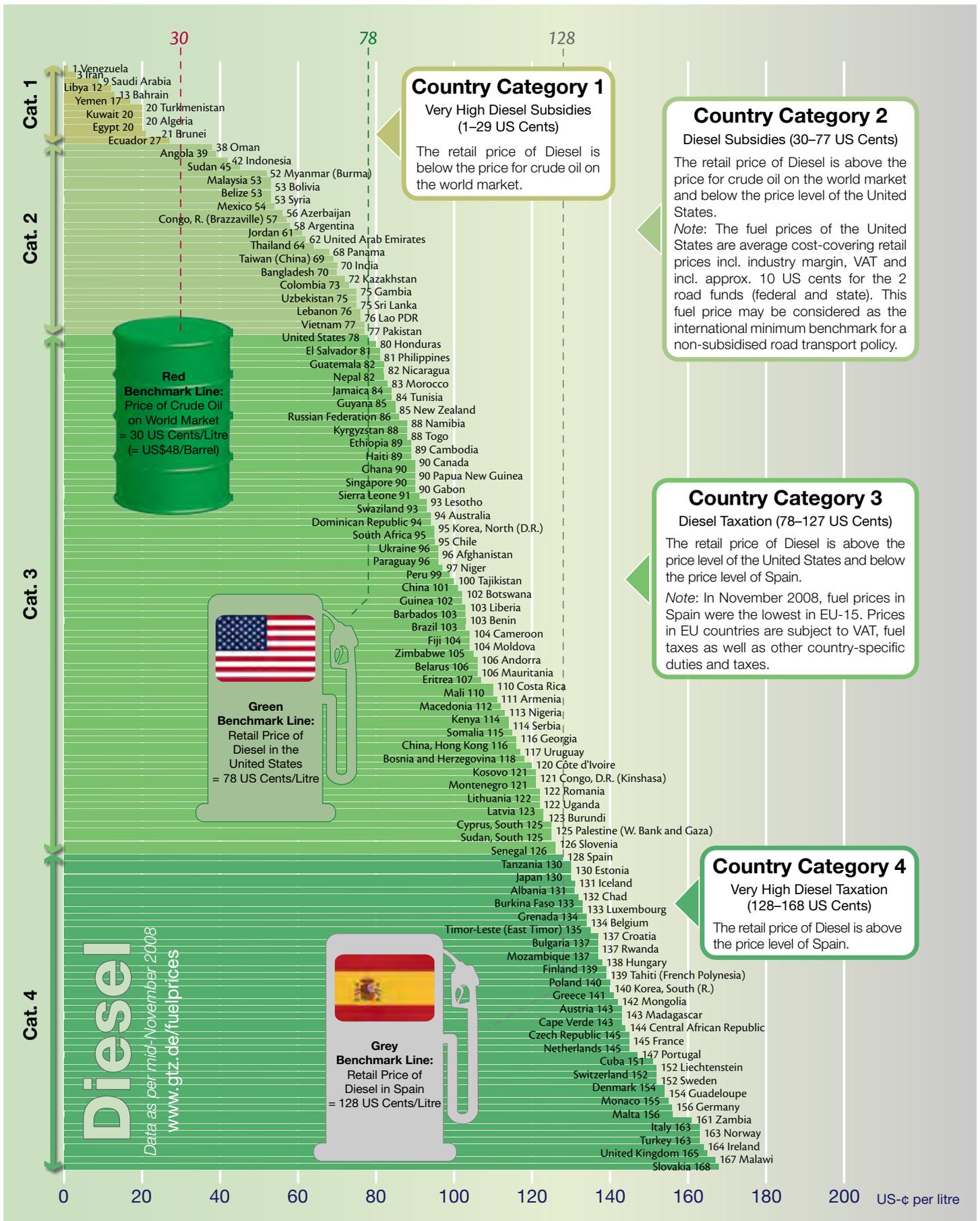
5.20



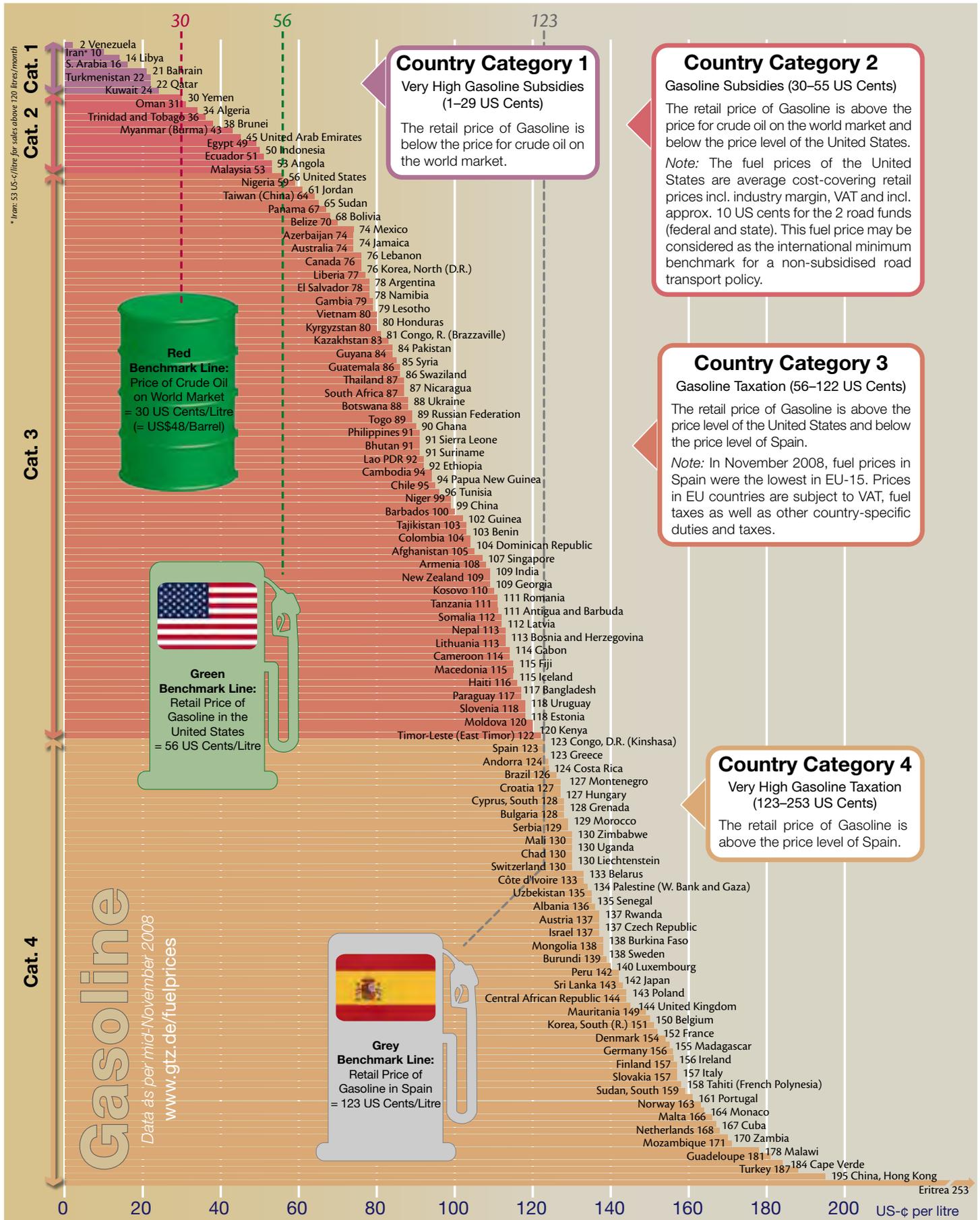
2.5 Retail fuel prices of 174 countries

- *World ranking of diesel prices*
- *World ranking of gasoline prices*

2.5.1 Retail prices of diesel in 174 countries as of November 2008 (in US cents/litre)



2.5.2 Retail prices of gasoline in 174 countries as of November 2008 (in US cents/litre)



3. Fuel taxation and pricing mechanisms

3.1 Principles of fuel pricing

Fuel prices, fuel taxation and even subsidies for petrol and diesel fuel continue to rank high on the world's political agenda, particularly after the rollercoaster of oil prices in 2007 and 2008. The period of very high crude oil prices in 2007/2008 followed by a phase of sharply declining crude oil and petroleum product prices at the end of 2008 again highlighted the need for a critical investigation of the level of fuel pump prices for fuel and the nature and manner of adjustment of price levels. This includes the issue of moving from ad hoc pricing towards regular price reviews and to the elimination of direct and indirect subsidies.

The design of national fuel taxation policies and the introduction of a rational pricing scheme are undoubtedly complex issues. The following pragmatic principles can provide some guidance for rational fuel taxation. Subsequently, the three main approaches to fuel price adjustments are presented and evaluated in terms of accountability, public acceptance and fiscal impact.

Principle 1: Fuel prices cover costs of production and distribution

The level of fuel prices should allow for full cost recovery of producers/importers, refiners and distributors including the costs the adequate maintenance of facilities and other assets. Companies involved in the importing and/or production as well as distribution and retailing should be subject to taxes and levies like any other company. Obviously the global picture of direct and indirect subsidies to the fossil fuel industry is diverse, ranging from tax exemptions and extensive research grants to rebates and many other forms of backing. Subsidies on fossil fuels are often distributed in the form of such preferential treatment and to a lesser extent as direct payments. In September 2009 the leaders of the G-20 nations called for a phase out of fossil fuel subsidies to reduce climate-harming gas emissions as well as to save on fossil fuels.

Principle 2: Fuel taxes help finance the transport sector

Fuel taxes are good instrument for making road users pay for road use. Although fuel consumption does not precisely reflect road use, it is a sufficiently accurate approximation — the more people drive, the more fuel they consume. Therefore, taxing fuel consumption is

somewhat broadly similar to charging for road use. Fuel taxation can thus help implement the 'users pay' principle, which states that road users should pay for using road infrastructure.

Despite certain shortcomings, for most developing countries fuel taxes seem to be the most appropriate way to charge road users. Other options, such as road tolls, are costly to implement and —if not designed as high-tech solutions— may constrain traffic flows. Additionally tolls can never cover the whole road network but only certain sections such as highways or bridges.

The financing of the roads and highways infrastructure via fuel taxes is the primary pricing policy instrument worldwide. On a global average, some 80 % to 90 % of all transport sector revenues are raised via fuel taxes. The remaining share mainly stems from annual vehicle taxes, which normally increase with the size of the vehicle. Small passenger cars normally pay less than large trucks.

In the USA, fuel taxes of about US 10 cents per litre of diesel and gasoline are levied to cover all direct expenditure for roads and highways (maintenance, refurbishment, new construction and capital recovery for the roads and highways departments). However, recently the US Highway Fund tended to be underfunded. However given the lower traffic density (fewer vehicles) in developing countries in Africa and elsewhere, US 10 cents per litre will cover only day-to-day and periodic road maintenance expenditures and not new construction or capital recovery for the roads and highways network. The rate of US 10 cents per litre however includes the maintenance of rural roads, for which —preferably in the form of a National Road Fund— approximately 20 % of the total sum are to be reserved. This internal cross-subsidy for rural roads (representing US 2 cents per litre) may form the financial basis for solving the Rural Roads issue, for which in most countries no solution is at hand.

As recommended by the World Bank, a rate of US 10 cents per litre of fuel (plus a vehicle tax of USD 75 per annum for small passenger vehicles and USD 500 for medium-sized trucks) was adopted within the scope of the International Road Maintenance Initiative for less developed countries. The US 10 cents rule was adopted also at the Annual SSATP Meeting of African Transport Ministers of November 2005 held in Bamako/Mali.

Transport sub-sectors other than the road sector also need funding and in certain cases it may be difficult to generate sufficient funding from within the sub-sector (*e.g.* railways or public urban transport). In these cases,

deficits will have to be covered with funding surpluses gained in other transport sub-sectors. A fuel tax can be a promising instrument for generating such surpluses and could partly contribute to the financing of other sub-sectors. In Germany for instance, parts of the fuel tax revenues are reserved for the improvement of regional and urban transport. In the USA, the fuel tax funded Federal Highway Trust Fund and the State Highway Funds help finance 'surface transportation programmes' and 'air quality improvement and highway safety programmes'.

Principle 3: Internalisation of external costs and incentives for energy-efficient transport

Besides its economic benefits, the transport sector causes numerous externalities such as air pollution, soil degradation and accidents. The social and economic effects of externalities are borne by the wider public who must be at least indirectly compensated. Dedicated fuel levies such as the German eco-tax (part of the overall fuel taxation) can increase fuel prices and thus help internalize external costs while at the same time turning proceeds from road transport into funding streams for sustainable transport solutions or compensation measures.

In addition to this internalisation of harmful effects, fuel taxation plays another important role: it increases fuel prices and thus creates direct financial incentives to use fuels in an economical way. Excessive individual car use, a major problem in many cities, becomes more expensive, making public transport more attractive. High fuel prices also promote fuel efficiency — either by stimulating the purchase of fuel-efficient vehicles or by encouraging economical driving behavior (eco-driving). It is also an incentive to shape transport networks in smarter and more energy-efficient ways in the medium- to long-term (*cf.* Figure 3).

All this can help reduce a country's dependency on oil. For oil importing countries the advantage is obvious. But even for oil exporting countries with seemingly abundant oil reserves, the promotion of fuel efficiency makes sense. Every barrel of oil that is not consumed by the domestic market today can be exported in the future.

Fuel tax rates should be differentiated by fuel quality. For example higher tax rates on 'dirty and more damaging fuels' (*i.e.* leaded fuel or fuels with high sulphur content) have helped reduce or phase out their usage.

With respect to road safety, the implementation of a Road Safety Cent (*cf.* <http://www.gtz.de/de/dokumente/en-Road-Safety-Cent-2006.pdf>) can generate revenues for dedicated road safety work and to compensate victims.

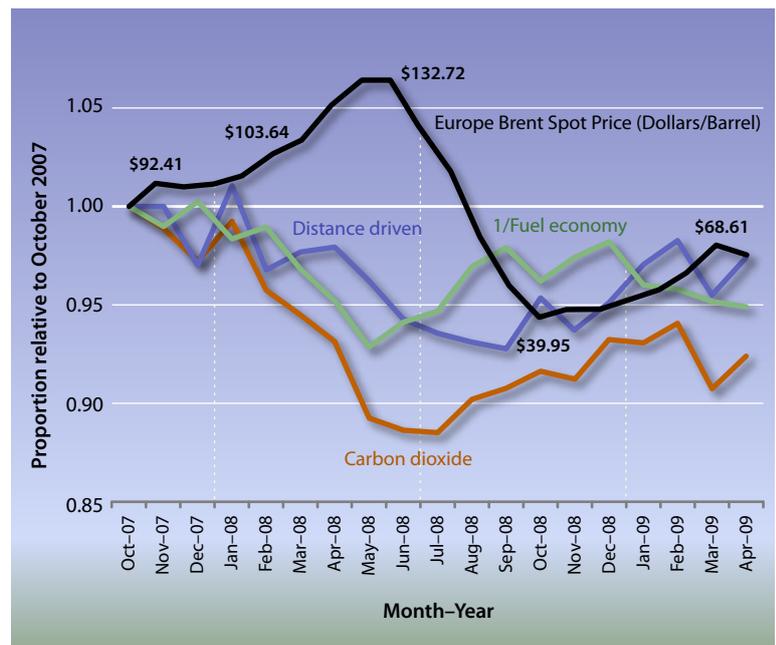


Figure 3: Fuel efficiency (US) and oil price.

Source: Sivak M., Schoettle B. (2009) – Recent Reductions in Carbon Dioxide Emissions from New Vehicles, <http://www.docstoc.com/docs/14923893/RECENT-REDUCTIONS-IN-CARBON-DIOXIDE-EMISSIONS-FROM-NEW-VEHICLES>

Principle 4: Important contribution to general budget revenues

Fuel taxes are a means of generating revenues for the public budget. They can be seen as a reliable source of revenue for the state because they can be collected and enforced relatively easily even with just a few refineries or fuel distribution centres. Thus fuel taxes are much easier to collect than say income taxes or value added taxes (VAT), which in many developing countries are hard to enforce and thus often constitute a weak and unreliable basis for public revenue. In addition, as fuels should be regarded as any other commercial good, they should always be subjected to VAT. VAT should thus be charged on the full sales value of fuels (including the fuel tax element) (*cf.* Box 2).

To ensure transparency and thus increase public acceptance of fuel taxation, the relevant legal background documents and concerned governmental bodies should be open to public scrutiny.

The charts in Chapter 2 provide an overview of taxation levels and structures in selected countries. The actual level of taxation will remain the responsibility of governmental bodies. However the application of the principles outlined above and careful cross-referencing to comparable countries (in the region) may help highlight the benefits of taxation to the public and to enhance public acceptance of fuel taxation. This will be crucial in order to ensure that the political costs of fuel pricing remain low.

Box 2: Fuel Taxation Principles at a glance

- **Principle 1:** Cover Production/Transport/Refinery Costs.
- **Principle 2:** Fuel taxes help finance the transport sector.
 - ❖ Road infrastructure financing.
 - ❖ Road maintenance financing (rule of thumb: minimum of US 10 cents for road maintenance, including 20% for rural roads).
- **Principle 3:** Internalisation of external costs and incentives for of energy-efficient transport.
 - ❖ Directly related to fuel consumption and CO₂ emissions.
 - ❖ Proxy for other social costs (like accidents (cf. road safety cent, congestion, etc.).
 - ❖ Eco-Tax.
- **Principle 4:** Important contribution to general budget revenues.
 - ❖ Major contribution towards financing core state functions such as the health services, education and security.
 - ❖ Easy to collect.
 - ❖ Major source of revenue in many countries.
 - ❖ Subject to full VAT as any other good.

Higher taxes on diesel and gasoline affect car owners only and some resulting effects for public transport prices may be counterbalanced by special price reduction of transport tickets for the real needy groups (students, elderly, etc.). But individual taxi use (as taxi drivers often form the leading group of protest) is considered a luxury all over the world, even in industrialised countries.

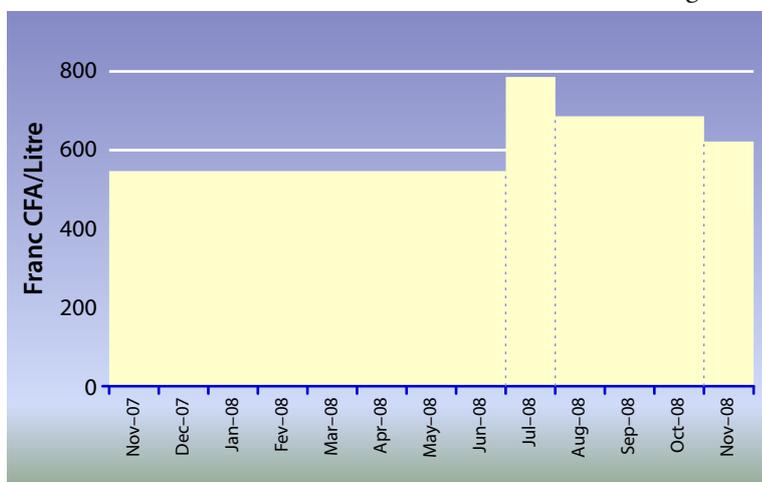


Figure 4: Ad hoc pricing: Côte d'Ivoire (diesel price).

Source: Irinnews

At the same time the mapping of the individual fuel prices in Chapter 2 may indicate the smuggling potential between neighbouring countries. Hence a cross-border trade of fuel may lead to substantial losses of tax revenues of individual countries, specifically between subsidizing countries and neighbouring high taxation countries (as Iran vs. Turkey, etc.).

3.2 Adopting transparent pricing mechanisms

Besides the actual level of fuel prices and its tax components, the question of how and how often to adjust prices is of considerable interest in many countries. Pricing mechanisms should be made accountable and transparent as well as sustainable in terms of limited fiscal impact and low political costs. Globally three basic forms of fuel pricing are apparent: *ad hoc pricing*, (formula-based) *regular price adjustment* and *liberalised markets*.

Ad hoc pricing means that prices are set at irregular and (mostly long) intervals. In countries with ad hoc pricing such as Egypt, Algeria, Indonesia, Bangladesh and Côte d'Ivoire, fuel pricing is often highly politicised. Here price adjustment decisions are made involving political structures, often up to the highest levels. So long as the purchase price is covered, long-term price setting is politically attractive and even acceptable in budgetary terms in times of relative calm on the commodities markets, or if domestic oil resources and refinery capacities exist. This political appeal increases if international purchase prices rise as domestic consumers can be protected against the rigours of the world markets. However it also means increasing impact on the budget as soon as the purchase price rises faster than domestic sales prices. There is a budgetary impact if the government or subordinate institutions fail to pass on

increased prices on international markets to national consumers and the resulting difference has to be paid out of general funds or the state budget. In terms of resource efficiency, ad hoc pricing is counterproductive as it delays or prevents the adjustment of consumer behaviour to rising world market prices. In face of increasing scarcity of fuel reserves in the long-term (and thus rising fuel prices), price incentives to use fuels economically and thus reduce the overall energy intensity of a country, are hindered.

When fuel prices are not regularly adjusted, price adjustments backlogs can —as international examples show —amount to 30–50%.

Catching up on these price adjustments can involve considerable political costs, particularly in situations when the population is not accustomed to price changes. The example of Côte d'Ivoire shows that price increases of 44% for diesel and 29% for petrol in June 2008 quickly led to public unrest like street blockades and closures. There was a partial retreat from increases two weeks after the announcement. These adjustments involved high political costs and budgetary effects namely an increase in the transport allowance for civil servants and shortfalls in revenue. The budgetary implications of delayed price increases can be considerable: the delay in fuel price adjustments between January and July 2008 cost the Ethiopian government around USD 200 million¹⁾. Extreme examples of ad hoc pricing are countries where prices have remained unchanged for years such as many countries in the Arabian Gulf region. Though in these rich countries the issue is less one of political and budgetary impacts, but rather one the long-term effect of lower energy prices that lead to highly inefficient resource utilisation.

In some developing and emerging nations the sharp price hikes in 2007 and 2008 have led to a reorientation towards **regular price adjustments** at defined intervals and in many cases based on predetermined formulae. Ideally the components of the price, the factors underlying the price increase and the adjustment intervals are all set by statute and an independent institution is assigned to monitor prevailing regulations.

With mechanisms for regular price adjustments in place, the decisions about the extent and the frequency of price adjustments are largely depoliticised. Price adjustments are transparent, understandable and verifiable by the public due to the rational basis for decisions. Individual price adjustments are generally moderate. Nevertheless public resistance to general price rises cannot be excluded even with price adjustment mechanisms up to the point of temporary suspension of the adjustment mechanism (*cf.* Mozambique). In the case of falling markets, it is politically sensible to switch to regular price adjustments (and pricing formulae). The graph for South Africa shows that the price formula is doing a good job in tracking price changes.

Regular price adjustments can also help minimise budgetary impacts. Price rises are passed on relatively quickly, although price formulae can also be defined so that price changes are implemented only after increases or decreases exceed certain thresholds. The transparency of the price adjustment process allows consumers to continuously adjust their energy and transport use patterns in terms of form, efficiency and frequency.

A third variant comprises **liberalised pricing systems** where the state's role is reduced to setting taxes and excise duties. The price for the consumer emerges from the free interplay between the companies involved. Examples include most OECD states plus Kenya, Uganda and the Philippines among others. A prerequisite for this is an adequate number of suppliers (to ensure competition), reliable market supervision in the form of a regulatory or antitrust authority, and a correspondingly critical public. As the first criterion in particular is not really satisfied in many states, this

form of price adjustment is only slightly evident in developing and emerging nations. The potential of liberalised systems lies in the high degree of de-politicisation of prices and the elimination of direct budgetary impacts.

When comparing the three basic forms of fuel price adaptation, it is sensible to differentiate between temporary and permanent price shocks. Temporary price shocks (*e.g.* during the Gulf war in 1990) can be relatively easily absorbed by all mechanisms.

As for the permanent price shock with tremendous increases since 2004 and the ensuing volatility, only a few countries with substantial financial resources can keep retail prices unchanged. There is a higher potential for political vulnerability when there is a longer

¹⁾ Source: RAPID ASSESSMENT: Impact of Rising Energy Prices on the Ethiopian Economy (Draft Report for GTZ)

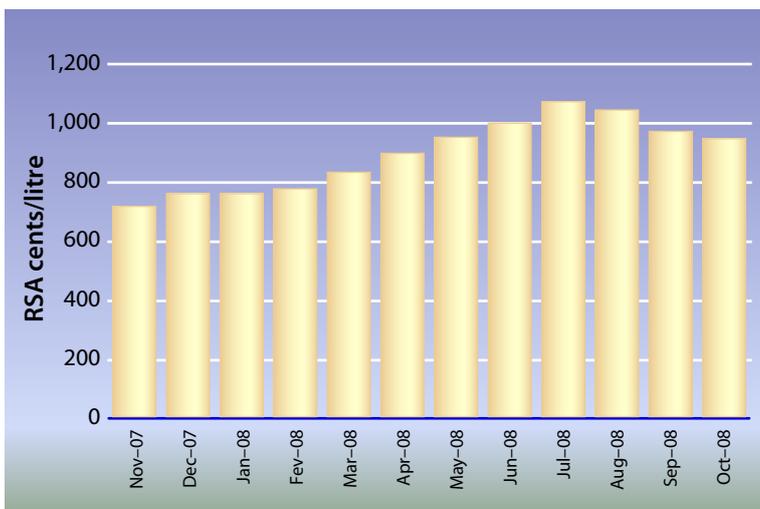


Figure 5: Automatic price adjustments – the example of South Africa (95 octane petrol, Gauteng Province).

Source: <http://www.sasol.com>



Figure 6: The USA as an example of liberalised systems — changes in average petrol price.

Source: USA – Energy Information Administration

lag between the previous and a new (and sometimes substantially higher) price level. It could be a painstaking process in countries that have regular price reviews if no underlying formula exists, adjustments are set through a consultative process and the public receives limited information on the rationale behind it.

In the face of a permanent price shock, the transition from ad hoc pricing to regular reviews and/or automatic mechanisms is politically costly. Significant steps are needed to adjust to international price levels and previously accumulated fiscal burdens are substantial.

Decreasing oil prices as at end 2008/early 2009, offer a unique opportunity to move from ad hoc pricing to regular reviews and/or automatic mechanisms and/or to review the structure and level of taxation.

Figure 7: Comparison of pricing mechanisms.

	Ad Hoc Pricing	Regular Price Adjustments/ Automatic Pricing Mechanism	Liberalised Pricing Mechanisms
Political vulnerability	Low	Temporary price shock	High
Political vulnerability	High	Permanent price shocks	Low
Political interference	High		Low
Fiscal implications	High (as long as prices are not adjusted)	Permanent price shocks Medium to Low (depending on frequency of adjustment and type of formulae)	n. a.

3.3 Recommended reading on fuel pricing and fuel pricing mechanisms

“ Exploit falling markets – Fuel Pricing Mechanisms

The discussion paper provides an overview of the forms of fuel pricing in the transport sector.

<http://www.gtz.de/de/dokumente/gtz2008-en-exploit-falling-markets.pdf>

“ An appropriate mechanism of fuels pricing for sustainable development

In this work the authors, after a brief overview of the main energy commodities markets, propose an alternative mechanism for fuel pricing consistent with sustainable development. Technological change and pluralism, costs and environmental issues are the benchmarks of the discussion. The two proposed mechanisms for fuel pricing try to encompass all these aspects stressing upon the scarcity concern, not merely on a resource-based point of view, and also emphasise the technological variable as the ‘first one to be taken into consideration’.

<http://www.ingentaconnect.com/content/els/03014215/1999/00000027/00000011/art00048>

“ A Review of West Coast Gasoline Pricing and the Impact of Regulations

There have been numerous proposals for legislating restrictions on vertical supply relationships in the West Coast and elsewhere. However, there has not been a systematic examination of gasoline prices in the West Coast, relative to the rest of the country, to understand the size of possible pricing anomalies. The authors examine the differences in the price of gasoline in the West Coast and the Gulf Coast both at the rack (wholesale) and retail.

<http://ideas.repec.org/a/taf/ijecbs/v10y2003i2p225-243.html>

“ Are ‘flexible’ taxation mechanisms effective in stabilizing fuel prices? A fiscal policy evaluation considering the Italian fuel markets

In this paper the authors study the incidence of specific taxes in the Italian fuel markets, and exploit these findings to simulate the effects of fiscal policies aimed at mitigating oil price fluctuations. They estimate several reduced-form specifications, using as dependent variables the equilibrium wholesale prices for gasoline and motor diesel over the period 1996–2007.

<http://web.econ.unito.it/prato/papers/n7.pdf>

“ Evidence of a Shift in the Short-Run Price Elasticity of Gasoline Demand

Understanding the sensitivity of gasoline demand to changes in prices and income has important implications for policies related to climate change, optimal

taxation and national security, to name only a few. While the short-run price and income elasticities of gasoline demand in the United States have been studied extensively, the vast majority of these studies focus on consumer behaviour in the 1970s and 1980s.

http://www.econ.ucdavis.edu/faculty/knittel/papers/gas_demand_083006.pdf

“ Fuel price determination in transportation sector using predicted energy and transport demand

This study determines the fuel price based on estimated sectoral energy and transport demand using pumping prices. Three approaches are first used for estimating energy and transportation demand based on linear time series, polynomial time series and genetic algorithm based (GATEDE and GATDETR), as multi-parameter, models. Future fuel prices and marginal costs of the energy consumption are then obtained.

<http://ideas.repec.org/a/eee/enepol/v34y2006i17p3078-3086.html>

“ Mitigating Distributional Impact of Fuel Pricing Reform

In 2005 the Indonesian government implemented a massive fuel price increase. While the benefits of the reform were widely acknowledged as efficient, the debate continues on whether it was equitable. This paper answers this question utilising a Computable General Equilibrium (CGE) model with disaggregated households that allows for a rich and accurate distributional story. Analyses of the reform and various counterfactual scenarios are carried out.

<http://ideas.repec.org/a/eee/enepol/v34y2006i17p3078-3086.html>

“ Gasoline demand revisited: an international meta-analysis of elasticities

Meta-analysis is used to determine if there are factors that systematically affect price and income elasticity estimates in studies of gasoline demand. Four econometric models are estimated, using long-run and short-run price and income elasticity estimates from previous studies as the dependent variables. Explanatory variables include functional form, lag structure, time span, national setting, estimation technique, and other features of the model structure.

http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6V7G-3VCHFV0-B&_user=10&_rdoc=1&_fmt=&_orig=search&_sort=d&_docanchor=&view=c&_searchStrId=1081266200&_rerunOrigin=google&_acct=C000050221&_version=1&_urlVersion=0&_userid=10&md5=6edcc555d9f3904a07a77ee3196d8db3

“ The Implications of a Gasoline Price Floor for the California Budget and Greenhouse Gas Emissions

California is faced with an unprecedented budget crisis. The state is also committed to significant reductions in greenhouse gases that cause climate change. Meanwhile, the price of gasoline is plunging as the world economic slowdown cuts oil demand. At the intersection of these three situations lies an opportunity. In this policy paper, the author analyses the effects of a transportation fuel surcharge that moves inversely to the price of oil.
<http://escholarship.org/uc/item/9xz9r2gm>

4. Rising energy prices and their impact on developing countries

Case studies from various african countries

The world has seen a sharp increase in oil prices over the last few years, especially since 2004. Whereas five years ago one could still buy a barrel of crude oil for about USD 25, prices increased stepwise to USD 75 in 2006 to hit a new record in summer 2008 at approximately USD 145 per barrel. There was consumer reaction worldwide. Compared to industrial nations, the consequences of these price hikes are more severe and diverse for development countries. Many of them are ill prepared to digest the shock and to properly re-shape their energy and transport policy and cope with higher energy prices in the long or even short-term.

Given this background, GTZ decided to study the issues and approaches in some of its partner countries. Besides complementing the quantitative data of our survey stated below, this chapter aims to offer an insight into the consequences of rising international crude oil prices on the local level.

It mainly focuses on the questions of how people and administrations cope with soaring fuel prices and the existing barriers to the implementation of sustainable policies.

In order to analyse these issues, the case studies follow a certain structure. After a short introduction, recent fuel price patterns, price composition, pricing mechanisms as well as regulatory issues are presented. While the next section deals with macroeconomic and budgetary consequences, the final section compiles the reactions of the stakeholders involved, such as end-consumers (households and business) and political decision-makers.

Local experts conducted the case studies, relying on interviews with key stakeholders, household and business surveys, reviews of official data, webpages and media reports. In order to highlight their key messages, the case studies were edited and adapted to the content of the International Fuel Prices 2009.

The following authors contributed the original studies:

- Ethiopia: Melessaw Shankow (MEGEN Power)
- Ghana: Dr Charles Amoatey
- Kenya: Ashington Ngigi (Integral Advisory Limited)
- Namibia: Dr Patrice Urayenzeza (CEPM)
- Rwanda: Dr Gerhard P. Metschies (Metschies Consult)
- Uganda: Eng Dr Mackay E. A. Okure (Makerere University)
- Tanzania: Dr Oscar Kibazohi (University of Dar es Salaam)



4.1 Ethiopia



Price in US\$/litre	Diesel	Gasoline
November 2006	62	93
November 2008	89	92

Population (2007)	78.6 million
Urban population (% of total) (2010 forecast)	17.6 %
Population (%) below \$1.25/day (2005)	39 %
Oil importation (%)	100 %
Traditional biomass (%) of total primary energy supply (2006)	90 %
Gross National Income (GNI)/Capita in PPP USD (2008)	USD 870

Source: World Development Report 2010, Human Development Report 2009, IEA 2009

Ethiopia is a net importer of oil and being a land-locked country, it is highly vulnerable to supply problems and price escalations in the world market. Therefore, petroleum energy insecurity has always been a politically sensitive issue and a national concern. It also has historical roots, as the 1974 oil crisis is believed to have significantly contributed to the political upheaval that ousted Emperor Haile. Consequently, energy is now a thoroughly monitored topic. Besides this cautiousness, the share of petroleum is minimal and accounts for about 5 % of the national energy balance. Yet it has considerable effects on the economy as oil importation consumes a relatively high proportion of available income in the country. A diesel shortage in July 2008 caused queues at filling stations in Addis Ababa and other cities. There has been renewed and growing interest among policy-makers who have for example organised forums on renewable energy (*e.g.* solar energy). The Ethiopian Petroleum Enterprise also pledged to educate and sensitise consumers on how to economise on fuel through efficient use.

Fuel pricing

Price adaptation mechanisms

Given the effects of the 1974 oil crisis, the government is determined to not only regulate the petroleum energy sub-sector but is also prepared to absorb price shocks temporarily instead of transferring them directly to the consumers as soon as they occur in the world oil market. The Ethiopian government is not in favour of a more liberal 'free' market approach, particularly in the petroleum energy sub-sector where it exerts strict regulations. The regulations also apply to a lesser extent to the transport sector. These measures are applied to ensure macroeconomic stability for rapid economic growth. Among others, this state-centric approach has resulted in the parastatal Ethiopian Petroleum Enterprise having the exclusive mandate to import oil.

The Ethiopian government uses a price revision mechanism to set petroleum product prices. It is a relatively complex exercise of price manipulation that takes into account various social, economic and environmental considerations. Based on global oil prices and domestic

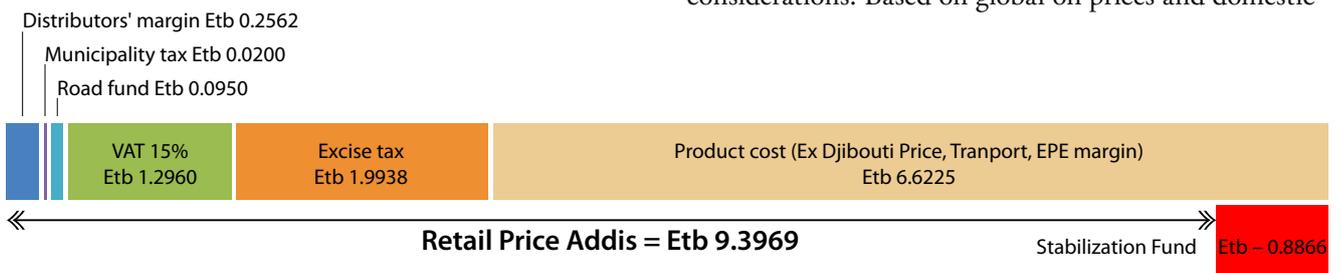


Figure 8: Petroleum price build-up structure in force since January 2008.

operating costs, the Ethiopian Petroleum Enterprise (EPE) and other oil distribution companies present their appeals for price revision to the Federal Ministry of Trade and Industry (MoTI). One of the key aspects of petroleum price adaptation in Ethiopia is that it has become regularised and institutionalised. In principle, price revisions are made every three months. MoTI considers the daily FOB prices of the previous six weeks when calculating adjustments of domestic petroleum prices. Over the years MoTI has developed a price adjustment formula that uses domestic taxes, levies and even margins as flexible variables that can be used to manipulate retail prices at petrol stations. Since 2008 the government has been balancing between maintaining macroeconomic stability and ensuring economic efficiency. It has done this by mitigating the impact of price shocks through regular price adaptations and unleashing the market to operate ‘freely’.

Regulatory framework

Regulatory (Price Control) Process: The government fixes the prices for energy and transport, and mandated governmental institutions supervise their implementation. Thus, while the Trade Practices Investigation Commission (TPIC) under the Ministry of Trade and Industry (MoTI) is responsible for proposing petroleum price revisions and supervising its implementation (as approved by the Council of Ministers), the Road Transport Authority (RTA) under the Ministry of Transport and Communications (MoTC) is responsible for setting tariffs and supervising their implementation when approved.

Petroleum Price Stabilization Fund: The fund is a facility that is dedicated to the exclusive purpose of stabilising domestic petroleum retail prices. The fund’s two main sources are gains that are made from petroleum price reductions in the world market and external donations. The fund is used for the cross-subsidisation of selected petroleum products. For example kerosene as a cooking fuel is exempted from taxes and heavily subsidised. As a result of spiralling fuel prices in 2008, the enterprise’s own financial resources including those from the fund, have decreased dramatically. In effect, the Ethiopian Petroleum Enterprise (EPE) has borrowed over USD 500 million from local banks to import petroleum needed for the fiscal year 2008.

National Petroleum Reserve Mechanism: The government rarely adopts this scheme as its primary objective is not price stabilisation but ensuring uninterrupted oil supply. The capacity of all the depots is

estimated to be about 370,000 m³, sufficient to last for about 90 days.

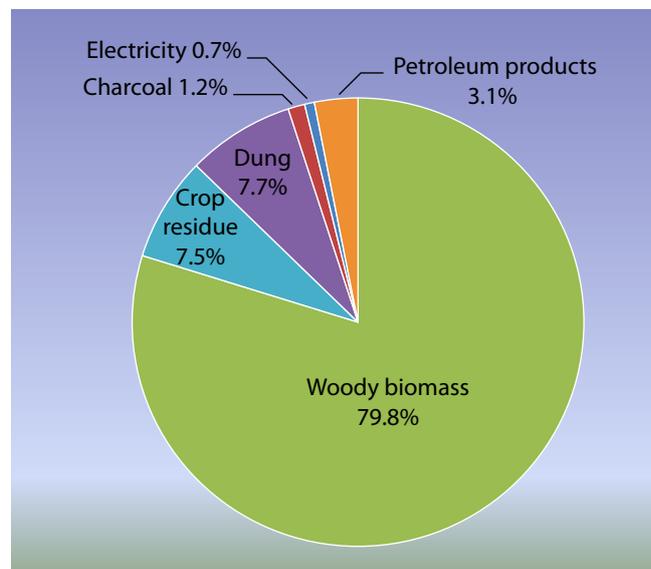
Budget implications

The policy of high subsidisation by the Government of Ethiopia (GoE) has led to a serious budget deficit. The government has always pushed for a policy to keep fuel prices down and below that of other SSA countries. This has resulted in a policy where some petroleum products like kerosene are sold even under market prices. Thus the main driver for growing demand is not high economic growth (11 %), but the low and subsidised fuel prices. But the GoE is ‘willing’ to pay such a price. Government officials and their advisers believe that the adverse impacts of volatile and soaring prices on the economy would be much worse if they are not adequately contained. The result of this approach is a growing foreign trade deficit, which significantly depleted foreign exchange reserves. According to the International Monetary Fund (IMF) the country’s reserve in July 2008 was drawn down to a mere 1.5 months. The effects of the growing oil price are clear when looking at the share of the petroleum import bill until 2005/2006, which was between 30 % and 40 % of total export earnings annually. This share jumped to 87 % in the fiscal year 2006/2007. According to IMF and the World Bank, inflation has recently reached between 40 % and 50 %.

Reactions of end-users

Households and **businesses** are among those most badly affected by rising energy prices. The situation

Figure 9: National energy balance by energy sources.



would have been much worse if the price shocks were directly transferred to consumers. Households and businesses that relied on kerosene reacted quickly by switching to biomass when prices were adjusted upwards in January 2008.

The household sector is one of the most affected by the surge in petroleum prices, with consequences on food intake and savings rates.

Transportation costs have been increasing significantly over the past couple of years. Even though the actual petroleum price rises are not fully transferred to the consumers and the tariff for public transportation is still regulated by the government, earlier fuel price adjustments and the slight upward revision of tariffs have already impacted many consumers.

Within Ethiopian households **cooking and heating** are two of the most energy-intensive activities. Although traditional fuels such as fuelwood and charcoal are still the most widely used energy fuels with lower impacts on the rising oil prices, the pattern of energy use and expenditure varies greatly in urban and rural households. The impact of rising petroleum prices affects urban households the most. This has several reasons: Urban households purchase their food supplies and they are more mobile than their rural counterparts. Less than 0.2% of rural households use kerosene for cooking compared to 19% of urban households. Middle and low-income households switched from kerosene to charcoal while upper income households switched from LPG to electricity or kerosene. But switching from high to lower quality fuel will have an immediate health consequence due to increased indoor air pollution.

Affected **businesses** include transport operators, hotels and restaurants, cafes, shops and delivery companies. Most of these companies pass on the cost increase to the consumers. But public transport such as taxis, city buses and inter-regional buses cannot do so as the government regulates them. The GTZ-SUN-E project conducted interviews with restaurants and hotels regarding their cooking energy consumption and expenditure. It was indicated that a third of the businesses has always used biomass fuels while a similar proportion made a switch from kerosene and LPG to biomass fuels, mainly charcoal.

Most **industries** depend on grid electricity for their power requirement. In the 1980s, as part of the fuel switching strategy adopted by the government, industries were encouraged to switch to electricity, as inexpensive excess power was available in the grid. However

there are still several industries that use petroleum fuels such as light and heavy fuel furnace oils (LFO and HFO) for boilers and dryers. The lack of rain in March and April 2008 caused a water crisis. Water levels in the reservoirs fell rapidly affecting the economy seriously. The Ethiopian Electric Power Corporation (EEPCo) introduced power shedding schedules earlier in the year. It was this power shedding that affected manufacturing industries and some businesses more than the oil price surge in Ethiopia.

Reactions of political decision-makers

The GoE had already developed three key strategies in direct response to the two oil crises in the 1970s. They were the Biomass Fuels Supply Augmentation (through afforestation and reforestation), Demand Management (through improving end-use efficiencies in the industrial and domestic sectors), and Inter-fuel substitution (switching from biomass to kerosene and electricity).

Equity has always been at the forefront of petroleum pricing. This is particularly the case with kerosene, a fuel that has enjoyed heavy subsidisation for nearly three decades now. However not only kerosene is subsidised. Electricity tariffs deliberately favour domestic consumers in general and lower income groups in particular. Besides energy fuel subsidies, the GoE has started further **short-term mitigation measures**:

- **Fixed Price Time-bound Procurement:** When purchasing petroleum from the world market through a tender, the EPE enters into a fixed price, time-bound contract with suppliers.
- **Multiple Ports:** In a bid to reduce petroleum transport costs, the EPE has embarked upon a study that examines the cost-effectiveness of using multiple ports to supply petroleum to parts of the country that are within a given proximity.
- **Special Discounts:** In recent years Ethiopia has benefited from more stable and discounted prices on gasoline imported from the Sudan.
- **Awareness Raising:** Many in the energy sector strongly believe that there is low consumer awareness about the importance of energy conservation (e.g. through good energy management practices).

Long-term measures are those adaptation processes that aim to introduce structural changes in the ways energy is secured and used over a period of time. One of the key structural weaknesses of the Ethiopian energy sector is its inability to harness and adopt indigenous energy resources such as hydropower, wind, geothermal and photovoltaic (PV) solar. As such, ensuring energy

security from indigenous resources is at the forefront of the current government's development plan as it is aware of the role energy plays in 'energising' development. Thus the GoE is adopting four key energy sector development programmes and strategies. These programmes and strategies are:

■ ***The Power Sector Development Programme:***

The plan is to generate over three GWs of electricity from large hydro dams until 2012. After meeting the steadily growing domestic demand, part of the electricity generated will be exported and sold to neighbouring countries. The longer-term plan is to use electricity for urban mass transport including trams and trains.

■ ***Biofuels Development and Utilisation Strategy:***

This programme's goal is to intensify oil and gas exploration efforts and to ensure the development and utilisation of alternative fuels, namely biofuels.

■ ***Energy Efficiency Promotion:***

Improving end-use efficiencies of domestic cooking devices has been and still is one of the major interventions being adopted in Ethiopia. With millions of 'Lakech' stoves sold commercially through informal sector operators since its introduction in early 1990s, today the majority of urban households own and use the Lakech stove regularly.

The industrial and transport sectors are two other areas with considerable potential for energy savings through the improvement of end-use efficiencies.

Following the findings of the energy audit studies, publicly owned industries were encouraged —using inexpensive electricity as a package of incentives— to shift from using fuel oil to electricity for process heating.

In the transport sector, there are limited initiatives that are aimed at promoting energy efficiency. Ethiopia's vehicular transport is extremely energy-inefficient, with even 40 year-old cars and trucks still running on the road. Therefore the GoE has introduced a bill discouraging the importation of second-hand cars that are more than 5 years old.

■ ***Promotion of the Adoption of Renewable Energy Resources:***

Although efforts have been underway for more than two decades, there had been inadequate government support for the development of renewables. Efforts are now underway to waive duties and taxes on PV and some of its essential components based on a consensus reached between private sector PV dealers

and MoME officials. Moreover through its Rural Electrification Fund (REF), the government is providing technical and financial support to cooperative societies and private companies who wish to generate electricity from renewables and supply to off-grid rural consumers.

4.2 Ghana



Price in US¢/litre	Diesel	Gasoline
November 2006	84	86
November 2008	90	90

Population (2007)	22.9 million
Urban population (% of total) (2010 forecast)	51.5%
Population (%) below \$1.25/day (2006)	30%
Oil importation (%) 2006	100%
Traditional biomass (%) of total primary energy supply (2006)	63.3
Gross National Income (GNI)/Capita in PPP USD (2008)	USD 1,430

Source: World Development Report 2010, Human Development Report 2009, IEA 2009

Ghana began to reform its energy sector in 2003. Until then, crude oil importation and refinement was the sole responsibility of the government through the Ghana National Petroleum Company (GNPC), which had a monopoly on the upstream markets. To keep ex-pump prices low the government heavily subsidised ex-refinery fuel prices, a practice that led to the near bankruptcy of the Tema Oil Refinery (TOR). In response to increasing fuel prices on the world market that the current government could not bear without hurting other economic sectors, it began a deregulation of the petroleum downstream sector (see NPA 2005, Act 691). This removed all subsidies on fuel. It also allowed Oil Marketing Companies (OMCs) to import their own crude oil to be refined by TOR for a fee or a direct importation of refined products for distribution and sale in Ghana. The deregulation policy was accompanied by import mitigation policies like capitation grants, free Metro bus transport for school children and cross-subsidisation of petroleum products.

One unintended impact of rising fuel prices in Ghana is the **adulteration and contamination** of petroleum products by OMCs and filling station operators. Further, some fuel stations

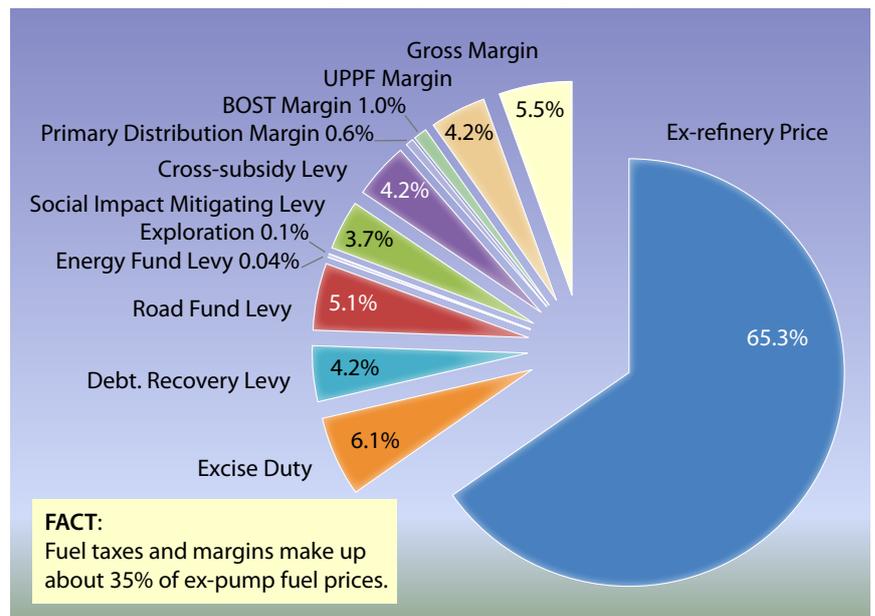
are also believed to adjust their pumps to sell lower volumes than what consumers actually pay for. Also **fuel smuggling** to neighbouring countries increased significantly with Ivory Coast and Burkina Faso as attractive destinations. In the past, cross-border smuggling added about 25% to Ghana's imports.

Fuel pricing

Price adaptation mechanisms

The **ex-refinery prices** are calculated using the world market crude oil prices with mark-ups for insurance,

Figure 10: Fuel taxes and margins on premium (May 2008).



FACT: Fuel taxes and margins make up about 35% of ex-pump fuel prices.

transportation, suppliers' commission, refinery costs and other related charges. Price levels are set to fully recover costs; this means that any changes in crude oil prices are immediately and directly transferred to consumers. The pricing of products is partly based on a cross-subsidisation policy. Under this policy, petrol (premium) is taxed higher and the additional revenue is used to subsidise the other products. OMCs are allowed to fix their own ex-pump prices for each product but may not exceed the maximum indicative ex-pump prices established by the National Petroleum Agency (NPA).

In terms of *frequency*, a price review is automatically triggered if actual total sales (*i.e.* volume sold multiplied

Box 3: Are there too many tax components in the fuel price?

Ghana has 13 tax elements and margins on fuel. Some opposition political parties and civil society organisations have criticised the government for setting high taxes on fuel and have called for the removal of some of these taxes. For example, the debt recovery and deregulation mitigation levies have been challenged, as they were meant to pay for the accumulated debt from past fuel subsidies. However they have not yet been reviewed. Consumers expect the government to make the status of the debt repayment public so that the levy can be abolished once payment is completed.

The tax components and their functions are presented below:

- Cross-subsidy levy: Premium petrol is taxed to subsidise kerosene;
- Debt recovery levy: Above mentioned tax to repay debts;
- Road fund levy: Fund to build and maintain roads, contributes 35% to the budget for road construction;
- Deregulation mitigating levy: Mitigates the effects of deregulation;
- Unified Petroleum Price Fund (UPPF): Supports the long distance transport of fuels towards the inland (more than 200 km away from the next refinery)
- Gross margin: Margins for producers and retailers
- BOST margin: Revenue from the BOST margin is paid directly to the Tema Oil Refinery (TOR) and the Bulk Oil Storage and Transportation Company (BOST), which is responsible for oil storage. It is intended to increase the capacities to provide six instead of 2 weeks supply.

Fuel taxes and margins make up about 35% of ex-pump fuel prices.

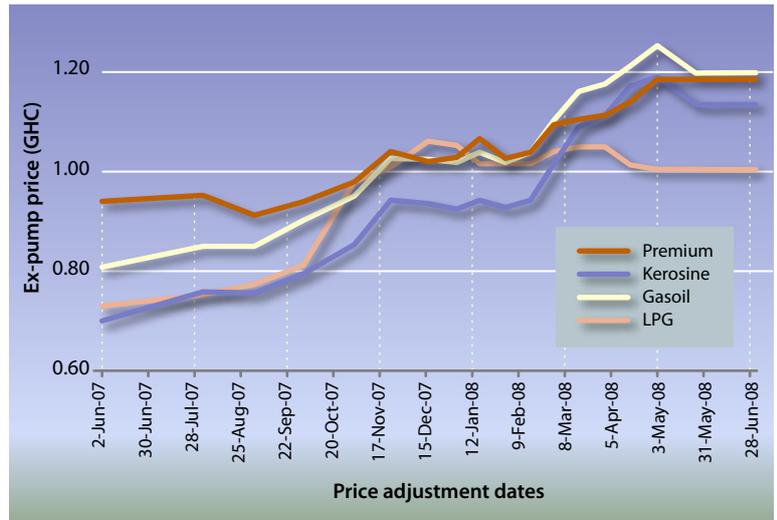


Figure 11: Trends in fuel price increases in Ghana.

by ex-refinery current price) and full cost recovery total sales differ by more than 2.5 %. In other words if full cost-recovery prices exceed or fall below current ex-refinery prices by more than 2.5 %, then ex-refinery prices will be automatically adjusted to equal cost-recovery prices. Despite the existence of the automatic pricing formula, in practice, price reviews are done bi-weekly. This is to prevent a situation where prices may have to be reviewed on a daily basis due to rapid price changes on the world market and also to give OMCs adequate time to sell old stocks. After being reviewed, the new prices are announced in the evenings on TV and radio and take effect from 06:00 the following day. As seen in the chart below there has generally been a continuous price surge for all products in 2007/2008, a reflection of the price trend on the world market.

Regulatory framework

To facilitate the deregulation process the government established a National Petroleum Authority (NPA) with the mandate to ensure that the interests of all stakeholders in the sector are protected. The NPA is an autonomous and independent Regulatory Authority established by an Act of Parliament (NPA Act 2005, Act 691). After establishing ex-refinery prices and considering the various margins and legislated fuel levies, the NPA sets a maximum indicative ex-pump price for the Oil Marketing Companies (OMCs) and periodically reviews the pricing mechanism. Appointed by the President, the eight-member NPA governing body includes representatives from the public, the Petroleum Workers' Union and a member from either the Chamber of Commerce or Chamber of Mines. All members, except the Chief Executive, have a maximum of two four-year terms.

Budget implications

In June 2008 parliament passed into law two bills to mitigate the effect of rapid fuel prices on Ghanaians. This was in response to consumer complaints about the escalating fuel prices and their impact on food prices, transport costs and the general cost of living. The first involves the suspension of further upward price adjustments and reduction in some fuel tax elements on selected petroleum products (*i.e.* gas oil or diesel, kerosene, premix and marine gas oil). The intervention specifically provides for the removal of excise duty and debt recovery levies on premix oil and the reduction of excise duty and debt recovery levies on gas oil, kerosene and marine gas oil. The second law abolished import duties on selected food items like rice, wheat and vegetable oil. It also removed taxes on imported fertiliser. Although hailed by consumers, the fuel tax relief will cost the government an annual shortfall of up to 6 % in fuel tax revenue or GHS 70 million.

Reactions of end-users

Despite government intervention in reducing duties on fuel and selected food items, transports fares and food prices have not been significantly reduced. However the Ghanaian government has no direct control to set fares for private public transport operators. Though there is a formula for setting public transport fares based mainly on prevailing fuel prices, transporters often increase fares arbitrarily. Transport fares are never reduced when there is a decline in fuel prices.

The increase in private transport cost has encouraged the use of public transport in major cities. For example patronage of train services between Tema and Accra has increased. To control household expenditure on transport, many people who previously patronised taxis now use minibuses (or 'trotros'). Taxi fares can sometimes be 10 times higher than trotro fares. This is because taxi drivers often demand that passengers rent the whole taxi (called 'dropping') instead of sharing with others.

Taxi drivers have also blamed the government for the frequent fuel price increases because it reduces the patronage of taxis in favour of the government-subsidised Metro Mass Bus Services. These bus fares are subsidised by revenues from the social impact mitigation levy. The levy is GHp 4.4 per litre of fuel. The subsidy translates to between 20 % and 50 % reduction in metro bus transport fares compared to trotros. For example trotros charge GHp 15 for the shortest trip compared with GHp 10 for the metro bus.

Reactions of political decision-makers

Ghana has neither a coherent framework nor a long-term strategy for a secure national energy supply. It is also just recovering from a severe power crisis, which hit the country in 2007 due to low water levels in its only hydropower dam. The situation led to the purchase and installation of large thermal plants across the country to supplement industrial and residential energy supplies, increasing the demand for diesel. In response the government increased the electricity tariff by 35 % in November 2007. To mitigate the effect on consumers, the government procured and distributed 6 million energy-saving compact fluorescent light (CFL) bulbs free of charge to all consumers. The CFL bulbs, which replaced incandescent bulbs, are expected to reduce electricity bills by 50 %.

To further reduce the social impact of rising food and fuel prices the government has introduced a poverty alleviation measure called the Livelihood Empowerment Against Poverty (LEAP) programme. LEAP is a national social protection strategy (NSPS), which will provide direct cash transfers (currently between GHp 8 to GHp 15 per household per month) to support the poor. LEAP will also assist beneficiaries to access existing government and social services that will provide them with buffers against various risks and shocks from price increases.

4.3 Kenya



Price in US\$/litre	Diesel	Gasoline
November 2006	98	112
November 2008	114	120

Population (2007)	37.8 million
Urban population (% of total) (2010 forecast)	22.2%
Population (%) below \$1.25/day (2005)	19.7%
Oil importation (%) 2006	100%
Traditional biomass (%) of total primary energy supply (2006)	73.6%
Gross National Income (GNI)/Capita in PPP USD (2008)	USD 1,580

Source: World Development Report 2010, Human Development Report 2009, IEA 2009

Petroleum and electricity are the main drivers of the modern sector of Kenya’s economy. Wood fuels provide the energy needs of the traditional sector including rural and urban poor households. Solar thermal, solar electricity and wind power are other energy sources in the country but are mostly unexploited.

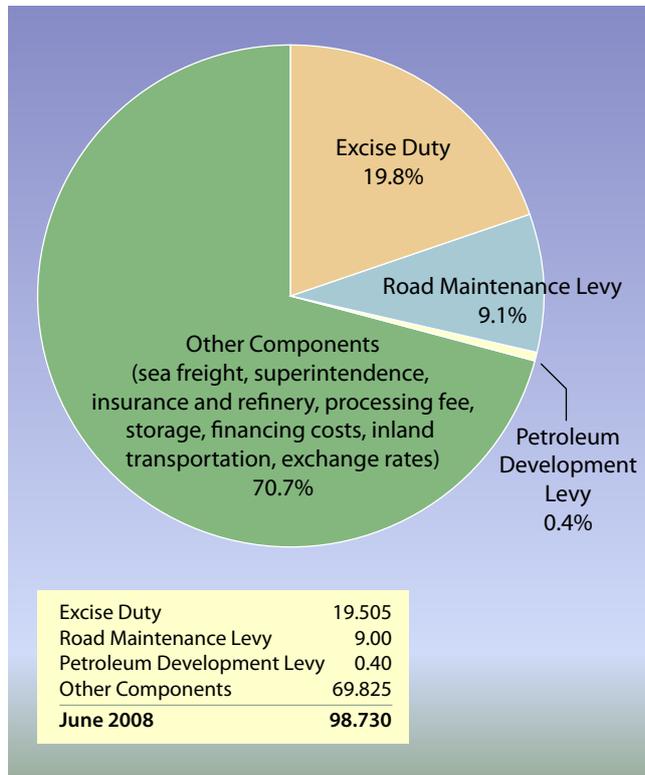
The petroleum sector was deregulated in late 1994 with the deregulation of retail prices of petroleum products and of the importation of crude oil and refined products. The country has previously encountered problems due to high energy costs. In the early 1980s, energy costs rose dramatically after the Iranian political crisis caused oil prices to skyrocket. Kenya experienced a serious balance of payment problem resulting from high oil import bills. The government reacted by introducing biofuels (10% blend of alcohol in gasoline) and loaded taxes on gasoline to discourage discretionary driving among other measures. It also created the Ministry of Energy to focus on new energy sector developments, and formed the National Oil Company of Kenya (NOCK) to ensure security and stability of oil supply. The petroleum sub-sector has experienced the proliferation of sub-standard fuel dispensing facilities and services. This includes the mixing of motor fuels with kerosene and the dumping of export fuels for illicit financial gains at the expense of both the consumer and government revenue. Price adjustments especially for the oil sector are not implemented in a transparent manner, which consumers do not understand. Unfortunately, the local oil dealers do not lower prices as quickly as they increase them.

Fuel pricing

Price adaptation mechanisms

Kenya uses the *cost plus pricing mechanism*. The maximum product prices are calculated from oil product import costs, operating costs and allowable industry

Figure 12: Fuel taxes and margins on regular (June 2008) in KES.



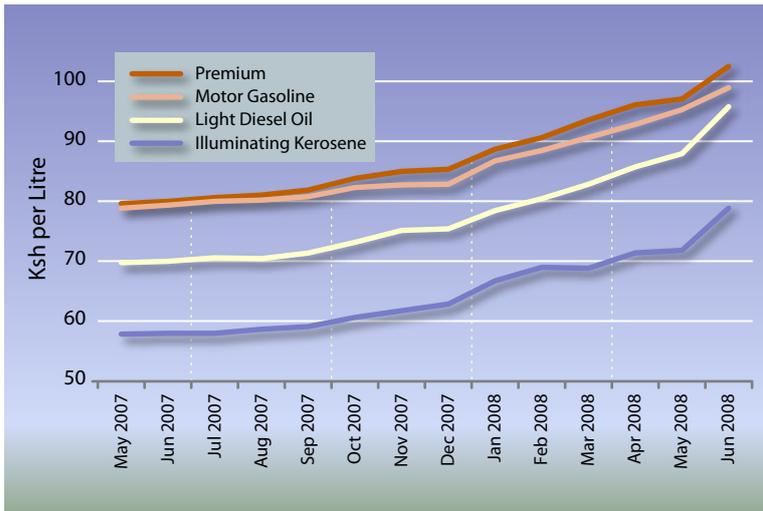


Figure 13: Weighted average retail prices for selected products within Nairobi.

margins. For oil importation, the GoK applies an open tender system to supply the country’s oil. Through the Ministry of Energy the government imports 70% of the national demand for petroleum products through the open tender system, where an oil company with the lowest quotation for freight and premium imports on behalf of the rest. This allows all the oil marketing companies to access petroleum products at the same price and therefore ensures competition in the market. However since the liberalisation of the oil sector, the government has had no price control mechanism in place leading to pump prices being implemented arbitrarily by the dealers based on the international oil prices. For the petroleum sector, the main dealers set the price, which the station dealers have to follow. The retail sector consists of two categories: multinational and independent dealers. The former controls over 85% of the total market share.

Budget implications

The total oil import bill was USD 1.4 billion (KES 99 billion) in 2005, out of which the crude oil import bill was USD 753 million (KES 52 billion), while the refined oil product import bill was USD 681 million (KES 47 billion). This amounts to 23% of total Kenyan imports. The GoK’s *current account deficit* widened from USD 577 million to USD 1,198 million from April 2007 to April 2008. High oil prices will exert a heavy toll on the budget in terms of both revenue and expenditure. In terms of revenue, the tax base will be eroded if the profitability of oil consuming companies is adversely affected and if unemployment increases. The government is under heavy pressure to intervene to cushion the effect of the oil price increase.

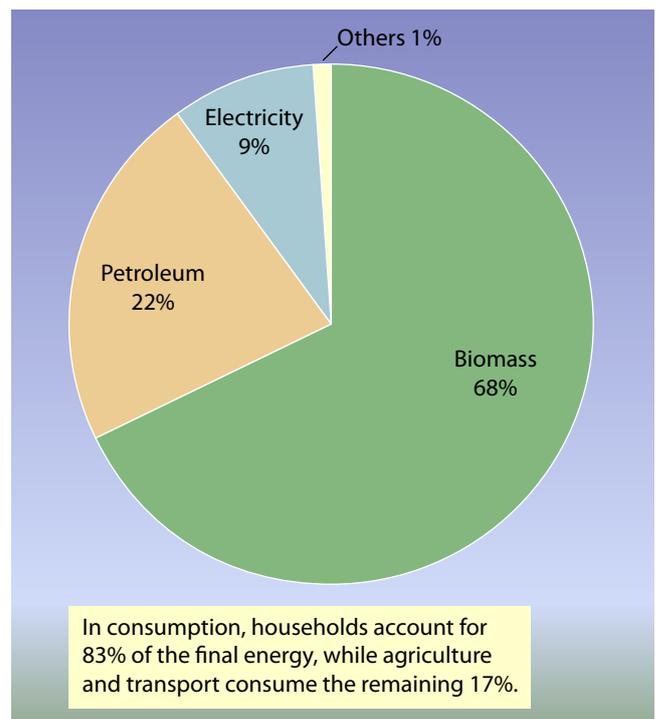
Reactions of end-users

First of all, there is considerable shock about the rapidity and extent of the price increase in Kenya. Motorists have reduced the use of their vehicles with most of them opting to use public *transportation*. They are changing to other fuel saving methods such as turning off their engines during traffic jams, driving on neutral gear (‘coasting/gliding’) and in some cases some public transport vehicles have been forced to operate during off-peak hours. *Households* have stopped using cookers and water geezers and are exploring solar heating alternatives. In *business*, cargo transport companies have indicated that they might soon begin importing their own fuel to minimise operational costs. The escalating price of fuel has resulted in hundreds of motorists and public transporters being forced off the road. According to the Kenya Transporters Association the worst hit are the matatu (public transport minibuses) and truck operators whose businesses have turned unprofitable due to rising diesel prices. The major *industrial consumers* are already feeling the effect of high electricity bills, which are affecting their margins. This makes them very uncompetitive compared to operators in South Africa, Egypt and even neighbouring Tanzania.

Reactions of political decision-makers

The GoK has continued to encourage the use of LPGs through policies and initiatives such as the removal of

Figure 14: Energy balance in Kenya.



taxes on LPGs in 2005 and spearheading the construction of LPG handling and storage facilities. Another measure was recently undertaken by the Ministry of Nairobi Metropolitan Development (NMD), which introduced parking areas in the outskirts of the Central Business District (CBD) and provided shuttle buses for transportation to the CBD to ease traffic congestion during peak hours. Two further short-term mitigation schemes are the Petroleum Strategic Reserves and Legal Notice No. 44. The former states that 30-day strategic stocks of various petroleum products will be implemented and financed by the 2008/2009 budget, while the latter requires petroleum oil companies to maintain minimum operational stocks by product. High energy prices can also be viewed as a push factor to utilise alternative clean energy resources and reduce heavy reliance on oil. Geothermal and solar energy are being considered. Another suggestion is to blend petroleum with ethanol like in Brazil. A third solution, which is currently being experimented, is to use jatropha oil (jatropha diesel) as a substitute for kerosene (diesel). It is however unlikely that these solutions can be implemented on a massive scale in the short run.

4.4 Namibia



Price in US¢/litre	Diesel	Gasoline
November 2006	87	87
November 2008	88	78

Population (2007)	2.1 million
Urban population (% of total) (2010 forecast)	38.0%
Population (%) below \$1.25/day (2005)	n.a.
Oil importation (%) 2006	100%
Traditional biomass (%) of total primary energy supply (2006)	12.7%
Gross National Income (GNI)/Capita in PPP USD (2008)	USD 6,270

Source: World Development Report 2010, Human Development Report 2009, IEA 2009

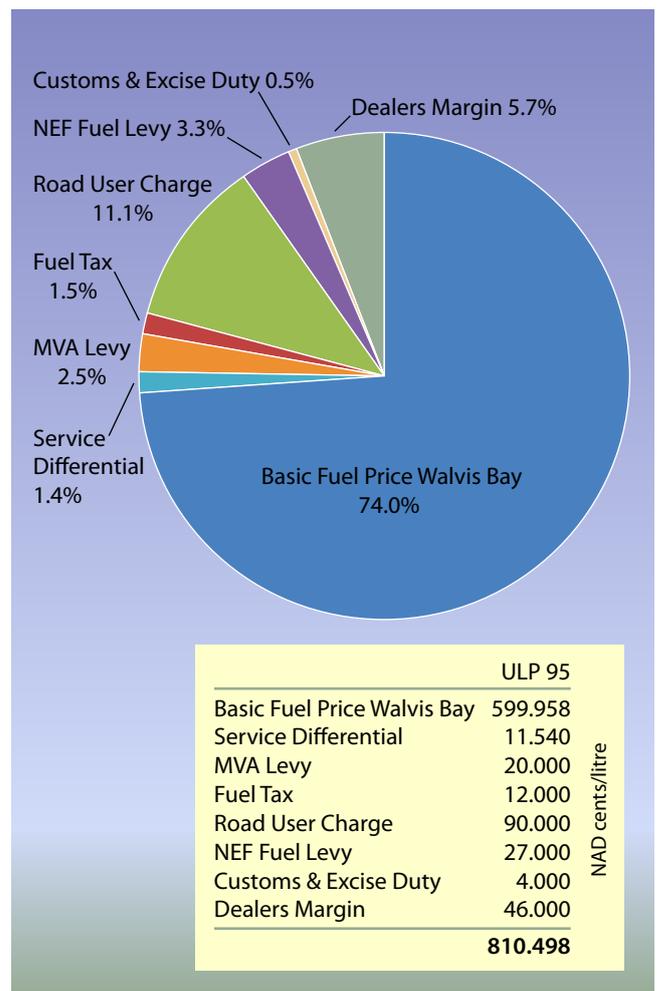
Soaring international crude oil prices have driven fuel prices up in the South African Development Cooperation Countries (SADC). Countries in the region do not necessarily follow South Africa, where fuel prices are normally higher. Hence there are many factors that the ministries consider before deciding on whether to slash or maintain prices, since the national governments have also been paying towards reducing massive under-recovery costs in the past. When determining fuel prices, it is important for the region to design the price schedule so that the countries do not subsidise foreign economies. The price setting mechanisms work so that fuel is not exported back to a neighbouring state where prices are slightly higher. The situation has changed dramatically with some asking for pump prices to be reviewed daily or weekly and to let the market determine the consumer price daily. Throughout the SADC region, starting with the very active South African industry, all have agreed to review the fuel price monthly. Despite all efforts, all *Southern Africa Customs Union* (SACU) countries—except Namibia—witnessed violent protests in response to the rising global fuel and food prices.

Fuel pricing

Price Adaptation Mechanisms

In 2008 the oil price regulatory bodies in Namibia agreed to shift to the BFP (Basic Fuel Price) system, a 100% spot price based structure. This approach replaced a fuel pricing mechanism based on quarterly

Figure 15: Fuel price composition Namibia for unleaded petrol 95 (April 2008).



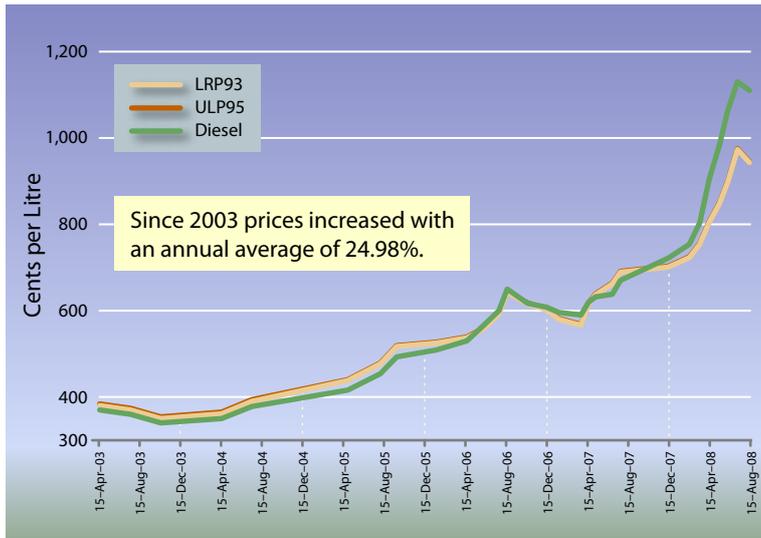


Figure 16: Fuel price increases since April 2003 at Walvis Bay, Namibia.

price adjustments that was introduced on 1 January 1997. This quarterly fuel price review was supposed to respond more efficiently to market changes and eliminate the subsidies that were previously paid out of the National Energy Fund (NEF) to ensure affordable fuel prices nationwide. The objective was to adjust the price so as to clear the monthly unit over/under-recoveries incurred in the previous quarter. With the new price mechanism and as a lesson learnt from the ongoing crisis, the minister will review and publish oil prices on a monthly basis. The Namibian government will probably continue to appease taxpayers and voters by avoiding sharp price fluctuations.

Regulatory framework

Through an act of parliament legislators have regulated almost all the business around all petroleum products; they have set clear parameters used to calculate fuel prices such as industry margins, allowable definitions of assets, state regulations and pricing mechanisms.

According to Namibian legal acts, prices of fuels are controlled but market forces will determine the prices of all other petroleum products (gas). The retail prices of all petrol grades are published in a government gazette at each cost adjustment but gas prices are controlled only at the wholesale level and are therefore not gazetted. The government plays no active part in the supply and distribution of petroleum products other than to control prices of petrol and diesel to enable the private sector to do business that is beneficial to the country. The Ministry of Mines and Energy monitors imports while the Ministry of Trade and Industry issues

the necessary import permits. The process towards the deregulation of the downstream petroleum sector has already started with the abolishment of the service station rationalisation plan (RATPLAN), the amendment of the Petroleum Products and Energy Act, and the drafting of the downstream petroleum regulations among others.

The Petroleum Products and Energy Amendment Act 2000 amended the Petroleum Products and Energy Act 1990. With this change of policy more comprehensive powers were granted to the Minister of Mines and Energy (MME) particularly to the import, supply, storage, possession and sale of petroleum products and the licensing of and conducting of business by wholesalers, resellers and consumer installation operators.

The National Energy Fund (NEF) is a buffer between the real oil cost and the price paid by the Namibian consumers including the industry. It was created among others to regulate the ups and downs on the fuel market. The total of under-recoveries including interests corresponds to the amount the NEF owes to the 5 downstream companies operating in Namibia. If the situation becomes unbearable, the Ministry of Finance will have to step in and bail out the fund. In SADC every NEF has been bailed out at least once since their establishment.

Budget implications

Over the last five years SADC countries have experienced rising inflation rates and interest rates have been even higher than the governments' forecasts due to rising oil prices. Raising energy prices overturn the budgets of both public and private organisations and put them under immense pressure.

Reactions of end-users

The opinion on the fluctuating prices of energy and other basic commodities has changed dramatically. The population became aware of the reasons behind the market trends through the media and especially in the government gazette. Every price increase worsens the already desperate financial situation faced by many households, with food and electricity prices already wreaking havoc in the lives of nearly all Namibians and the SADC at large. Dismissals caused by non-affordable energy prices in different industry branches have wrought severe consequences not only on the affected

workers and their families but also on the national economy as a whole, which is already reeling from a massive unemployment rate of around 40%.

With household debt at a record 78% of disposable income, the majority of SADC citizens are likely to slump even further into debt. Add to that escalating food and oil prices, as well as electricity, education and medical costs, and the future does not look bright. Fuel costs reached new highs in August 2008 when the regional petrol and diesel prices rose to 9.96 Rand and 11.00 Rand per litre respectively. Commuters have been hardest hit by fuel prices with bus and taxi fares also on the rise. The impact is also evident in the number of cars being repossessed by banks, with vehicle repossessions reportedly soaring to 25% in the first two months of 2008.

Workers' Unions such as COSATU have threatened protests over the escalating cost of living. Companies, especially small ones, will face crippling increases in their costs and thousands of jobs could be lost.

Farmers, fishermen and miners all lamented the increase, which threatened to derail all intended new budgets for investments and could also lead to bankruptcy in some extreme instances. For many farmers it has been the final nail in the coffin as they just faced a taxing drought. The fishing, agricultural and mining industries, the economic mainstays of coastal countries such as Namibia, are the major export revenue earners and employers. These three sectors use heavy-duty equipment, which consume many litres of fuel per month. For major players in the fishing industry the increase of the diesel price has put severe pressure on their operations as input costs have spiralled. In the mining business, Roessing Uranium, one of the major mining outfits in the region, announced that the mine's fuel bill and the impending power crisis had affected operating costs. In Namibia alone the mine uses about 1.6 million litres of diesel per month. With the diesel price increase it had added another NAD 14 million to diesel expenses for the remainder of the year. The Namibian Chamber of Mines stated that the diesel price hike has dangerously affected the mines' profitability and had a negative impact on the mining industry.

Reactions of political decision-makers

In response to the rising energy expenditures, governments in the region dropped all import duties on rice, wheat, yellow maize and vegetable oil, 'mahangu' and grains. Excise duties and taxes were removed from oil and fuels used by the countries' fishermen. Fertilisers

were subsidised and the farming community in Zimbabwe was given free tractors. These measures will naturally impact negatively on future government budgets like that of Namibia's where 93% of its revenue and income (Projects 2008/2009) will come from tax revenues.

By generally increasing energy prices, city councils in SADC increased utility tariffs in response to rising fuel prices and energy prices. In Namibia, the city council came under fire from the Namibia Farm Workers' Union (Nafwu) over the increases in utility tariffs. The Union argued that city councilors were more concerned about protecting their own salaries and benefits than trying to be fair and reasonable to the communities they serve. Consumer awareness is high to the point that the Ministry of Mines and Energy has been requested to intervene and check the accuracy of fuel pumps across the countries. Liaising personnel between consumers and oil dealers have advocated for openness from the government concerning fuel prices. They argue that it would be easier if clients were well informed about the factors in adjusting prices such as oil prices, exchange rates, interest rates and shipping costs.

4.5 Rwanda



Price in US¢/litre	Diesel	Gasoline
November 2006	108	111
November 2008	137	137

Population (2005)	9.5 million
Urban population (% of total) (2010 forecast)	18.9%
Population (%) below \$1.25/day (2000)	76.6%
Oil importation (%) 2006	100%
Traditional biomass (%) of total primary energy supply (2006)	n.a.
Gross National Income (GNI)/Capita in PPP USD (2008)	USD 1,080

Source: World Development Report 2010, Human Development Report 2009, IEA 2009

Fuel pricing

Price adaptation mechanisms

Rwanda follows the policy option that the consumer (e.g. car owner, passenger) pays the oil price increase of the world market as the government refrains from granting subsidies to help people acquire fuels or energy. A detailed analysis of Rwanda’s fuel price development as illustrated above reveals the interesting fact that it follows a blind policy of passing all price increases to the consumer. There are a series of different taxes (e.g. for import, roads, VAT, statistics, storage) levied worldwide on all traded goods and fuels in addition to transport and refinery costs. Most of these taxes

Figure 17: Recent trends in fuel price increases in Rwanda.



are calculated ‘ad valorem’, that is they may rise parallel to price increases of imported crude oil. Such a complex system of different fees and taxes may involuntarily lead to an uncontrolled increase of so-called ‘windfall profits’ for the government. In this case the state profiteers from the price speculation of the world markets.

However the analysis of the above data on diesel and crude oil prices from November 2004 to June 2007 shows that in Rwanda the difference between the sales price and crude oil price (i.e. mainly the state taxation including refinery and transport) remained nearly constant over a period of nearly 4 years at a rate of US 72 to 79 cents per litre. Thus only the world market increase was passed on to the consumer but the state made no ‘windfall profit’ because the total tax amount on fuel was ‘frozen’. Furthermore it is obvious that the lack of subsidies lower the impacts of rising oil prices.

Regulatory framework

The Rwanda Utilities Regulation Agency (RURA) was established in 2001 to regulate transport prices for urban minibuses and inter-urban bus transport. During the period of skyrocketing fuel prices RURA took on the additional task of listing price guidelines for taxis, private minibuses and big public buses, which was aimed at all public transport operations in Rwanda. This protected the consumers against inappropriate price increases by

service operators. Price lists were displayed at the main bus and taxi terminals in Kigali. There is no further evidence of price regulation mechanisms in Rwanda.

Reactions of end-users

Private minibuses mainly operate the public transport in Kigali, which has 800,000 inhabitants. However taxicabs are available at ten times the fare of minibuses. In the last few years a fleet of motorbike taxis has been established. They charge double the price of the minibuses but are up to five times cheaper than normal taxis. Their advantage is their lower fuel consumption compared to other means of transport. Thereby, *transport businesses* have reacted to a certain extent to the rising prices.

Reactions of political decision-makers

The Government of Rwanda enacted several short and long-term policies to react to the increasing fuel prices of the few last years. Transport efficiency in sub-Saharan Africa is often blocked by numerous checkpoints. In Rwanda the government once counted more than 10 roadblocks on the Kigali-Gatuna road at the Ugandan border (250 km). Often bribes (USD 10) have to be paid to accelerate the procedure. Through government action checkpoints were reduced both at the border and in Kigali, thus expediting travel and decreasing the overall fuel consumption by this simple means. A further feature of the African continent is the rapid increase of urbanisation. While in small towns it is still usual to eat at home at noon, this may not be advisable in cities with more than 100,000 inhabitants, where lunch has to be taken at the workplace. As such the government tries to encourage people to have their lunch at work, thus preventing traffic jams and the waste of fossil fuels. In many African countries 4x4s and pick-up vehicles are not yet taxed as passenger cars, but at low tariffs as trucks. This happened in the past in Tanzania where up to 25 % of the total fleet were all-terrain vehicles. As in Germany, a new taxation policy for 4x4s and pick-ups may cost up to 9 times the previous tax amount. Heavy 4x4 vehicles and pick-ups are often taxed as 'goods vehicles'. This could cause heavy losses for the government. As a landlocked country dependent on supply lines crossing neighbouring countries, Rwanda has a Strategic State Fuel Reserve. A pipeline from Eldoret in Kenya is being planned, but currently all fuel is supplied via trucks from Mombasa. Furthermore it is felt that higher strategic reserves and better contingency planning are necessary. The

Rwandan government radically reduced car ownership among state agencies and sold the cars to the private sector. Now cars may be rented from privately managed companies. In 2005 the government decided to sell off its entire fleet of government service cars following the Zero Car Concept. Only ministries were left with a minimum of cars. For government officials wanting to travel within Rwanda, their respective government branches would have to hire the cars from one of three private companies. In most sub-Saharan countries road transport is limited to daytime. However this is a major bottleneck for increasing travel. Substantial investments into the road network are needed to make them 'night-safe' as in Turkey or Pakistan where roads are used 24 hours and where trucks travel more than 150,000 km per annum compared to 40,000 km at present in Rwanda.

4.6 Uganda



Price in US\$/litre	Diesel	Gasoline
November 2006	117	101
November 2008	130	122

Population (2007)	30.6 million	
Urban population (% of total) (2010 forecast)	13.3 %	
Population (%) below \$1.25/day (2005)	51.5 %	
Oil importation (%) 2006	100 %	
Traditional biomass (%) of total primary energy supply (2006)	92.1 %	
Gross National Income (GNI)/Capita in PPP USD (2008)	USD 1,140	

Source: World Development Report 2010, Human Development Report 2009, IEA 2009

Despite the low consumption of petroleum products as an energy source, they remain significant in Uganda’s energy sector. Recent statistics show that imported petroleum products in 2007 amounted to USD 647million. This constituted 18.5 % of all imports, the highest percentage of all goods. Out of a total of USD 1,199 million spent on donor-funded development activities and projects, it was reported that petroleum and other fuel and energy affairs cost USD 198 million.

Currently all petroleum products consumed in Uganda are imported. As Uganda is landlocked, all oil products land at the Mombasa or Dar es Salaam ports on the Indian Ocean and are then transported some 2,000 km inland to Uganda. This involves a turn-around time of some 15 to 25 days. This is why the Ugandan authorities are often preoccupied with ensuring the security of supplies.

The recent discovery of oil reserves in Uganda and the anticipated production of crude oil as early as 2009 is considered an opportunity for the country to enhance its growth rate mainly by undertaking a range of infrastructure projects. The Early Production Scheme (EPS) plans to expedite the commencement of production of some 4,000 barrels per day, establish a mini refinery to produce diesel, kerosene and heavy fuel oil, and build an electricity generation plant of some 50–85 MW to be connected to the grid.

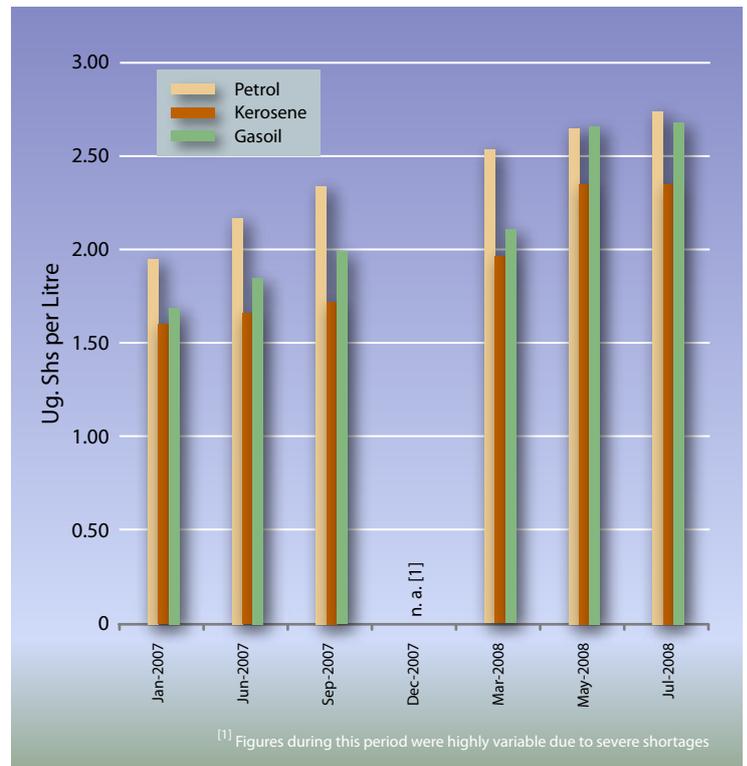
The adulteration of products and tampering of pump meters were reported to have increased during 2007.

Fuel pricing

Price adaptation mechanisms

The Ugandan energy market, which includes petroleum supplies and distribution, is fully liberalised. Although the electricity sub-sector is technically liberalised it benefits from strong government action and support. As

Figure 18: Recent average fuel pump prices (UGX) in Uganda.



there were no subsidies for petroleum, dramatic price increases have obviously occurred just like world oil prices as illustrated in the table above.

Despite these negative effects the government of Uganda basically does not participate in price adjustment. However the government monitors the prices by physically visiting fuel pump stations to record and collect statistics on prices. This is mandated in the Petroleum Supply Act 2003. Government intervention occurs only when price hikes take an abnormal twist. For example in January 2008, prices increased fivefold when supply was disrupted after riots in Kenya. The government threatened to withdraw the licences of some dealers who had taken advantage of the severe shortage to inflate prices.

The Ugandan government levies tax on petroleum products in the form of excise duty. In 2007, the levy was UGX 720 per litre of petrol, UGX 200 per litre of kerosene and UGX 450 per litre of diesel. In June 2008, the Minister of Finance increased the levy to UGX 850 per litre of petrol, UGX 200 per litre of kerosene and UGX 530 per litre of diesel. Since the levy is fixed during the financial year, it does not contribute to the price adjustment. However it is considered the highest fuel tax rate in the region and many consumers use this to blame the government for the fuel price.

The government has been considering higher supply stocks as a price adjustment mechanism. Storage tanks for three weeks supply are available. Another mechanism to check prices is to increase competition by licensing more distribution companies.

Regulatory framework

The Energy Policy for Uganda (2002) and the Renewable Energy Policy for Uganda (2007) govern Uganda's energy sector. Key institutions in the sector are the Ministry of Energy and Mineral Development, the Electricity Regulatory Authority, the Rural Electrification Board, donor agencies and the private sector.

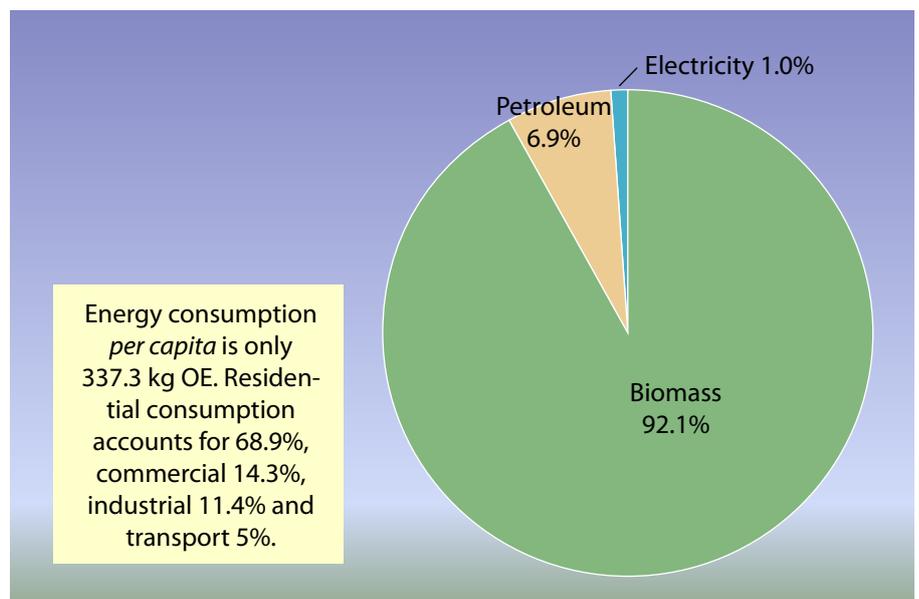
Public transportation in Uganda is run completely by private individuals or firms with little or no regulation. At government level, only public transport vehicles require an operating licence.

Several individual operators have formed associations on an industry or regional basis to try to organise the transport business environment. In principle these associations have assumed both management and regulatory roles. They set and adjust prices that their members can charge.

Budget implications

The government, as a major consumer of services in the country, experienced a substantial increase in expenditure due to high inflation, the appreciation of the shilling against the US dollar (the dominant currency in the country's foreign transactions), and steep rises in world oil and food prices. Therefore government expenditure for goods and services was reported to have amounted to UGX 1,409 billion out of a total of UGX 4,119 billion in 2007/2008. This was reported to have risen by 42% over the previous year and was 15% more than the budget estimate. This development was attributed to inflationary pressure. Indeed, the Uganda Bureau of Statistics reported an inflation rate of 12.4% in July 2008 and 15.4% in August 2008. The minister also expected a decline in the overall balance of payments from a surplus of USD 745.3 million recorded in 2006/2007 to a deficit of approximately USD 682.6 million in 2007/2008. Increases in fuel prices have also affected tax revenue. In 2007/2008, industries and companies were exempted from paying taxes on diesel use for electricity generators and the government also removed taxes on heavy fuel oil, which is used for thermal power generation.

Figure 19: Energy supply by energy source in Uganda.



Reactions of end-users

First, the *household* survey indicated that 93 % of the respondents blamed the government for the increasing fuel prices while the remaining 7 % claimed that it is a global issue that has to be solved internationally.

Besides this sceptical opinion of the government, there are several effects on the households. They can no longer save since they spend much on fuel. Small business owners like matooke dealers now face higher operating costs. (Matooke is one of Uganda's national dishes). Households also claim they can no longer meet all their basic needs since everything consumed depends on fuel prices. Small businesses like retail shops are also on the verge of collapse given increased operating costs.

Regarding adjustments to the high fuel prices, 46 % of households have continued to consume the expensive fuels claiming that they have no other option. Furthermore 34 % have resorted to consuming cheaper fuels by

Box 4: Tips by the population

Some 53.3% of the households suggested that the government reduce taxes on fuel and basic goods and services, and instead increase taxes on luxurious products. The other 46.7% suggested that the government speed up the drilling of the discovered oil in the country.

Other recommendations include:

- Reinstating the public transport system that originally existed in the country, which would reduce transport costs.
- Working with stakeholders like the fuel companies to reduce taxes and hence lower prices.
- Revising government policies on fuel pricing, which would probably mean the government imposing price levels.

substituting their current fuels with others. For transportation, 90 % of the respondents now walk over small distances instead of taking taxis as high fuel prices have also increased transport fares.

In the *transport sector*, some 79 % of public transport operators have increased their fares arguing that they have to stay in business. This means that they have passed on the problem to the people they serve. 57 % of the respondents said they had considered some fuel conservation measures, 29 % had implemented them while 14 % had not even considered any fuel conservation measures for their vehicles. Among the 29 % who had considered some measures, half said that they have had to reduce their driving speed and service their vehicles on time.

All the respondents among big *businesses* have been affected and are no longer as efficient as before. Some officials reported that their businesses have stalled. The surveyed firms disclosed that they had not developed any strategies of their own to cope with the situation. Instead they claimed that they have no option but to live with it. As a result, their operating costs have since increased. Some were hopeful that the situation might stabilise in the future. Among the business firms, 80 % had no plans of buying more generators since fuel is expensive while the other 20 % had plans of expanding their generator capacities. All the surveyed firms had not considered alternative fuels for their generators claiming that they only consume diesel.

Reactions of political decision-makers

Steps are being taken to establish an institutional framework for the implementation of the Renewable Energy Policy. This includes the setting up of an Energy Commission and the preparation of a White Paper on a Renewable Energy Bill to be presented in Parliament.

4.7 Tanzania



Price in US\$/litre	Diesel	Gasoline
November 2006	99	104
November 2008	130	111

Population (2007)	41.3 million
Urban population (% of total) (2010 forecast)	26.4%
Population (%) below \$1.25/day (2000)	88.5%
Oil importation (%) 2006	100%
Traditional biomass (%) of total primary energy supply (2006)	91.0%
Gross National Income (GNI)/Capita in PPP USD (2008)	USD 1,230

Source: World Development Report 2010, Human Development Report 2009, IEA 2009

As a 100% importer of petroleum fuels Tanzania has no choice but to purchase fuels at world market prices. Hence the pump price for petroleum fuels in Tanzania follows world prices. Prices for gasoline, diesel and kerosene increased at a steady rate, doubling within 22 months between January 2004 and July 2006. They stabilised and decreased slightly between July 2006 and July 2007. Thereafter prices increased at a rate of 50% within 6 months. The price increase has affected many sectors especially transportation and consumer products especially staple food.

Consequently additional costs are transferred to the end-users that affect their livelihoods.

Fuel pricing

Price adaptation mechanisms

Pricing is done independently by individual petroleum trading companies. The Energy & Water Utilities Regulatory Authority of Tanzania (EWURA) monitors prices to ensure that the companies do not charge high prices for fuels. EWURA issues indicative pump

prices on a monthly basis by adding operating costs, tariffs and margin profits to the world market fuel prices. The effect of price changes on the world market takes approximately three weeks to reach the Tanzanian market after orders are placed.

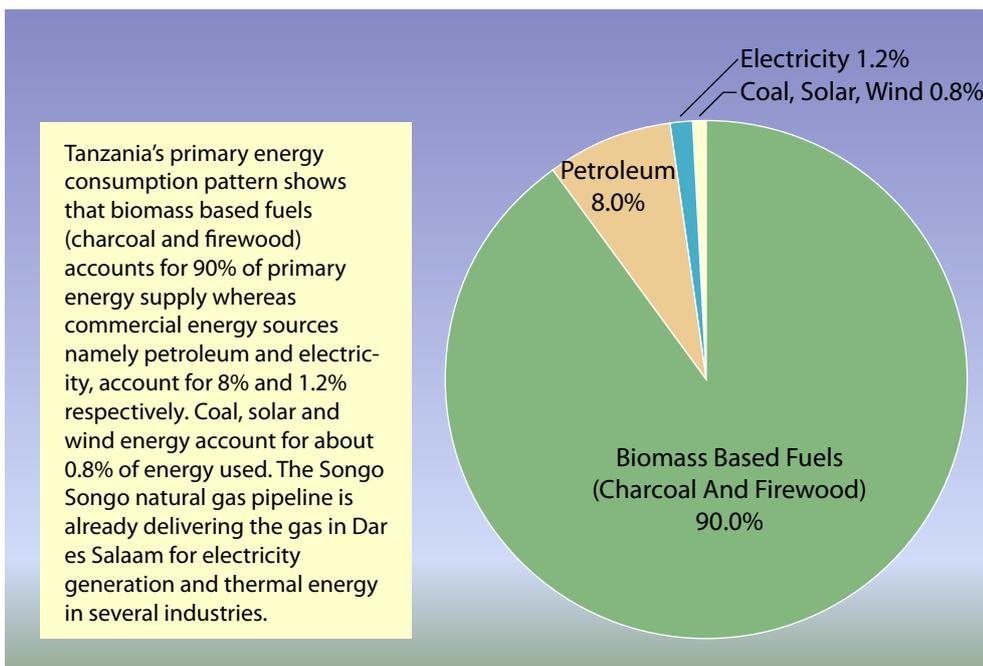


Figure 20: Tanzania's primary energy consumption pattern.

Regulatory framework

Energy pricing is regulated by EWURA, which commenced its operations on 1 September 2006. EWURA’s role is to regulate the prices of petroleum products (mainly fuels and electricity) to ensure fair prices for the end-users. Besides issuing indicative prices, EWURA monitors pump prices of all companies. According to EWURA’s officials, deviation of pump prices from EWURA’s indicative prices has never exceeded 2% and is usually within the range of 0.7%.

Fares for public transport including city commuter buses and long distance buses are set and controlled by Surface and SUMATRA. SUMATRA, which started operating on 20 August 2004, is a multi-sector regulatory agency established by the Act of Parliament No. 9 of 2001. SUMATRA’s roles and functions include promoting the availability of regulated services to all consumers including low income, rural and disadvantaged consumers, and regulating rates and charges. Operators of commuter and long distance buses cannot increase fares unless SUMATRA approves. It regulates a sensitive sector where customers prefer stable and low fares while operators prefer increasing fares. While bus operators trigger fare increases, the trigger for fair reductions is unclear. However SUMATRA can exercise its power to reduce fares when petroleum prices decrease.

There are no specially prepared policies to mitigate the effect of high energy prices. However there are policies that focus on the availability of affordable energy to the public. One such policy is the National Energy Policy of 2003.

Reactions of end-users

Increased **fuel prices** have a negative impact on the daily expenditures of most of Dar es Salaam’s residents. All respondents complained of high expenditures for most of their basic daily needs. Respondents of an

informal survey listed food, fuel and transport fares as the most affected commodities.

Personal mobility within and outside the city has been affected by the rising fuel prices. About half of all respondents have changed mobility patterns to accommodate the high energy prices. Car owners have changed driving patterns. They now use public transport and/or drive less far on weekends. Low-income groups use public transport less and some are obliged to walk on foot instead.

Given the high energy prices, business in the transportation sectors became less profitable and it became difficult to operate using old fares. In June 2008 commuter and long distance bus operators from many municipalities nationwide applied for a fare increase of 20–100%

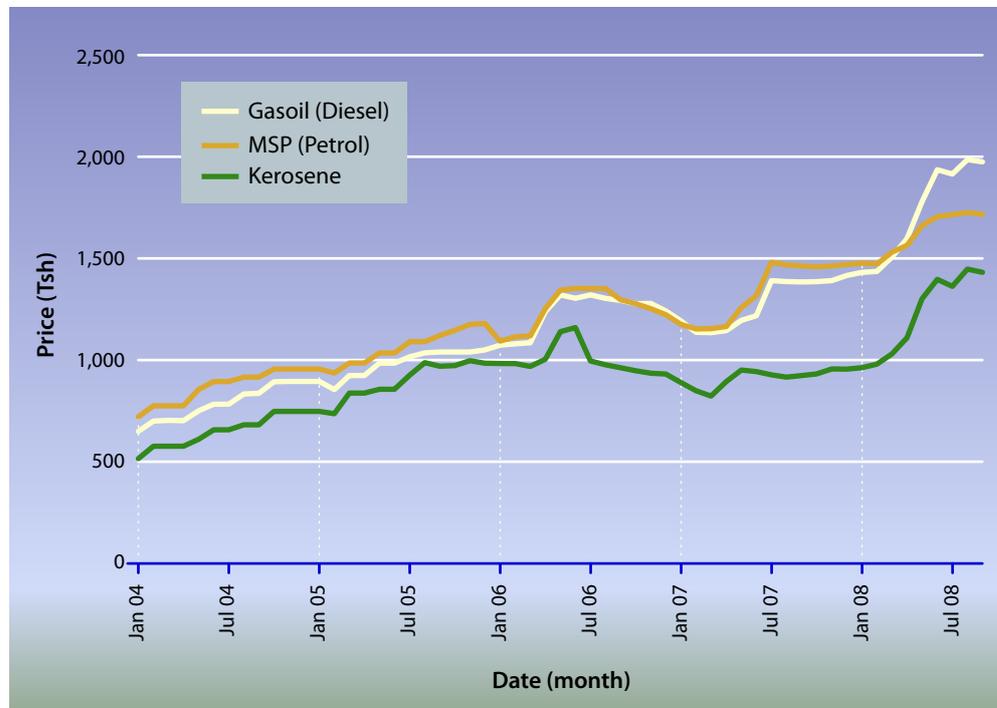


Figure 21: Trend of fuel pump prices in Dar es Salaam.

above the fares set by SUMATRA in 2006. The grounds for application included rising fuel and lubricant prices, devaluation of the Tanzanian Shilling which negatively affected the prices of imported spare parts and tyres, adjustment of the Government Minimum Salary, fees and levies, insurance premiums, income tax, road licence fees and maintenance costs. SUMATRA conducted an investigation, approved the requests and issued new commuter and bus fares on 1 August 2008. The decision was unpopular among commuters; in Dar es Salaam, primary school students demonstrated against the decision to increase their bus fares by 100% from TZS 50 to 100 (approximately US 9 cents).

All bus operators indicated high operating costs arising from high fuel prices. All operators reported decreasing volumes of passengers after SUMATRA issued new fares on 1 August 2008. It appears that commuters are not yet used to the new fares and more time is needed before the market stabilises.

Truck operators had mixed opinions. While they are unregulated by any authority, they face competition among themselves and high operating costs arising from high fuel prices. All operators agree that cargo volumes have not decreased. However operators of heavy duty trucks (more than 10 tons) reported a reduction of customers with lower tonnage loads. Such customers tend to hire services from low tonnage truck operators (approximately 3–5 tons) at a lower cost.

Within the business sector, one adaptation option for petroleum fuels is natural gas. To date, more than 20 companies have replaced expensive heavy industrial oil or industrial diesel with cheaper natural gas for power production or thermal applications.

Reactions of political decision-makers

The government is promoting investments in biofuels to produce gasoline and diesel substitutes and their blends are already available around the country. Biofuel production and utilisation will provide future adaptation options against high world petroleum prices. However the exercise is being conducted without any policy and registration for biofuels, which might not provide adequate future cushioning options. Moreover foreign investors looking for carbon credits and the high biofuel demand in the European Union drive the biofuel agenda. The government is trying to catch up by creating biofuel guidelines, which will be modified later into law.

This year the Tanzania Petroleum Development Corporation (TPDC) initiated a project called the compressed/piped natural gas (CNG/PNG) project for households, institutions and vehicles in Dar es Salaam. The project intends to reduce dependency on popular traditional fuels (wood/charcoal), imported LPG and petroleum. The project will install infrastructure to distribute and supply CNG/PNG to households, institutions and vehicles in Dar es Salaam city and later to other regions. TPDC intends to sell the gas for domestic use at a price lower compared to other forms of energy to reduce the hardship experienced through high energy prices and the use of charcoal. TPDC plans to price the gas at approximately 60–70% less than LPG or charcoal with the same energy equivalent.



5. Freedom of information – publicise fuel price information

In 2008 substantial price increases of transport fuels led to growing public interest in many countries regarding the setting of domestic fuel prices, their composition and the global and national factors that determine local fuel prices.

There is outrage when prices are arbitrarily increased in terms of frequency, scale and in comparison to other goods. This public outrage —sometimes expressed through strikes and blockades but more often through political haggling— can constitute a major element in the national political sphere and consume vital political, social and economic resources.

In numerous countries especially those with ad hoc pricing mechanisms, decisions on fuel prices are made behind closed doors; the wider public is subsequently informed of new price levels but is kept in the dark about the price composition, the rationale for the price increases and the purpose of imposed taxes and levies.

Furthermore most countries will eventually opt to detach themselves politically from setting fuel prices especially given the high volatility of crude oil prices and the often limited ability of national decision-makers to influence import price levels. This depoliticisation of pricing is a welcome trend that allows price levels to be designed appropriately in order to increase energy efficiency. Highly politicised prices as observed for example in Indonesia, Iran or Venezuela, tend to be very low and do not respond to international price trends. Yet too often they fail to achieve their political goal namely, to protect the poor.

While it will not relieve politicians of their key obligations of accountability and good governance, better communication of fuel price policies may help mitigate the socio-political impact of fuel price increases and thereby help protect political leaders from the threat of turmoil and potential, unnecessary bloodshed.

Better communication of fuel price information is also an indispensable precondition to respond to the calls of the G-20 and other players to reduce subsidies for fossil fuels in order to combat climate change and to increase energy efficiency.

Seen from another angle, there is no justification to withhold price information of a basic commodity. At least the information on taxes, levies and other charges imposed by governmental entities should be publicised.

Therefore we strongly urge decision-makers to:

- Make information on fuel prices public and easily accessible;
- Publish information on taxation levels and composition of fuel prices;
- Provide information on determinants for pricing, on frequency of updates and the underlying formula if automatic mechanisms are applied.

In this age of web 2.0, all information on national fuel prices and taxation policies should be made available on national webpages and open to wider public scrutiny. In our opinion good sources provide information on:

- Actual price data for all fuel products;
- Timelines of prices;
- Price components (production and/or import prices, taxation levels, and other charges);
- Explanation of structure and modus operandi of pricing mechanisms (if applied);
- Underlying legislation.



Figure 22: The National Petroleum Authority, Ghana.

Source: <http://www.npa.gov.gh/#>



Figure 23: Department of Mineral and Energy, South Africa.

Source: <http://www.dme.gov.za/energy/documents.stm>

This responsibility could lie with governmental entities, the private sector, consumer-protection groups or other stakeholders.

As always there are countries with online resources that meet the criteria above. Good examples include



Figure 24: Europe's Energy Portal.

Source: <http://www.energy.eu/#prices>

South Africa (operated by the Department of Minerals and Energy), Ghana (operated by the National Petroleum Authority) or the European Union, which provides an extensive summary of its Members States' fuel taxation issues.

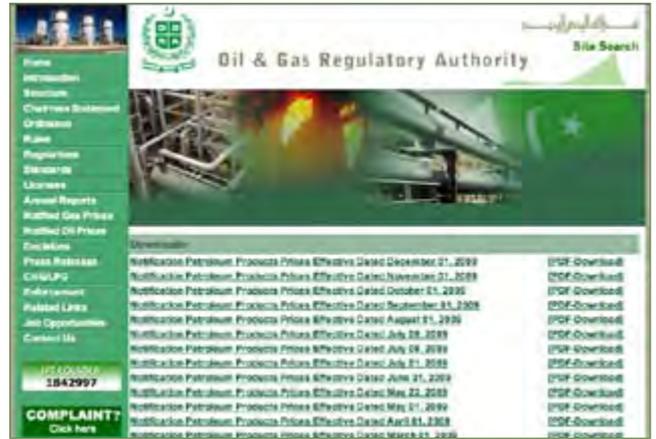


Figure 25: Oil and Gas Regulatory Authority (OGRA), Pakistan.

Source: http://www.ogra.org.pk/cats_disp.php?cat=83

5.1 Sources of fuel price data of G-20 and N-11 countries

As part of our work on international fuel prices, GTZ continues to compile and publish information on available sources. The following table lists the resources, fuel prices and fuel taxation of 55 countries. As the G-20 and Next-11 countries are the major consumers of fuels, our survey covers them all. However even here there is a lack of some information (no public good provision).

Please feel free to add your country’s links by sending it to Armin.Wagner@gtz.de.

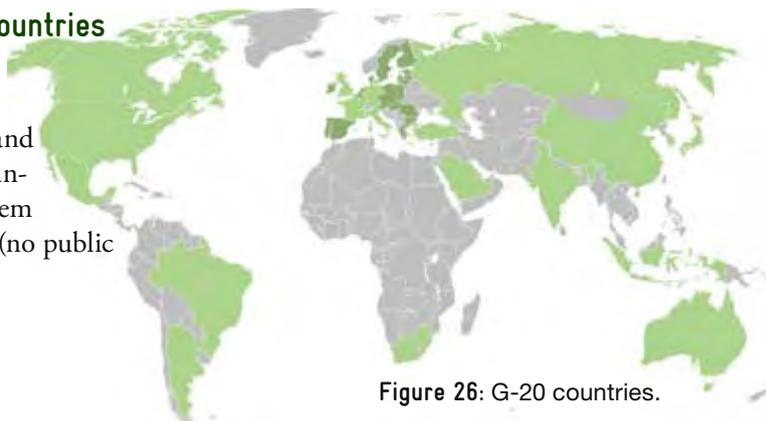


Figure 26: G-20 countries.

Group of twenty finance ministers and central bank governors (G-20)

Country	Fuel price information*
European Union**	http://www.energy.eu/#prices On taxation: http://ec.europa.eu/taxation_customs/taxation/excise_duties/energy_products/rates/index_en.htm
United States	http://tonto.eia.doe.gov/oog/info/gdu/gasdiesel.asp
Japan	http://oil-info.ieej.or.jp/price/price.html
Germany	http://www.energy.eu/#prices
China	n.a.
United Kingdom	http://www.energy.eu/#prices
France	http://www.energy.eu/#prices
Italy	http://www.energy.eu/#prices
Canada	http://nrcan.gc.ca/eneene/sources/pripri/gazess-eng.php On taxation: http://www.nrcan.gc.ca/eneene/sources/pripri/taxpet-eng.php
Brazil	http://www.anp.gov.br/preco
Russian Federation	http://www.mfa.ru/mfa.asp
India	http://www.bharatpetroleum.com/YourCorner/PetroPrice.aspx?id=5
South Korea	http://www.keei.re.kr/main.nsf/index_en.html
Australia	http://www.fuelwatch.wa.gov.au/ http://www.accc.gov.au/content/index.phtml/itemId/878867
Mexico	http://dgcnesyp.inegi.gob.mx/cgi-win/bdieintsi.exe/NIVD10000500030030#ARBOL
Turkey	http://www.shell.com/home/page/tu-tr/app_profile/pompa.html
Indonesia	http://www.shell.com/home/Framework?siteId=id-en&FC2=/id-en/html/iwgen/leftnavs/zzz_lhn3_3_0.html&FC3=/id- http://www.pertamina.com/index.php?option=com_content&task=category&sectionid=24&id=125&Itemid=846en/html/iwgen/shell_for_motorists/fuels/fuels_our_price_020909.html
Saudi Arabia	n.a.
South Africa	http://www.dme.gov.za/energy/liquid_prices.stm
Argentina	http://energia.mecon.gov.ar/downstream/DS_PJur.asp

Figure 27: N-11 countries.



Next Eleven (N-11)

Country	Fuel price information*
Egypt	n.a.
Bangladesh	n.a.
Indonesia	http://www.shell.com/home/Framework?siteId=id-en&FC2=/id-en/html/iwgen/leftnavs/zzz_lhn3_3_0.html&FC3=/id-http://www.pertamina.com/index.php?option=com_content&task=category&sectionid=24&id=125&Itemid=846en/html/iwgen/shell_for_motorists/fuels/fuels_our_price_020909.html
Iran	n.a.
Mexico	http://dgcnesyp.inegi.gob.mx/cgi-win/bdieintsi.exe/NIVD10000500030030#ARBOL
Nigeria	http://www.pppra-nigeria.org/
Pakistan	http://www.ogra.org.pk/cats_disp.php?cat=83
The Philippines	http://www.doe.gov.ph/OPM/Pumpprices.htm
South Korea	http://www.keei.re.kr/main.nsf/index_en.html
Turkey	http://www.shell.com/home/page/tu-tr/app_profile/pompa.html
Vietnam	http://www.petrolimex.com.vn/

Other countries

Country	Fuel price information*
Chile	http://www.cne.cl/cnewww/opencms/06_Estadisticas/energia/Hidrocarburos.html
Colombia	http://www.aciem.org/bancoconocimiento/i/indicessaucedo2007/indicessaucedo2007.asp
Costa Rica	http://www.recope.go.cr/info_clientes/precios_productos/
Ghana	http://www.npa.gov.gh/petroleum-prices/
Guatemala	http://www.mem.gob.gt/portal/Memdocuments/dgh/precios/diarios.xls
Honduras	http://www.cap.gob.hn/portal/historiales/
Nicaragua	http://www.ine.gob.ni/hidrocarburos.html
Norway	http://www.statoil.no/FrontServlet?s=sdh&state=sdh_dynamic&viewid=drivstoff_priser
Singapore	http://www.spc.com.sg/home
Switzerland	http://www.erdoel-vereinigung.ch/de/erdoelvereinigung/Preise.aspx
Thailand	http://www.shell.com/home/content/thailand-en http://www.pttplc.com/en/nc_oi.aspx

* If available, pages with additional and more detailed information on taxation policies are indicated.

** Covers EU-27: Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

5.2 Recommended reading and links on increasing and volatile oil prices

GTZ constantly searches for research papers and publications related to various aspects of fuel pricing. A brief collection is presented below.

Impact

“ Crude Oil Prices: Trends and Forecast

IMF Working Paper

This paper analysed oil prices during 2000M1-2007M10. To exhibit the effect of monetary policy, the paper distinguished two samples 2000M1-2003M4 and 2003M5-2007M10.

<http://www.imf.org/external/pubs/cat/longres.cfm?sk=21965.0>

“ Food and Fuel Prices – Recent Developments, Macroeconomic Impact, and Policy Responses – An Update

IMF Policy Paper

These findings reinforce the importance of adopting appropriate policies to maintain macroeconomic stability while protecting the poor.

<http://www.imf.org/external/pp/longres.aspx?id=4280>

“ The Balance of Payments Impact of the Food and Fuel Price Shocks on Low-Income African Countries: A Country-by-Country Assessment

IMF Policy Paper

This note discusses the implications of the price shocks for the balance of payments of low-income countries in sub-Saharan Africa. To this end, the note identifies a list of 18 countries in the region that are especially hard-hit and that consequently face a pressing need for additional balance of payments and budget support.

<http://www.imf.org/external/pp/longres.aspx?id=4267>

“ IMF To Investigate Factors Behind Oil Price Surge

IMF Survey

Responding to a call by G8 ministers, the IMF will prepare an analysis of the real and financial factors behind the recent surge in oil and commodity prices, their volatility, and the effects on the global economy, Managing Director Dominique Strauss-Kahn says in Osaka.

<http://www.imf.org/external/pubs/ft/survey/so/2008/new061408a.htm>

“ Do High Oil Prices Matter? – Evidence on the Mobility Behavior of German Households

Research Paper

Focusing on travel survey data from Germany, this paper investigates the determinants of automobile

travel, with the specific aim of quantifying the effects of fuel prices and fuel economy.

<http://www.economicclimatechange.com/2008/10/do-high-oil-prices-matter-evidence-on.html>

“ How Do Gasoline Prices Affect Fleet Fuel Economy?

Research Paper

Exploiting a rich data set of passenger vehicle registrations in twenty US metropolitan statistical areas from 1997 to 2005, the authors examine the effects of gasoline prices on the automotive fleet's composition. They find that high gasoline prices affect fleet fuel economy through two channels: (1) shifting new auto purchases towards more fuel-efficient vehicles, and (2) speeding the scrapping of older, less fuel-efficient used vehicles.

<http://www.economicclimatechange.com/2008/11/how-do-gasoline-prices-affect-fleet.html>

“ Analysis of the Impact of High Oil Prices on the Global Economy

IEA Working Paper, 2004

This paper reviews how oil prices affect the macroeconomy and assesses the extent to which the economies of OECD and developing countries remain vulnerable to a sustained period of higher oil prices. It summarises the findings of a quantitative exercise carried out by the IEA in collaboration with the OECD Economics Department and with the assistance of the International Monetary Fund (IMF) Research Department.

http://www.iea.org/textbase/papers/2004/high_oil_prices.pdf

“ The Challenge of Higher Oil Prices

ADB Asian Development Outlook, 2005

The research paper gives helpful advice on which way to choose in adjusting to higher oil prices in Asia. It further elaborates on the question of why oil prices are so high and proposes policy recommendations.

<http://www.adb.org/Documents/books/ADO/2005/update/ADU2005PART3.pdf>

“ The Impact of Higher Oil Prices on Low Income Countries and the Poor

World Bank Working Paper – Robert Bacon, 2005

This note is designed to provide a brief overview of the impact of current oil price increases on low-income countries and poorer households.

<http://www.esmap.org/filez/pubs/29905HigherOilPricesBacon.pdf>

“ The Impact of Higher Oil Prices on the Global Economy

IMF Working Paper – Michael Mussa, 2000

This paper comments on the extensive discussion of

the potential impact of higher oil prices and focuses on affected sectors.

<http://www.imf.org/external/pubs/ft/oil/2000/oilrep.pdf>

“ Understanding Crude Oil Prices

Research Paper – James D. Hamilton, 2008

This paper examines the factors responsible for changes in crude oil prices. It reviews the statistical behaviour of oil prices, relates these to the predictions of theory, and looks in detail at key features of petroleum demand and supply. It concludes that although scarcity rent made a negligible contribution to the price of oil in 1997, it could now begin to play a role.

<http://www.economicclimatechange.com/2008/11/understanding-crude-oil-prices.html>

“ Ghana: Evaluating the Fiscal and Social Costs of Increases in Domestic Fuel Prices

World Bank Working Paper – David Coady and David Newhouse, 2005

This paper reflects on the analysis of the fiscal and social implications of domestic fuel price increases in Ghana with specific focus on resulting impacts and distributions issues. It further identifies alternative approaches to mitigate the adverse effects of price increases on poor households and actual government policy response.

http://siteresources.worldbank.org/INTPSIA/Resources/490023-1120841262639/ch11_ghana.pdf

“ The Structure of the Oil Market and Causes of High Prices

IMF Working Paper – Pelin Berkmen *et al.*, 2005

This note examines how crude oil, futures, and petroleum product markets interact to determine market outcomes.

<http://www.imf.org/external/np/pp/eng/2005/092105o.htm>

Subsidies and taxing

“ Issues in Domestic Petroleum Pricing in Oil-Producing Countries

IMF Working Paper – Sanjeev Gupta *et al.*, 2002

This paper discusses issues relating to the domestic pricing of petroleum in oil producing countries. Moreover, it argues that petroleum subsidies are inefficient and inequitable. Nonetheless, the elimination of petroleum subsidies is often politically difficult, although countervailing measures and publicity campaigns can help engender support for reform.

<http://www.imf.org/external/pubs/ft/wp/2002/wp02140.pdf>

“ Fuel and Food Price Subsidies – Issues and Reform Options

IMF Working Paper

This paper discusses the key issues and policy options in the reform of subsidies for fossil fuels and selected

food commodities, and their implications for the work of the Fund.

<http://www.imf.org/external/pp/longres.aspx?id=4293>

“ Ecosystem Subsidies of Fossil Fuels

Research Paper – Davis Hodas

Ecosystems provide the invaluable service of collecting and storing solar energy as fossil fuels (*e.g.* coal, petroleum, and natural gas). These concentrated forms of energy were gifted to us by the sun and collected and stored for our use by ancient ecosystem services. However, our legal and economic systems fail to recognise the value of this ecosystem service that is embedded in fossil fuels. As a result, society uses fossil fuels as though they were free and inexhaustible.

http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1117564

“ Domestic Petroleum Product Prices and Subsidies: Recent Developments and Reform Strategies

IMF Working Paper – David Coady *et al.*, 2007

The paper reviews recent developments in the pass-through of international to domestic petroleum product prices, in the different fuel pricing regimes, and in fuel subsidies in a range of emerging market and developing economies.

<http://www.imf.org/external/pubs/cat/longres.cfm?sk=20608>

“ Fuel Price Subsidies in Gabon: Fiscal Costs and Distributional Impact

IMF Working Paper – Moataz El Said and Daniel Leigh, 2006

This paper looks at the fiscal cost and distributional impact of implicit fuel price subsidies in Gabon, where fuel prices have remained largely unchanged since 2002.

<http://www.imf.org/external/pubs/cat/longres.cfm?sk=19906.0>

“ The Magnitude and Distribution of Fuel Subsidies: Evidence from Bolivia, Ghana, Jordan, Mali and Sri Lanka

IMF Working Paper – David Coady *et al.*, 2006

This paper identifies the issues that need to be discussed when analysing the fiscal and social costs of fuel subsidies. Using examples from analyses recently undertaken for five countries, it also identifies the magnitude of consumer subsidies and their fiscal implications.

<http://www.imf.org/external/pubs/ft/wp/2006/wp06247.pdf>

“ Household Energy Supply and Use in Yemen: Volume I, Main Report – Chapter 5: Petroleum Product Subsidies

ESMAP Working Paper – Peter Meier *et al.*, p. 73–97, 2005

This chapter reviews the pricing system of petroleum products and the magnitude of the subsidies involved.
<http://go.worldbank.org/DW6H3NPHW0>

“ **Energy Subsidies: Their Magnitude, How they Affect Energy Investment and Greenhouse Gas Emissions, and Prospects for Reform**

UNFCCC Report – Trevor Morgan, 2007

This work represents a detailed analysis of energy subsidies with respect to size, impact and resulting political implications.

http://unfccc.int/files/cooperation_and_support/financial_mechanism/application/pdf/morgan_pdf.pdf

“ **Affordability and Subsidies in Public Urban Transport: What Do We Mean, What Can Be Done?**

World Bank Working Paper No. 4440 – Estupinan *et al.*, 2007

This paper reviews the arguments used to justify subsidy policies in public urban transport and finally substantiates that more effort should be devoted to improve the targeting of public urban transport subsidies.

<http://econpapers.repec.org/paper/wbkwbrwps/4440.htm>

“ **Impact of a Lower Oil Subsidy on Indonesian Macroeconomic Performance, Agricultural Sector and Poverty Incidences: a Recursive Dynamic Computable General Equilibrium Analysis**

PEP Working Paper – Oktaviani *et al.*, 2007

The study objective is to analyse the impact of reducing fuel subsidies on macroeconomic variables, the agricultural sector and income distribution. The results show that the reduction in fuel price subsidy tends to increase prices of industrial outputs that highly depend on fuel such as the transportation and fishery sectors.

<http://ideas.repec.org/p/lvl/mpiacr/2007-28.html>

“ **OPEC: Where Oil Markets Indeed are “Well Supplied”**

JEC Research Report, 2007

This paper briefly compares and analyses fuel price policies of OPEC members.

<http://www.house.gov/jec/Research%20Reports/2007/rr110-16.pdf>

“ **Petroleum Product Pricing In India – Where have all the subsidies gone?**

IEA Working Paper, 2006

Petroleum product pricing in India is frequently seen as a black hole of subsidies. Economists and oil companies complain about the impacts those subsidies have on public finances, financial performance of oil companies and demand-side management. However, on closer analysis, the issue of petroleum product pricing in India

is more complex than the one-way flow of subsidies reported in the press.

http://www.iea.org/textbase/work/2006/gb/papers/petroleum_product_pricing.pdf

“ **Understanding the Factors That Influence the Retail Price of Gasoline**

GAO Working Paper, 2007

A US-focused work that presents detailed information on the factors that influence the price of gasoline and where possible, why those factors have developed. Specifically, the work explains how gasoline is made and distributed in the US.

<http://www.gao.gov/new.items/d05525sp.pdf>

“ **Petroleum taxes: trends in fuel taxes (and subsidies) and the implications**

World Bank Working Paper – Robert Bacon, 2001

This recent World Bank analysis shows that taxes on petroleum products are a critical source of government revenue for low-income countries. The rates of these taxes will have to rise sharply as low-income economies develop. But policy-makers must be mindful of how taxes (and subsidies) affect the relative prices of fuels, since too large a difference in process between products can lead to fuel switching and adulteration, adversely affecting the government tax take and pollution levels.

<http://rru.worldbank.org/documents/publicpolicyjournal/240Bacon-831.pdf>

“ **Estimating the Effect of a Gasoline Tax on Carbon Emissions**

NBER Working Paper – Lucas W. Davis and Lutz Kilian

Although a large existing literature examines the sensitivity of gasoline consumption to changes in price, these estimates may not be appropriate for evaluating the effectiveness of a carbon tax. First, most of these studies fail to address the endogeneity of gasoline prices. Second, the responsiveness of gasoline consumption to a change in tax may differ from the responsiveness of consumption to an average change in price.

<http://www.economicclimatechange.com/2009/02/estimating-effect-of-gasoline-tax-on.html>

“ **Gasoline Taxes to Address CO₂ Emissions from Road Transport**

TRB Paper – Georgina Santos

This paper reviews different policies to reduce CO₂ emissions from road transport, with a special focus on gasoline taxes in the US and the UK. It is shown that gasoline taxes can reduce demand but the shadow price of carbon assumed plays an essential role and if too low, taxes are not enough to curb emissions.

<http://pubsindex.trb.org/view.aspx?id=882340>

“ Taxing Energy in the United States: Which Fuels Does the Tax Code Favor?

Center for Energy Policy and the Environment at the Manhattan Institute – by Gilbert E. Metcalf

This report offers a comprehensive overview of the energy-related provisions of the US tax code and their estimated impact on tax revenues. More important, this report indicates where the US tax regime as a whole is likely to direct energy investment.

<http://www.economicclimatechange.com/2009/01/taxing-energy-in-united-states-which.html>

“ Gasoline and Diesel Prices and Taxes in industrialised countries

Institut Français des Relations Internationales (IFRI) – Romain Davoust

This study looks at price and tax levels for automobile fuels in industrialised countries, the members of the Organisation for Economic Cooperation and Development (OECD). These issues will be examined in a comparative perspective. Gasoline and diesel, also known as diesel fuel, will be analysed. The primary source of statistics is the International Energy Agency's 'Energy Prices and Taxes' published in the second quarter of 2008. Most of the figures cited in the tables and graphs come from this report.

<http://www.ifri.org/files/Energie/Davoustang.pdf>

Policy responses

“ Sustainable Transport: A Sourcebook for Policy-Makers in Developing Cities

GTZ – Sustainable Urban Transport Project

The sourcebook consists of more than 27 modules and is intended for policy-makers in developing cities and their advisors. It covers the key topics to be considered when creating a comprehensive urban transport policy.

http://www.sutp.org/index.php?option=com_content&task=view&id=426&Itemid=72&lang=uk

“ Databases of Policies and Measures

International Energy Agency

Since 1999, the International Energy Agency (IEA) has worked with governments to collect information on energy-related climate change mitigation policies. Among the most popular IEA websites, this database is arguably the most comprehensive collection of national level policies on energy-related climate change mitigation in IEA member countries.

http://www.iea.org/textbase/pm/index_clim.html

“ Grand corruption in the regulation of oil

Anti Corruption Resource Centre

This U4 Issue explores the topic of grand corruption in the regulation of oil. It focuses on how and why

corruption can distort or prevent efficient regulation of the oil sector. The authors suggest that, though voluntary initiatives and capacity building programmes are important, they should not replace the establishment of formal state-sponsored regulations.

<http://www.u4.no/themes/natural-resources/main.cfm>

“ Managing Transport Challenges when Oil Prices Rise

New Zealand Transport Agency Research Report 357

Land Transport New Zealand has released a report that explores options for how the central government, regional councils, and local authorities may respond to the transport challenges associated with rising oil prices. The report also examines ways to encourage the development of a transport system that is less dependent on oil-based transport fuels.

http://trb.org/news/blurp_detail.asp?id=9417

“ Unconventional Fossil-Based Fuels: Economic and Environmental Trade-Offs

RAND Cooperation

The RAND Corporation has released a report that explores coal-to-liquids and Canadian oil sands technologies, examines possible impacts on fuel costs from future limitations on carbon dioxide emissions, and compares estimated costs of the alternative fossil fuels to conventional petroleum fuels in 2025.

http://www.rand.org/pubs/technical_reports/2008/RAND_TR580.pdf

“ What Should Inflation Targeting Countries Do When Oil Prices Rise and Drop Fast?

IMF Paper No. 09/101

After a long period of global price stability, inflation increased sharply in 2008 following unprecedented increases in the price of oil and other commodities, notably food. Although inflation remained lower and growth higher in inflation targeting countries than elsewhere, almost everywhere price stability seemed in jeopardy as consumer prices kept surging and central banks struggled to keep expectations anchored.

<http://www.imf.org/external/pubs/cat/longres.cfm?sk=22580.0>

“ Appropriate Response to Rising Fuel Prices

VTI Working Paper – Todd Litman, 2008

This paper evaluates policy options for responding to rising fuel prices and identifies responses that maximise total benefits, including gradual and predictable fuel tax increases, mobility management strategies that increase transport system efficiency, incentives to choose fuel efficient vehicles, and development of alternative fuels.

<http://www.vtpi.org/fuelprice.pdf>

“ Coping with Higher Oil Prices

Report 323/06 – Robert Bacon and Masami Kojima, 2006

The report covers policy alternatives adopted by developing country governments in response to the increases in world oil prices since the end of 2003. It further analyses what factors have affected the responses and what policy prices have been used by governments to mitigate the effects of higher oil prices on consumers, the government budget, and the total demand for oil. <http://siteresources.worldbank.org/INTOGMC/Resources/higheroilpricesuneditedjune2006.pdf>

“ Coping with Oil Price Volatility

ESMAP Special Report 005/08 – Robert Bacon and Masami Kojima

Oil prices have been variable since the large price increases of the 1970s and 1980s. The wide price fluctuations in 2007, when daily spot prices for marker crudes nearly doubled between January and November, and fluctuations by more than USD 20 a barrel in early 2008 reinforce the idea that oil prices are volatile. Oil is important in every economy; when its prices are high and volatile, governments feel compelled to intervene. http://esmap.org/filez/pubs/8142008101202_coping_oil_price.pdf

“ Energy Technology for a Sustainable Future – Transport

IEA Working Paper – Lew Fulton, 2004

This paper, which looks at transport, is the first in a series of IEA TechnologyBriefs examining the roles various energy technologies can play in reducing CO₂ emissions. Each paper assesses the status of individual technologies, the R&D and demonstration needed for their further development, the contributions they could make to a sustainable energy future, and the challenges that lie ahead.

<http://www.iea.org/textbase/papers/2004/transport.pdf>

“ Overcoming Vulnerability to Rising Oil Prices: Options for Asia and the Pacific – Fuel to Change Livelihoods, Equity, Empowerment

UNDP Report, 2007

This report examines the impact of rising oil prices since 2003 on developing countries of the Asia-Pacific region. It represents a set of policy options and priorities that can help reduce national vulnerability to future price rises and protect the interests of the poor.

<https://unp.un.org/details.aspx?pid=17357>

“ Reducing Oil Consumption in Transport – Combining Three Approaches

IEA Working Paper – Lew Fulton, 2004

This paper provides an analysis of three promising

vehicle technology and fuel-related areas for saving oil and reducing CO₂ emissions from transport, and how strong policy measures in these areas could turn transport around by 2030.

<http://www.iea.org/textbase/papers/2004/transporthree.pdf>

“ New study on impact of fuel efficiency on oil prices could change thinking

T&E study

A new study commissioned by T&E has suggested that current thinking about the fuel consumption of vehicles has left out an important element—the impact of fuel efficiency standards on the price of oil. The report could change the way governments, politicians and the EU views the pricing of transport.

http://www.transportenvironment.org/Publications/prep_hand_out/lid:531

“ Energy Efficiency and Climate Change Considerations – for On-Road Transport in Asia

Joint ADB-CAI Report, 2006

This report provides a comprehensive analysis of GHG emissions from the transport sector and develops a broad set of policy recommendations.

http://www.cleanairnet.org/caiasia/1412/articles-70656_finalreport.pdf

“ Green Paper on Energy Efficiency or Doing More With Less

EC Working Paper, 2005

The Green Paper seeks to act as a catalyst, leading to a renewed energy-efficiency initiative at all levels of European society – EU, national, regional and local. In addition, this Green Paper seeks to make a significant contribution, by way of example and leadership, to kick-start an international effort to contribute to addressing climate change through energy efficiency.

http://ec.europa.eu/energy/efficiency/index_en.htm

“ Saving Oil in a Hurry

IEA Report, 2005

This book provides an assessment of the potential oil savings and implementation costs of rapid oil demand restraint measures for transport. This toolbox of measures includes new approaches towards telecommuting, carpooling, transit use and ‘eco-driving’ (fuel efficient driving styles), among other measures.

<http://www.iea.org/textbase/nppdf/free/2005/SavingOil.pdf>

“ International Transport Forum

Bibliography, 2008

The International Transport Forum is a global platform and meeting place at the highest level for transport, logistics and mobility.

<http://www.internationaltransportforum.org>

“ Safe, Clean, and Affordable... Transport for Development

World Bank

The business strategy strengthens the alignment of the transport sector approach with the Millennium Development Goals adopted by the United Nations in 2000. At the same time, it widens the directions and deepens the routes that will be taken to meet the evolving development agenda.

<http://go.worldbank.org/0SYVJWB40>

“ Blueprint for Sovereign Wealth Fund Best Practices

Peterson Institute for International Economics – Edwin Truman

The blueprint for SWF best practices is based on a scoreboard he has constructed for the current practices of 44 SWFs. The scoreboard contains 33 elements grouped in four categories: structure of the fund, governance, transparency and accountability, and behaviour of the fund in managing its portfolio.

<http://www.iie.com/publications/interstitial.cfm?ResearchID=902>

Climate change

“ Reforming Energy Subsidies: Opportunities to Contribute to the Climate Change Agenda

UNEP Report

With this booklet, UNEP aims to raise awareness of the various types of energy subsidies, their size and impact and the direct relationship with climate change and sustainable development.

http://www.unep.org/pdf/PressReleases/Reforming_Energy_Subsidies.pdf

“ Synthesis and Assessment Report on GHG Inventories Report

UNFCCC Report

The report states that in the transport sector several countries were able to reduce their CO₂ emissions compared to 1990.

<http://unfccc.int/resource/webdocs/sai/2009.pdf>

“ Clean Cities Alternative Fuel Price Report

US Department of Energy

Clean Cities Alternative Fuel Price Report is a quarterly report designed to keep you up to date on the prices of alternative fuels and conventional fuels in the US

http://www.afdc.energy.gov/afdc/pdfs/afpr_jan_09.pdf

“ Biofuels for Transportation: A Climate Perspective

PEW CLIMATE CENTER

This paper offers an introduction to the current state of play for biofuels: the technologies used in their production, their GHG emissions, and associated policy issues.

<http://www.pewclimate.org/docUploads/BiofuelsFINAL.pdf>

“ Fuel taxes: An important instrument for climate policy

ENERGY POLICY

This article shows that fuel taxes serve a very important role for the environment and that we risk a backlash of increased emissions if they are abolished.

<http://www.sciencedirect.com/science>

“ Climate for a transport change. TERM 2007: indicators tracking transport and environment in the European Union

EUROPEAN ENVIRONMENT AGENCY

The TERM 2007 report examines the performance of the transport sector vis-à-vis potential future targets for greenhouse gas emission reductions and concludes that technology measures are insufficient to meet likely targets.

http://reports.eea.europa.eu/eea_report_2008_1/en

“ Transport at a crossroads. TERM 2008: indicators tracking transport and environment in the European Union

EUROPEAN ENVIRONMENT AGENCY

The TERM 2008 report examines the performance of the transport sector vis-a-vis environmental performance and concludes that there are plenty of options for synergies between different policy initiatives but also a risk of measures counteracting each other.

<http://www.eea.europa.eu/publications/transport-at-a-crossroads>

Statistical data

Survey International Fuel Prices

<http://www.gtz.de/fuelprices>

Annual Statistical Supplement and User's Guide 2003

<http://omrpublic.iea.org/currentissues/sup.pdf>

Latest World Oil Balance Charts

<http://omrpublic.iea.org/balances.asp>

Oil Outlook to 2025

<http://www.opec.org/library/OPEC%20Review/OWEM04.pdf>

OPEC Annual Report 2003

<http://www.opec.org/library/Annual%20Reports/pdf/AR002003.pdf>

Transportation Result Measurement

<http://www.worldbank.org/transport/transportresults/global/gl-res-spec.html>

International Energy Agency (IEA) – World Energy Outlook 2008

<http://www.worldenergyoutlook.org/2008.asp>

International Energy Agency (IEA) – Worldwide Trends in Energy Use and Efficiency – Key Insights from IEA Indicator Analysis

http://www.iea.org/textbase/publications/free_new_Desc.asp?PUBS_ID=2026

OPEC – World Oil Outlook 2008

<http://www.opec.org/library/world%20oil%20outlook/WorldOilOutlook08.htm>

EIA: International Energy Outlook 2007

[http://tonto.eia.doe.gov/ftproot/forecasting/0484\(2007\).pdf](http://tonto.eia.doe.gov/ftproot/forecasting/0484(2007).pdf)

Organisations and institutions

“ African Energy Policy Research Network (AFREPREN/FWD)

AFREPREN/FWD is a registered non-governmental organisation (NGO) based in Nairobi, Kenya, with vast expertise in energy in east and southern Africa and some experience in west and north Africa. It brings together expertise, experience and skills of two past regional energy initiatives/programmes namely, the African Energy Policy Research Network (AFREPREN) and the Foundation for Woodstove Dissemination (FWD).

<http://www.afrepren.org/index.htm>

“ Asean Centre for Energy (ACE)

ACE is an intergovernmental organisation established by Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore and Vietnam. It is envisioned to be a catalyst for the economic growth and development of the ASEAN region by initiating, coordinating and facilitating regional as well as joint and collective activities on energy.

<http://www.aseanenergy.org>

“ Energy Sector Management Assistance Programme (ESMAP)

ESMAP is a global technical assistance programme under the joint sponsorship of the World Bank and the United Nations Development Programme which helps build consensus and provides policy advice on sustainable energy development to governments of developing countries and economies in transition.

<http://www.esmap.org/>

“ Global Subsidies Initiative

The International Institute for Sustainable Development's Global Subsidies Initiative (GSI) is a project designed to put the spotlight on subsidies and the corrosive effects they can have on environmental quality, economic development and governance.

<http://www.globalsubsidies.org/en>

“ International Energy Agency (IEA)

IEA is an intergovernmental body committed to advancing security of energy supply, economic growth and environmental sustainability through energy policy cooperation. It acts as an energy policy advisor for its 26 member countries in their effort to ensure reliable, affordable and clean energy for their citizens.

<http://www.iea.org/>

“ International Monetary Fund (IMF)

The IMF is an international organisation of 184 member countries. It was established to promote international monetary cooperation, exchange stability, and orderly exchange arrangements; to foster economic growth and high levels of employment; and to provide temporary financial assistance to countries to help ease balance of payments adjustment.

<http://www.imf.org>

“ Organization of the Oil Producing Countries (OPEC)

The OPEC is a permanent, intergovernmental organisation with the objective of coordinating and unifying petroleum policies among member countries.

<http://www.opec.org>

“ The Federal Institute for Geoscience and Natural Resources (BGR)

The Federal Institute for Geoscience and Natural Resources (BGR) is the central geoscientific authority providing advice to the German Federal Government on all geo-relevant questions.

http://www.bgr.bund.de/nn_337276/EN/Home/homepage__node.html?__nnn=true

“ The World Bank

The World Bank is a vital source of financial and technical assistance to developing countries around the world. It is made up of two unique development institutions owned by 184 member countries – the International Bank for Reconstruction and Development (IBRD) and the International Development Association (IDA).

<http://www.worldbank.org>

<http://www.worldbank.org/energy>

“ The World Energy Council

The World Energy Council (WEC) is the foremost multi-energy organisation in the world today. WEC has Member Committees in nearly 100 countries, including most of the largest energy-producing and energy-consuming countries. Established in 1923, the organisation covers all types of energy, including coal, oil, natural gas, nuclear, hydro, and renewables.

<http://www.worldenergy.org>

6. About us

Our organisation

As an international cooperation enterprise for sustainable development with worldwide operations, the federally owned Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH supports the German Government in achieving its development policy objectives. It provides viable, forward-looking solutions for political, economic, ecological and social development in a globalised world. Working under difficult conditions, GTZ promotes complex reforms and change processes. Its corporate objective is to improve people's living conditions on a sustainable basis.

Our clients

GTZ is a federal enterprise based in Eschborn near Frankfurt am Main. It was founded in 1975 as a company under private law. The German Federal Ministry for Economic Cooperation and Development (BMZ) is its major client. The company also operates on behalf of other German ministries, the governments of other countries and international clients, such as the European Commission, the United Nations and the World Bank, as well as on behalf of private enterprises.

Worldwide operations

GTZ has operations in more than 130 countries in Africa, Asia, Latin America, the Mediterranean and Middle Eastern regions, as well as in Europe, the Caucasus and Central Asia. It maintains its own offices in 87 countries. The company employs nearly 13,000 staff, almost 10,000 of whom are national personnel. About 1,700 people are employed at Head Office in Eschborn near Frankfurt am Main and at various locations within Germany.

GTZ Transport and Mobility

Our capability in the transport sector stems from more than 25 years of experience in the implementation of relevant projects. In more than 40 countries, GTZ has provided advisory services to governments on issues of transport policy and transport planning and has helped numerous public and private transport enterprises to increase their efficiency. To ensure that project measures have a sustainable impact, GTZ attaches special importance to the development and application of appropriate instruments and strategies, including the relevant training. Priority areas include *inter alia*:

- Transport sector policy;
- Road asset management and maintenance;

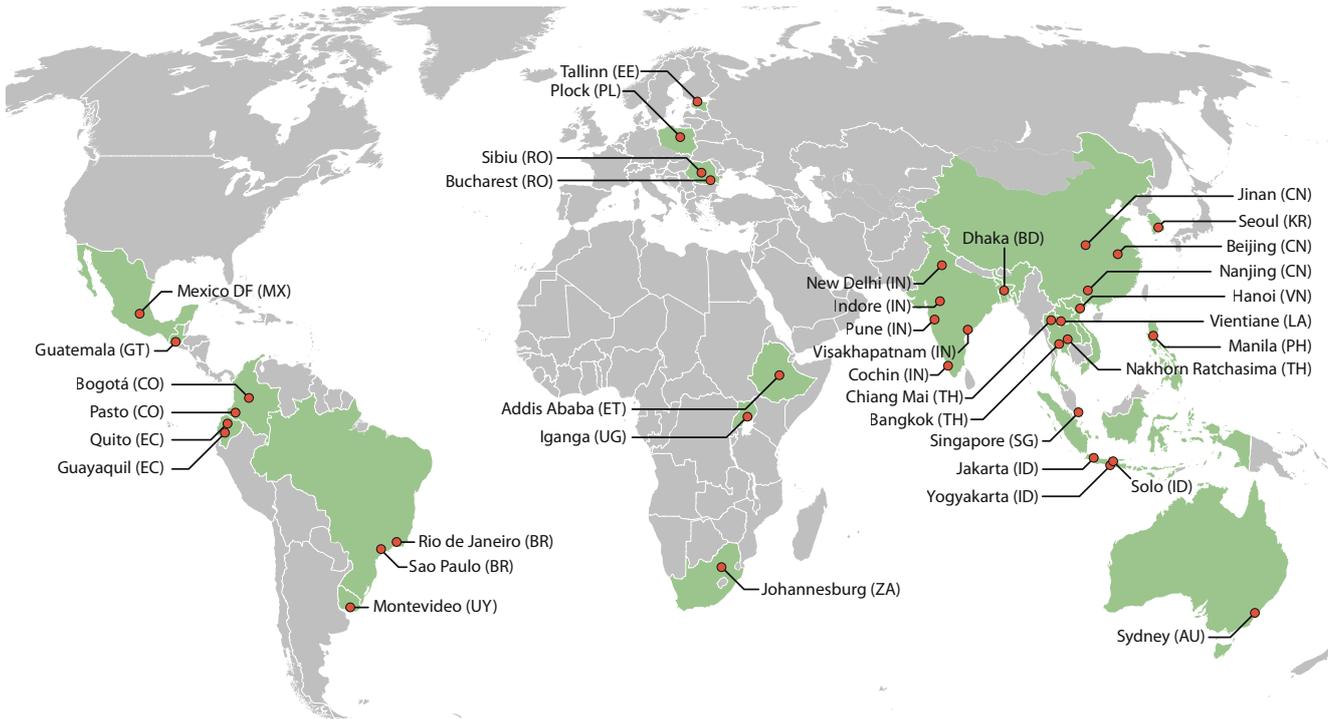


Figure 28: Training courses conducted by GTZ-SUTP until May 2009.

- Urban mobility;
- Railway sector services;
- Sector regulation and management.

Ongoing projects include *inter alia*:

- Capacity development in the transport sector in Liberia;
- Strengthening of institutional and management capacity in the road sector in Namibia;
- Sustainable port development in the ASEAN region;
- Rural infrastructure improvement project in Bangladesh.

With the focus on energy efficiency and urban transport, our Sustainable Urban Transport Project (SUTP, <http://www.sutp.org>) offers wide ranging expertise for decision-makers and planners in developing and emerging cities. We are working with cities *inter alia* to develop sustainable transport concepts (in the form of strategies and master plans), to implement reform processes in public transport and to mitigate the environmental impact of transport. Ongoing **urban transport projects** include:

- Climate-friendly mobility in Ukrainian cities;
- Emission reductions in urban transport in Indonesian cities;
- Bus rapid transit system Johannesburg/South Africa (advisory services and capacity development);
- Clean air for smaller cities in the ASEAN region.

Furthermore, GTZ SUTP designs and delivers training courses in Asia, Latin America and Africa. Until end of 2009, 54 courses comprising over 2000 participants have been held. Topics have varied from general topics such as Sustainable Urban Transport to specific issues such as Travel Demand Management (*cf.* map in Figure 28).

On a global scale, we share good practices, inform decision-makers and practitioners of the latest developments in the transport sector and are intensifying the dialogue on how cities and urban mobility shall look like in future. In this spirit, our leading publication ‘Sustainable Transport: A Sourcebook for Decision-makers in Developing Cities’ presently covers the following issues, as seen at the overview on the next pages.

For more information on our work, please contact us at:

GTZ Transport and Mobility:
transport@gtz.de, sutp@sutp.org

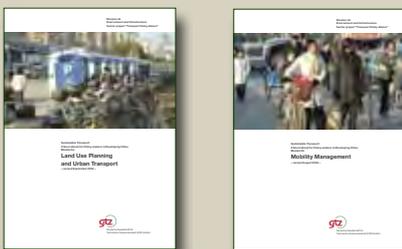
- <http://www.gtz.de/transport>
- <http://www.sutp.org>
- <http://www.gtz.de/roads>
- <http://www.gtz.de/roadsafety>
- <http://www.sutp.org/bridgingthegap>

1. Institutional and policy orientation



- 1a. The Role of Transport in Urban Development Policy
- 1b. Urban Transport Institutions
- 1c. Private Sector Participation in Urban Transport Infrastructure Provision
- 1d. Economic Instruments
- 1e. Raising Public Awareness about Sustainable Urban Transport

2. Land use planning and demand management



- 2a. Land Use Planning and Urban Transport
- 2b. Mobility Management

3. Transit, walking and cycling



- 3a. Mass Transit Options
- 3b. Bus Rapid Transit
- 3c. Bus Regulation & Planning
- 3d. Preserving and Expanding the Role of Non-motorised Transport
- 3e. Car-Free Development

4. Vehicles and fuels

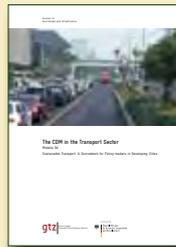
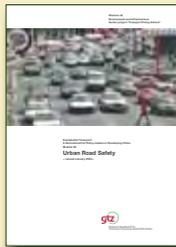


- 4a. Cleaner Fuels and Vehicle Technologies
- 4b. Inspection & Maintenance and Roadworthiness
- 4c. Two- and Three-Wheelers
- 4d. Natural Gas Vehicles
- 4e. Intelligent Transport Systems
- 4f. EcoDriving

5. Environmental and health impacts



5a. Air Quality Management
5b. Urban Road Safety
5c. Noise and its Abatement



5d. The CDM in the Transport Sector
5e. Transport and Climate Change
5f. Adapting Urban Transport to Climate Change



6. Resources



This module is being constantly updated and hence an online version has been made. Please click on <http://www.sutp.org> and go to the page with weblinks.

6. Resources for Policy-makers

7. Social and cross-cutting issues on urban transport



7a. Gender and Urban Transport: Smart and Affordable

Training documents



- Bus Regulation and Planning – Bus Sector Reform
- Public Awareness and Behavioural Changes in Sustainable Transport
- Non-Motorised Transport
- Mass Transit
- Transportation Demand Management

Bus Rapid Transit (BRT) Planning Guide



■ BRT Planning Guide Complete

Technical documents



■ Demystifying Induced Travel Demand
■ Social Change and Urban Transport



Cycling-Inclusive Policy Development: A Handbook



■ Cycling-Inclusive Policy Development: A Handbook

All modules are available in the English, Spanish and Chinese languages as well as selected modules in other languages. The modules are available (free of charge; brief registration required) on <http://www.sutp.org>.

7. Annex

Data sources

The data for industrialised countries come from various sources, primarily from the German automobile club 'Allgemeiner Deutscher Automobile Club' (ADAC) in Munich. Most of the data for developing countries, especially those in Africa and Asia, are based on local price surveys conducted by GTZ's local offices. In some cases, (e.g. Cuba, Myanmar, Sudan, Turkmenistan, North Korea and several Arabian Gulf countries), the German embassies/consulates kindly helped us collect the relevant data.

Method of collection

Global fuel prices vary as a function of global oil prices or due to individual legal frameworks, not only among countries but also within individual countries. For European countries, nationwide average filling station fuel price statistics (pump prices) were utilised in this survey, whereas for all other countries fuel prices as posted at filling stations in the respective capital cities were collected. The latter was done via a questionnaire that was circulated to GTZ local offices worldwide. Where several fuel prices for major cities were available, the unweighted average has been used.

Dr. Gerhard Metschies (gerhard.metschies@gmx.de) and Sebastian Ebert (s-eb@gmx.de) conducted the survey on behalf of the GTZ Transport Policy Advisory Services. The German Federal Ministry for Economic Cooperation and Development commissioned this project.

Fuel qualities

Throughout this study gasoline prices refer to Super Gasoline and mean 'unleaded Octan 95'.

Unit conversion for non-litre countries

All fuel prices have been converted into metric litres as the unit of measurement.

Region	Country	Fuel unit
Africa	Liberia	US Gallon
	Sierra Leone	US Gallon
America	Antigua and Barbuda	Imperial Gallon
	Belize	US Gallon
	Colombia	US Gallon
	The Dominican Republic	US Gallon
	Ecuador	US Gallon
	El Salvador	US Gallon
	Grenada	US Gallon
	Guatemala	US Gallon
	Guyana	Imperial Gallon
	Haiti	US Gallon
	Honduras	US Gallon
	Nicaragua	US Gallon
	Panama	US Gallon
	Peru	US Gallon
Puerto Rico	US Gallon	
The United States	US Gallon	
Asia	Myanmar (Burma)	US Gallon
	United Arab Emirates	Imperial Gallon

Unit conversions

1 US Gallon	=	3.785 Litres
1 Imperial Gallon	=	4.546 Litres
1 Barrel	=	159.000 Litres

Conversion of USD per barrel to US cents per litre

Crude oil price	Study	Equivalent						
		45	50	55	60	65	70	75
per Barrel	48	0.28	0.31	0.35	0.38	0.41	0.44	0.47
per Litre	0.30	0.28	0.31	0.35	0.38	0.41	0.44	0.47

Currency conversion

The objective was to compare the fuel price situation in various countries worldwide. The USD was as the reference currency, since all crude oil prices and most countries' import statistics are quoted in US dollars. The USD conversion rates are those applicable as per 17–21 November 2008. In countries with different or double exchange rates, the 'market rate/parallel rate/black market rate' was given preference over the official exchange rate. This was not only because it is the rate consumers mostly rely on, but also because experience shows that the official exchange rate eventually tends to be replaced by the parallel exchange rate.

Compared to 2006, there was virtually no change in the dollar-euro exchange rate between November 2006 (USD 1 = EUR 0.78) and November 2009 (USD 1 = EUR 0.79).

Crude oil price at world market

On the day of reference the crude oil price had decreased by 20% compared to 2006. Converted, a price decrease per litre of US 8 cents was registered.

Brent Crude Oil Price Trend at time of survey	USD/barrel (159 litres)	US cents/litre
15–17 November 2006	60.21	38
17–21 November 2008	48.00	30
Price decrease in 2 years		-8 US cents/litre

At its highest, the crude oil price briefly touched USD 148 per barrel in August 2008, at its lowest the price fell to 2004 level of USD 36 per barrel in December 2008.

8. Your contribution – how to participate

- GTZ's Fuel Price Survey continues to provide the only available summary of developing countries' fuel price policies: 'International Fuel Prices' is a long-standing effort by GTZ (German Technical Cooperation) on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ) to provide decision-makers with data on fuel prices on a global scale. GTZ with its global network of projects in 135 countries and regional offices and representations in 64 developing countries, has been publishing its biannual study 'International Fuel Prices' on the global fuel sector since 1999.
- Further Information:
 - ❖ GTZ fuel price newsgroup aims to facilitate the exchange and dissemination of information on recent developments and trends related to the issue. Subscription: Armin.Wagner@gtz.de;
 - ❖ Website: <http://www.gtz.de/fuelprices> with detailed information;
 - ❖ In order to broaden the database and to provide data series throughout the year we would like to invite the public to participate in our study. Please assist us by completing the form on our special webpage: <http://www.sutp.org/fuelprices>.



Deutsche Gesellschaft für
Technische Zusammenarbeit (GTZ) GmbH

- German Technical Cooperation -

Dag-Hammarskjöld-Weg 1-5
P. O. Box 5180
65726 ESCHBORN / GERMANY
T +49-6196-79-1357
F +49-6196-79-801357
E transport@gtz.de
I <http://www.gtz.de>

