CSIS

Center for Strategic and International Studies
1800 K Street N.W.
Washington, DC 20006
(202) 775-3270
To download: csis.org (Strategic Assessment)
To comment or contact author: Acordesman@aol.com

Geopolitics and Energy in the Middle East

Anthony H. Cordesman

Arleigh A. Burke Chair in Strategy
Center for Strategic and International Studies

January 2001

Note to Reviewers

This document is a rough draft for comment purposes. The reader is free to use it with proper attribution, but should realize it is on the web for comment and will be massively revised in the final edition. The reader should also be aware that much of the material in this draft is adapted directly from the text of various DOE/EIA reports, and US government sources are used unless other sources are referenced. The author has made extensive use of the text of DOE country and oil income analyses and wishes to acknowledge that fact.

It will only be possible to properly revise this paper, and provide parametric analyses; if reviewers provide detailed comments and alternative numbers or draft text. Broad comments are useful but they do not support specific changes, or provide a substantive basis for evaluating alternative views. The most helpful inputs are detailed mark ups or alternative/additional text.

Acknowledgements

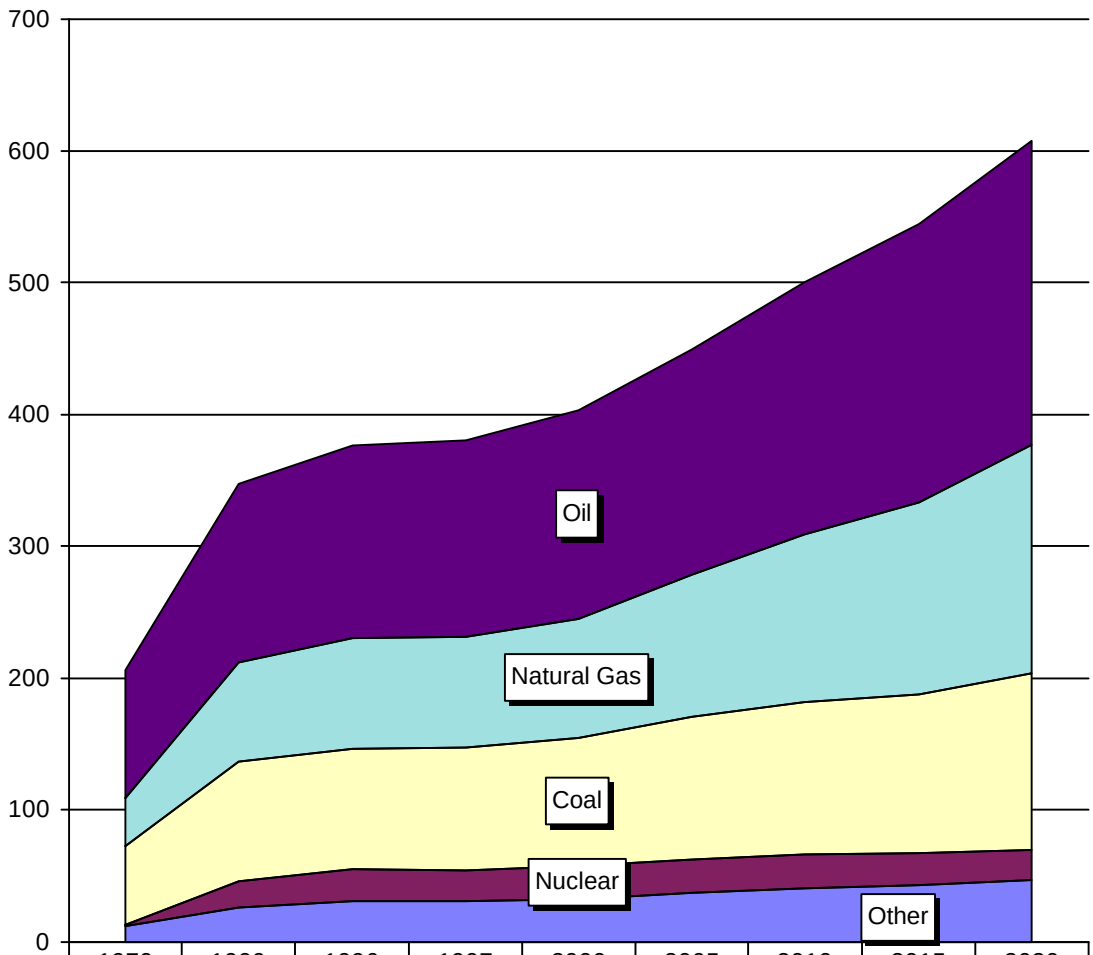
The author would like to thank Paul Famolari, Ghada Elnajjar, and Michael Cohen for their help in researching and editing this version of this report.

LIST OF TABLES AND FIGURES

I. THE GEOPOLITICAL CONTEXT

Figure I.1
Rising World Energy Demand By Type of Primary Fuel: 1970-2020

(Quadrillion BTU)

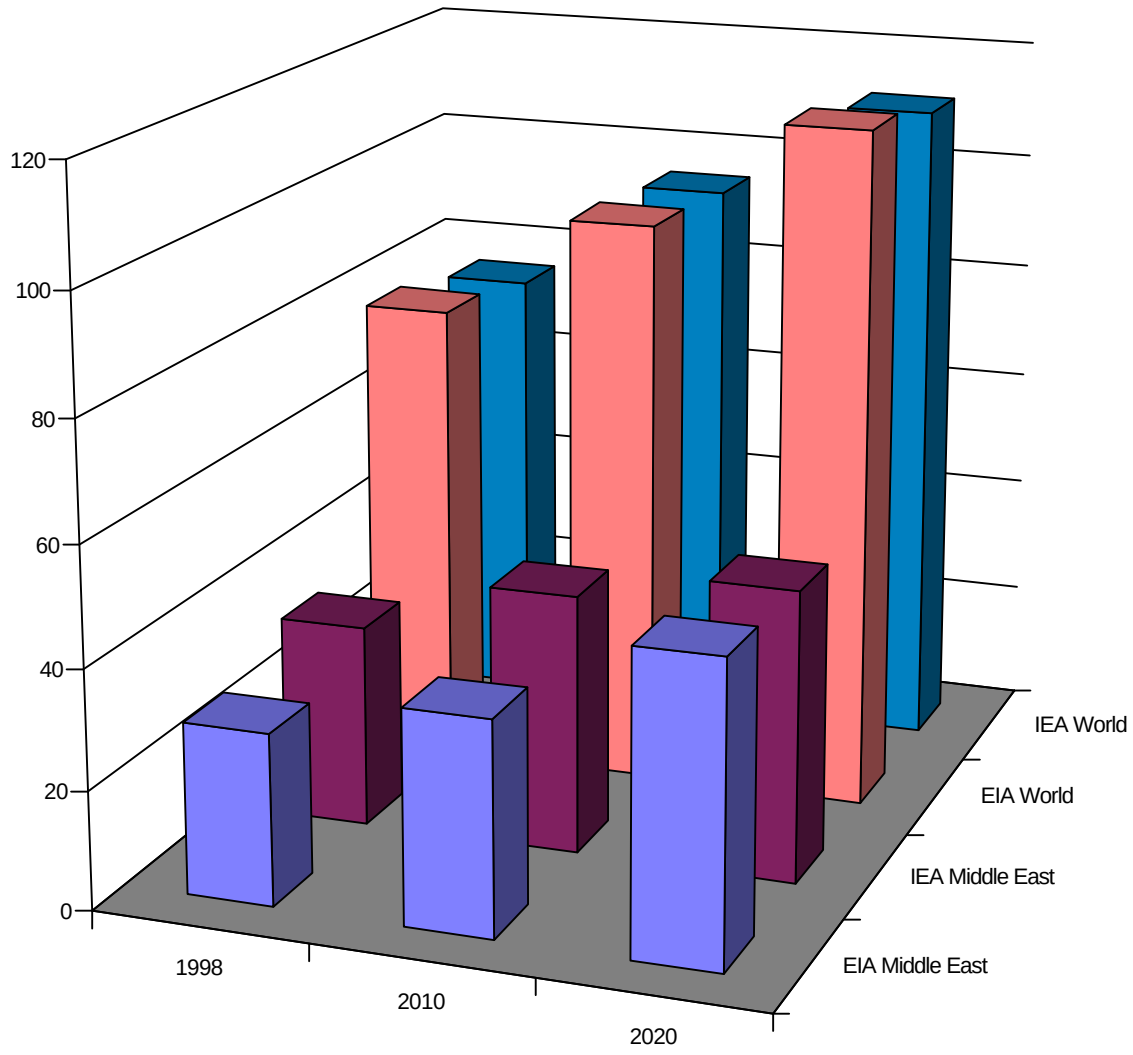


	1970	1990	1996	1997	2000	2005	2010	2015	2020
Oil	97.8	134.9	145.4	148.7	157.7	170.9	190.7	211.1	230.4
Natural Gas	36.1	75.1	84.1	83.9	90.1	107.7	127.7	145.3	173.3
Coal	59.7	90.5	91.8	92.8	97.7	107.9	115.4	120.7	134.5
Nuclear	0.9	20.4	24.2	24	24.5	25.4	26	24.6	22.5
Other	12.2	25.9	30.5	30.6	32.7	37.2	40.4	42.8	47

Source: EIA, International Energy Outlook, 1999, DOE/EIA-0484(99), pp. 142-143. EIA, International Energy Outlook, 2000, DOE/EIA-0484(00), p. 173.

Figure I.2
Projected Middle Eastern and World Oil Production: IEA versus EIA

(In Millions of Barrels Per Day)

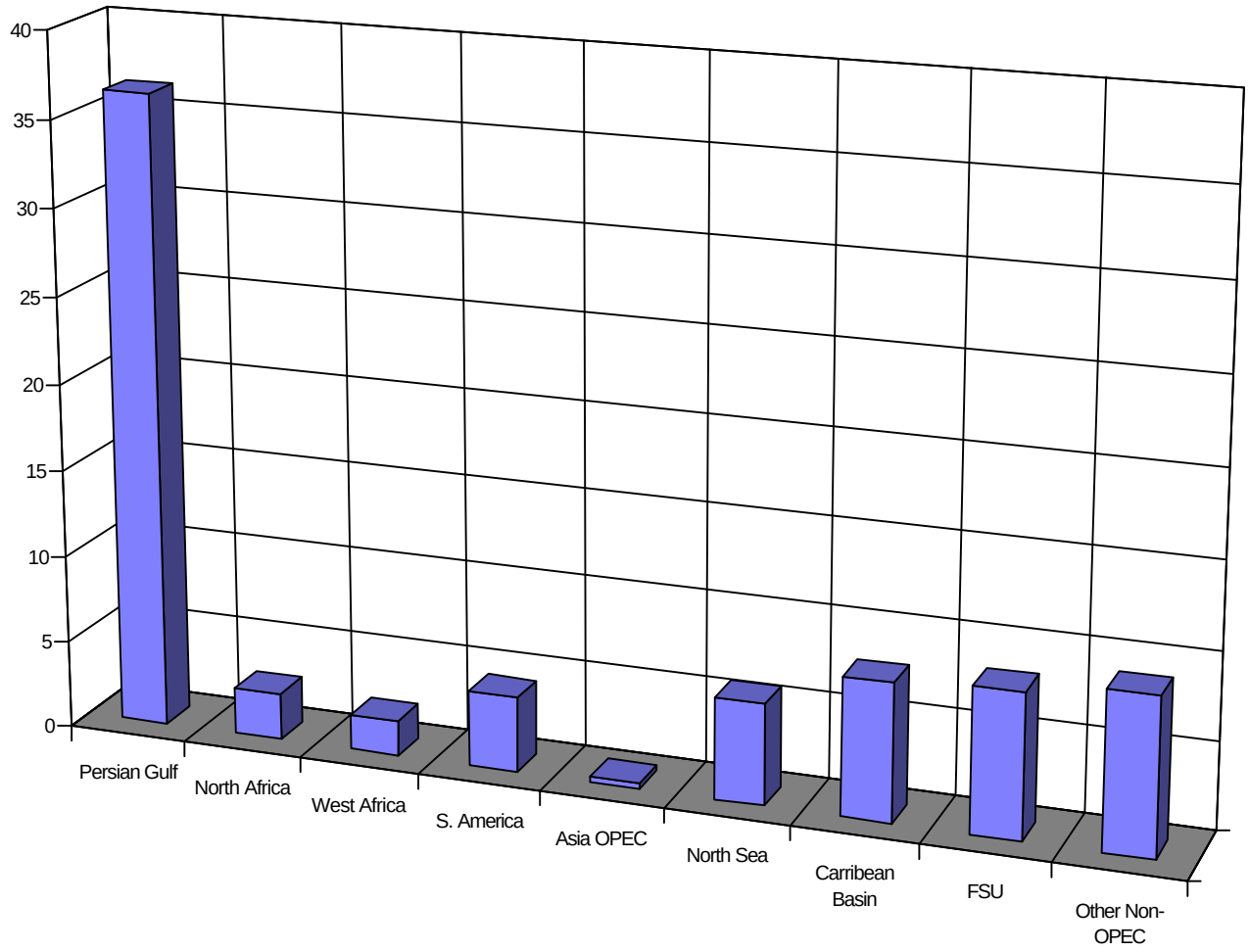


	1998	2010	2020
EIA Middle East	28.8	35.9	50.3
IEA Middle East	34.1	43.7	48.9
EIA World	78.7	96.6	115.4
IEA World	75.5	94.8	111.5

EIA, International Energy Outlook, 2000, DOE/EIA-0484(00), p. 229, IEA, Monthly Oil Market Report, 11 May 2000, p. 45.

Figure I.3
The Global Importance of Middle Eastern Petroleum Exports in 2020

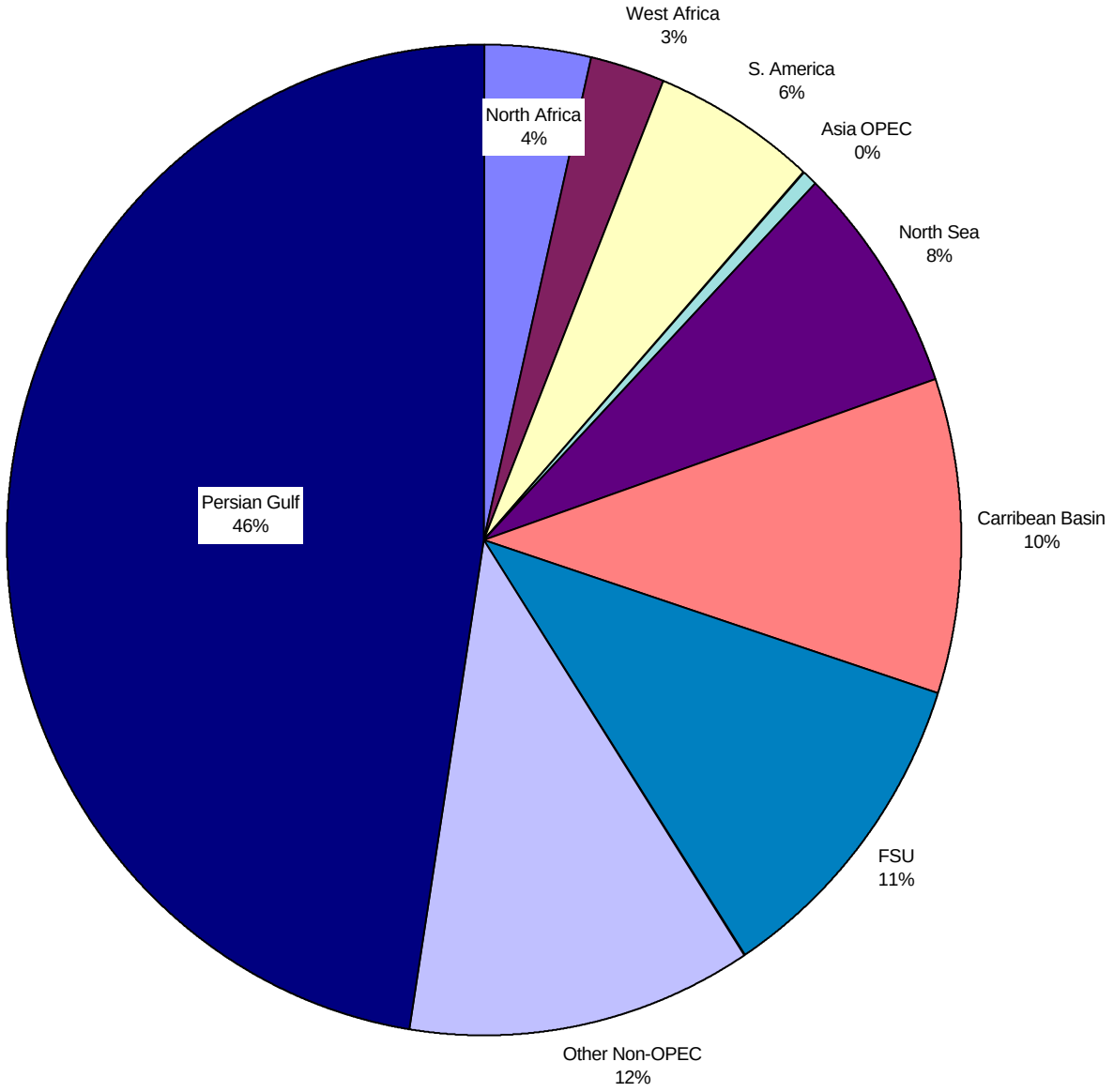
(EIA Reference Case Estimate in MMBD)



Source: Adapted by Anthony H. Cordesman from EIA, International Energy Outlook, 2000, DOE/EIA-0484 (00), March 2000, p.38.

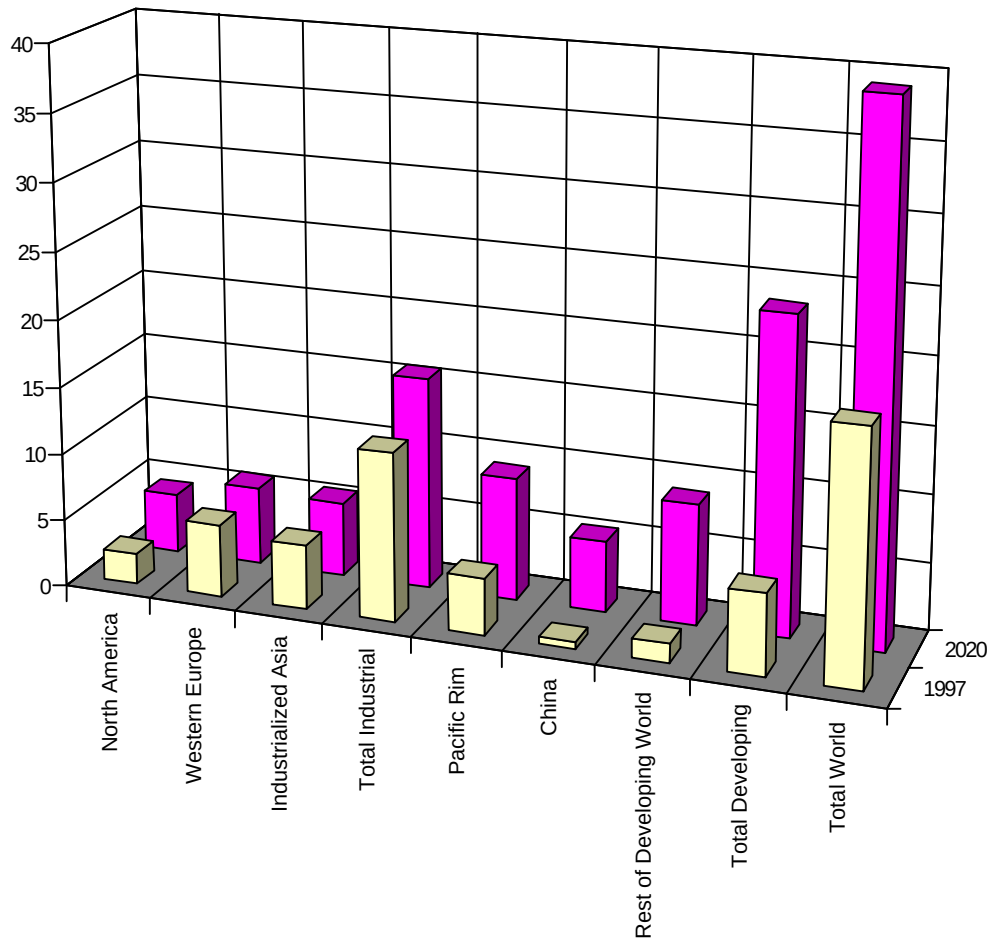
Figure I.4
Middle Eastern Petroleum Exports as a Percent of World Total in 2020

(EIA Reference Case Estimate in Percent)



Source: Adapted by Anthony H. Cordesman from EIA, International Energy Outlook, 2000, DOE/EIA-0484 (00), March 2000, p.38.

Figure I.5
The EIA Estimate of Middle East Exports by Destination: 1997 versus 2020
(in MMBD)



	North America	Western Europe	Industrialized Asia	Total Industrial	Pacific Rim	China	Rest of Developing World	Total Developing	Total World
1997	2.3	5.4	4.8	12.5	4.2	0.5	1.4	6	18.5
2020	4.4	5.8	5.5	15.7	9.1	5.3	8.9	23.4	39.1

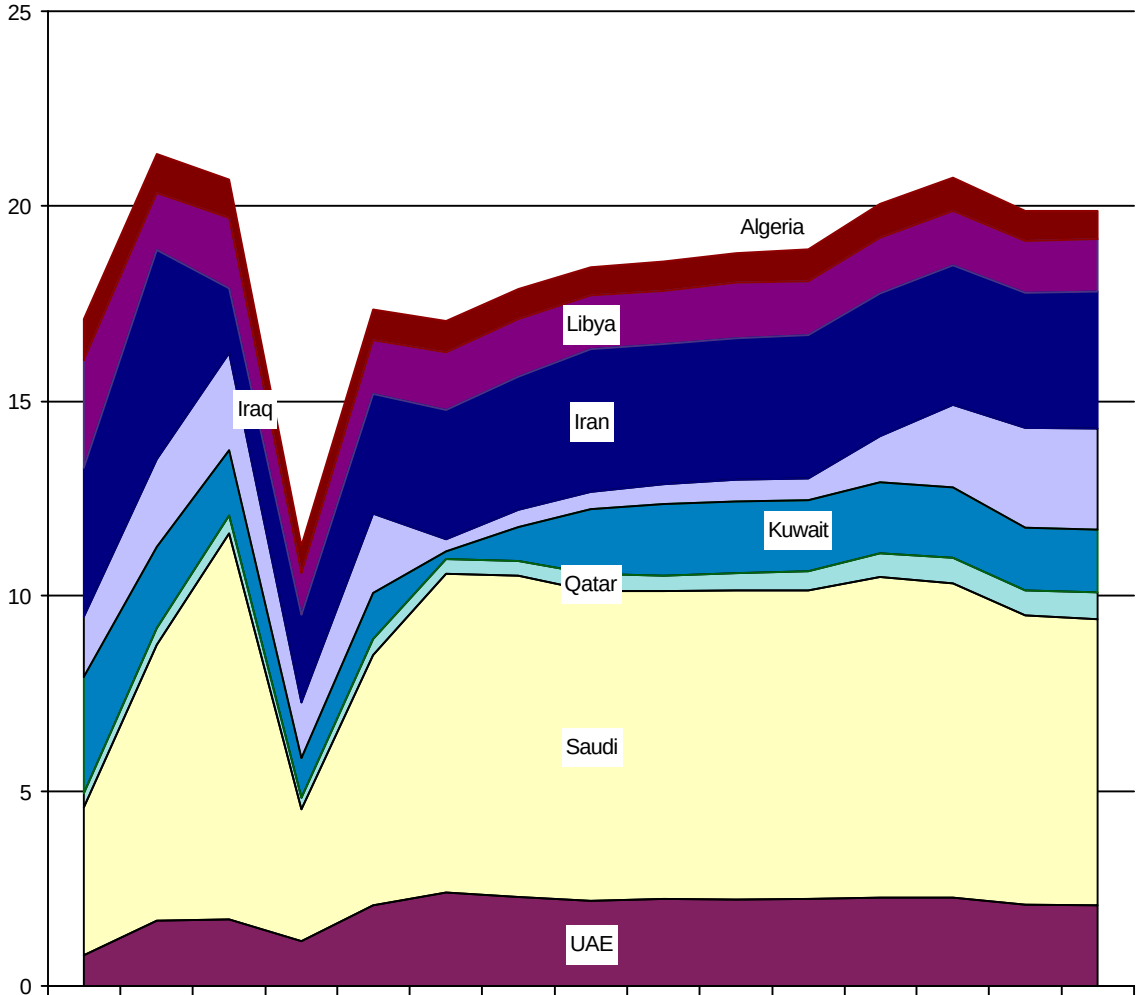
Source: Adapted by Anthony H. Cordesman from EIA, International Energy Outlook, 2000, DOE/EIA-0484 (00), March 2000, pp. 38.

II. GEOPOLITICAL TRENDS BY REGION AND COUNTRY

Figure II.1

CEA Estimate of Historical Trends in Middle Eastern Oil Production: 1970-1997

($Current Billions)



	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	Jan-00
Algeria	1.03	0.98	1.01	0.7	0.77	0.8	0.77	0.74	0.75	0.76	0.82	0.86	0.83	0.76	0.75
Libya	2.76	1.48	1.79	1.06	1.38	1.48	1.47	1.37	1.37	1.41	1.39	1.44	1.41	1.33	1.35
Iran	3.83	5.35	1.66	2.25	3.09	3.33	3.43	3.65	3.61	3.65	3.67	3.64	3.6	3.48	3.5
Iraq	1.55	2.26	2.51	1.43	2.04	0.3	0.43	0.44	0.51	0.55	0.57	1.2	2.11	2.55	2.6
Kuwait	2.99	2.08	1.66	1.02	1.18	0.19	0.86	1.69	1.83	1.84	1.81	1.81	1.8	1.62	1.6
Qatar	0.36	0.44	0.47	0.3	0.41	0.39	0.4	0.42	0.4	0.45	0.49	0.62	0.66	0.64	0.7
Saudi	3.8	7.08	9.9	3.39	6.41	8.18	8.23	7.96	7.9	7.94	7.91	8.22	8.07	7.42	7.35
UAE	0.78	1.66	1.7	1.13	2.07	2.39	2.28	2.17	2.22	2.2	2.23	2.26	2.25	2.08	2.05

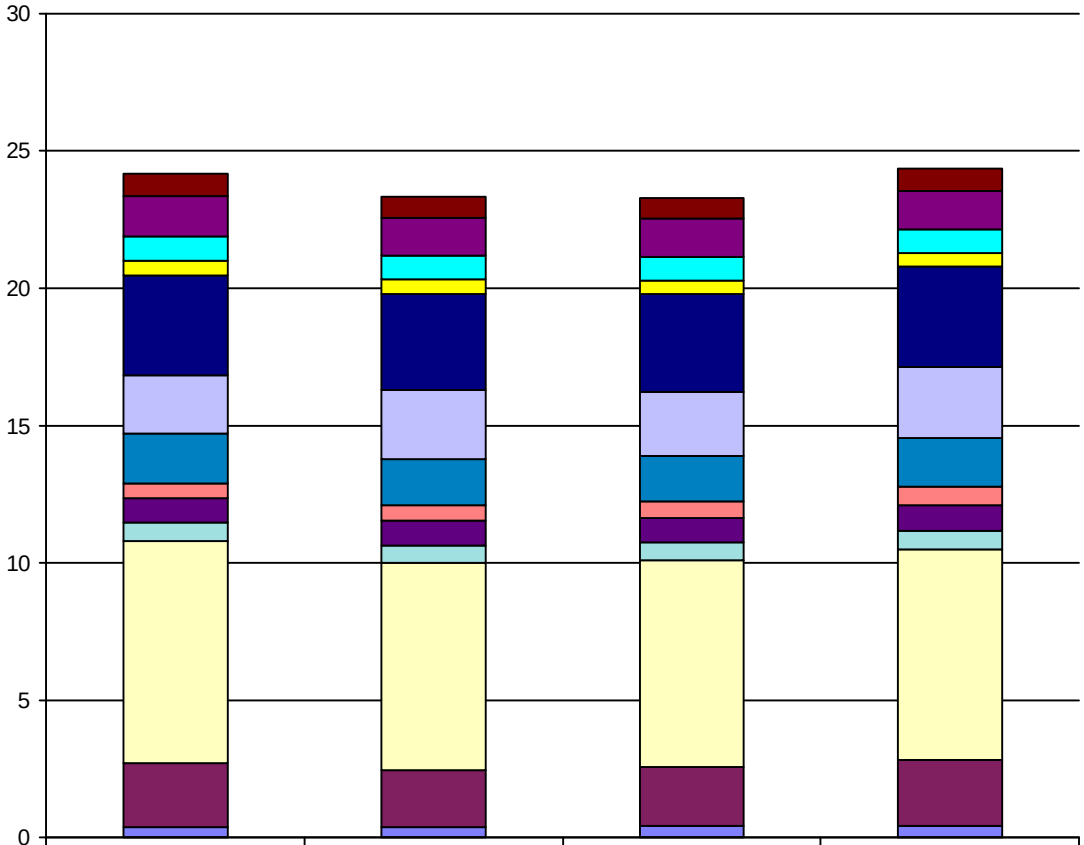
Total ME OPEC*	13.31	18.87	17.91	9.53	15.19	14.77	17.87	18.44	18.59	18.8	18.89	20.05	20.73	19.88	19.9
Total ME*	13.95	19.57	18.40	10.25	16.49	16.19							23.47	21.78	22.68

Adapted by Anthony H. Cordesman from Cambridge Energy Associates, World Oil Watch, 2000, Cambridge,, Mass., 2000, p. 26.
*Pre-1992 data: CEA, World Oil Trends, 1998, Cambridge, Mass., 1998, pp. 26-27. After 1992: the IEA, Oil Market Report, May 11, 2000. p. 45.

Figure II.2

IEA Current Middle Eastern Oil Production Levels by Country

(In Millions of Barrels Per Day)



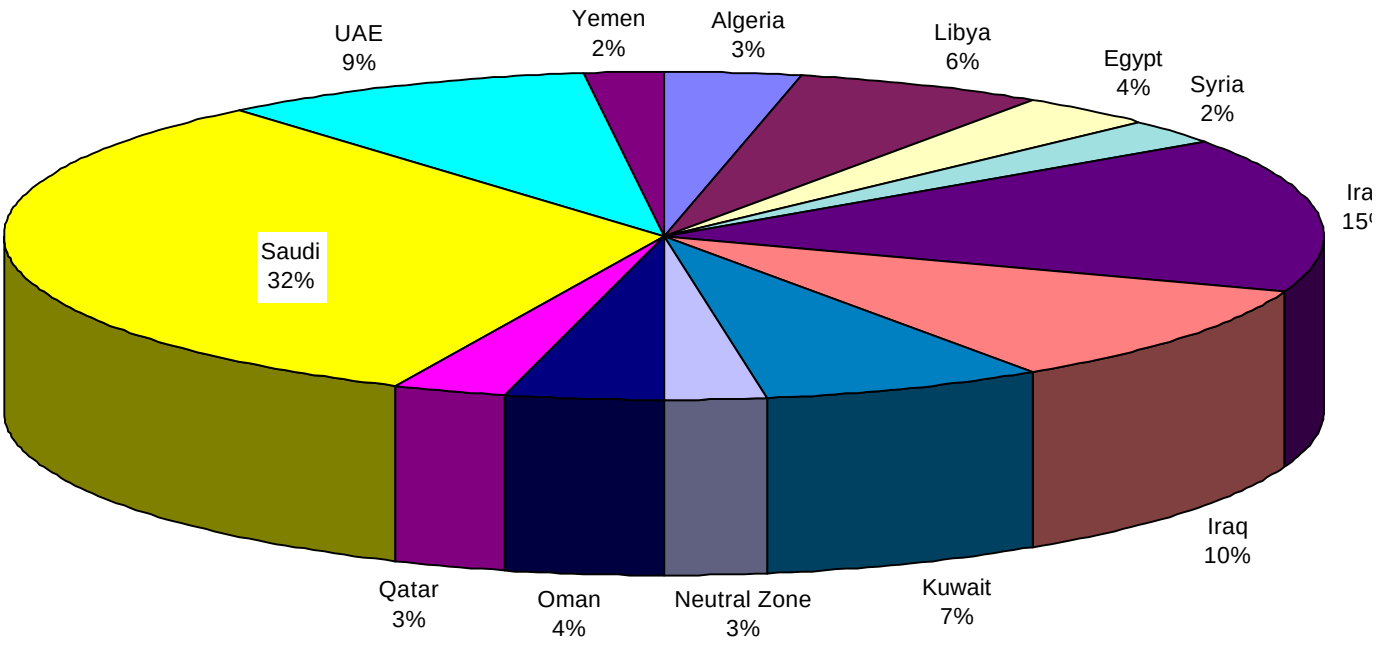
	1998	1999	1Q00	Apr.00
Algeria	0.82	0.76	0.76	0.79
Libya	1.47	1.38	1.41	1.42
Egypt	0.88	0.85	0.83	0.83
Syria	0.55	0.54	0.53	0.52
Bahrain				
Iran	3.63	3.5	3.57	3.62
Iraq	2.11	2.52	2.32	2.63
Kuwait	1.81	1.65	1.63	1.75
Neutral Zone	0.56	0.59	0.6	0.66
Oman	0.9	0.9	0.91	0.93
Qatar	0.66	0.63	0.65	0.68
Saudi	8.09	7.52	7.52	7.7
UAE	2.3	2.07	2.13	2.37
Yemen	0.4	0.41	0.44	0.44

Adapted by Anthony H. Cordesman from data provided by the IEA, Oil Market Report, May 11, 2000. p. 45.

Figure II.3

IEA Estimate of Percentage of Total Current Middle Eastern Oil Production by Country

(Percent in 1st Quarter 2000)

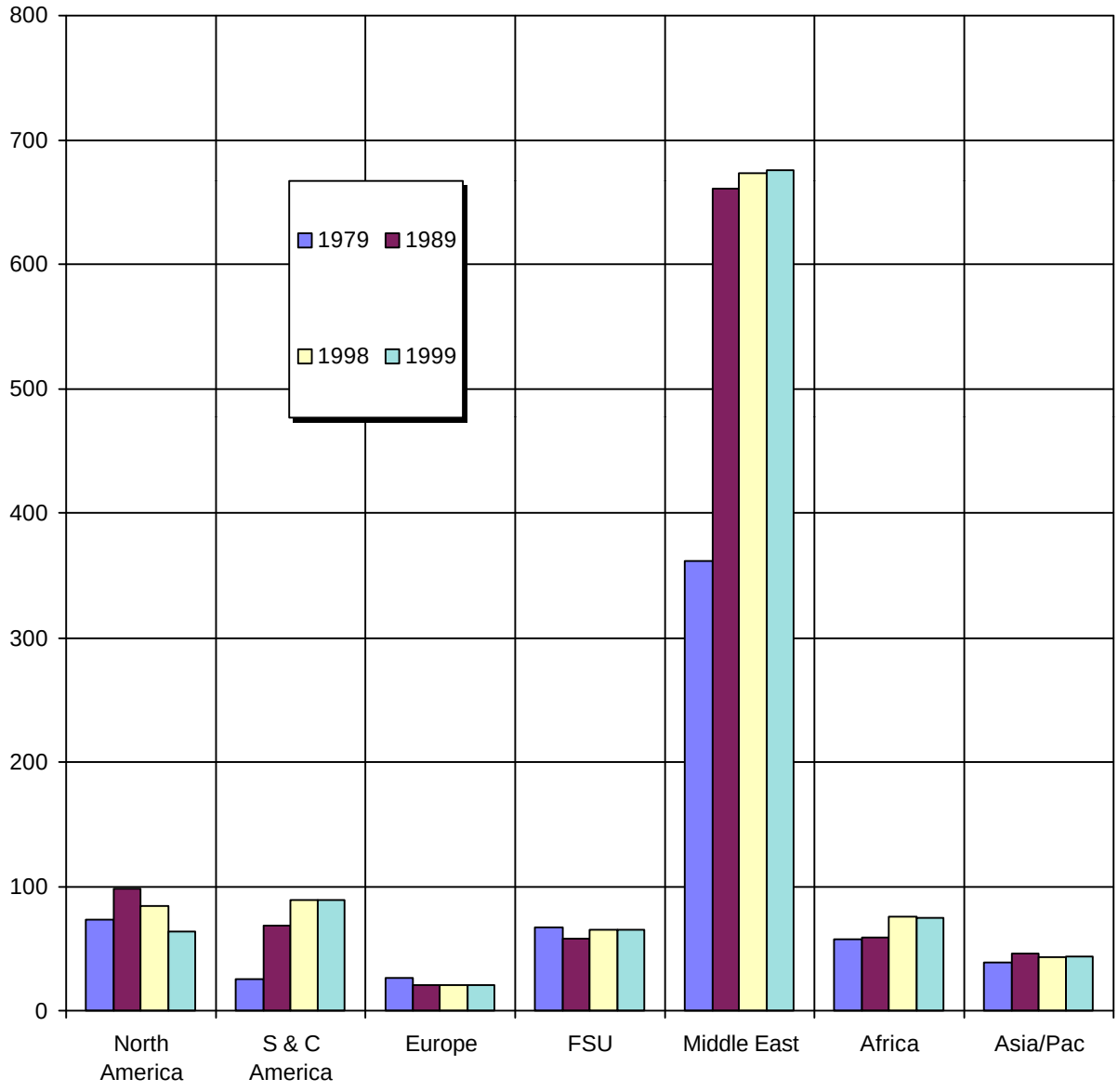


Adapted by Anthony H. Cordesman from data provided by the IEA, Oil Market Report, May 11, 2000. p. 45.

Figure II.4

Shifts in the Regional Balance of Oil Reserves

(Billions of Barrels)



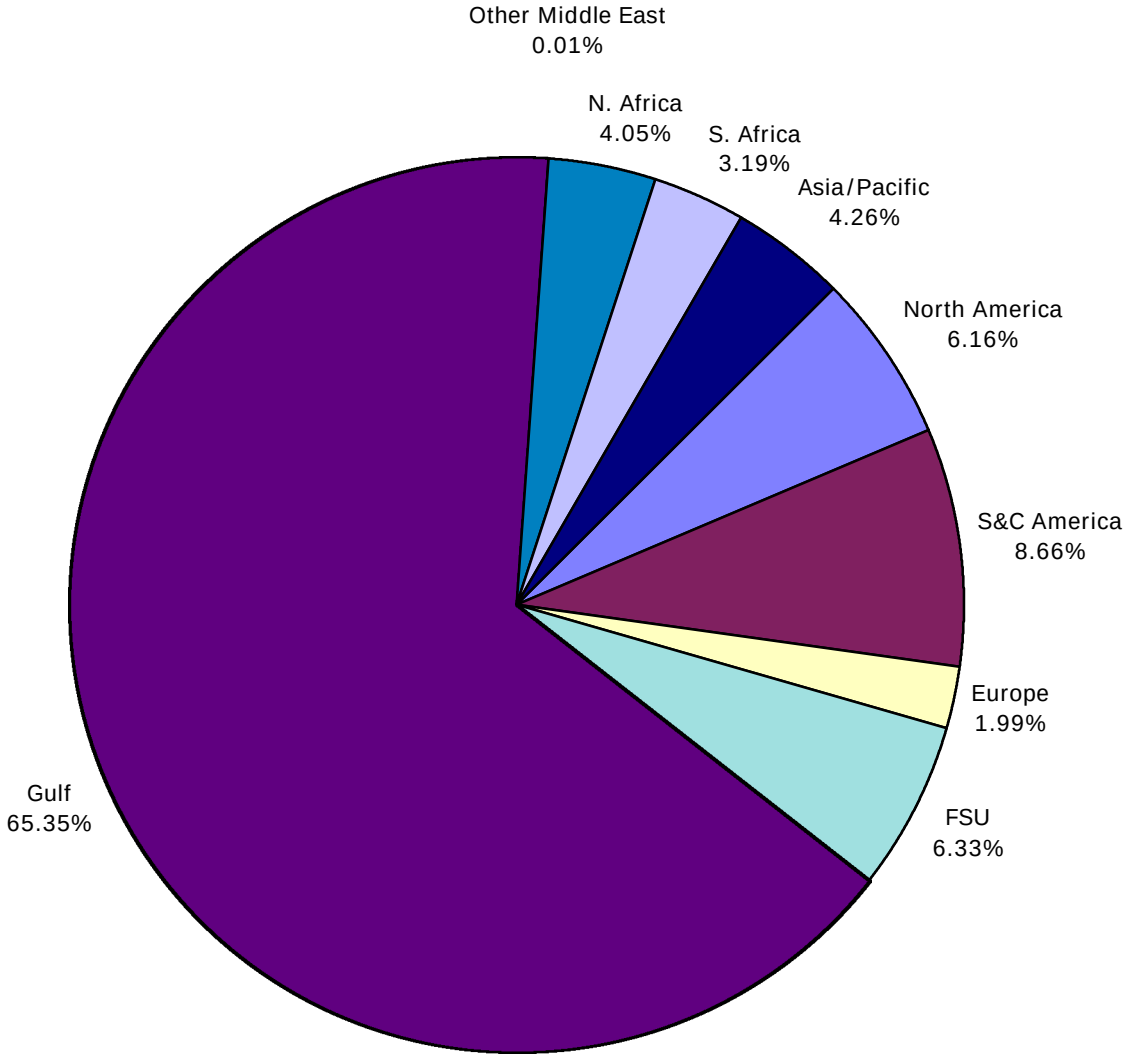
1979	73	25.2	26.6	67	361.8	57.1	39.4
1989	98.4	68.7	20.5	58.4	660.3	58.8	46.6
1998	84.7	89	20.8	65.4	673.6	75.4	43.1
1999	63.7	89.5	20.6	65.4	675.7	74.9	44

Source: Oil and Gas Journal, and BP Statistical Review of World Energy, 2000, p. 4.

Figure II.5

The Middle East and the Gulf Dominate Future Oil Supply: World Oil Reserves by Region as a Percent of World Total

(Based on Oil and Gas Journal Forecast for and a World Total of 1,052.9 billion barrels)

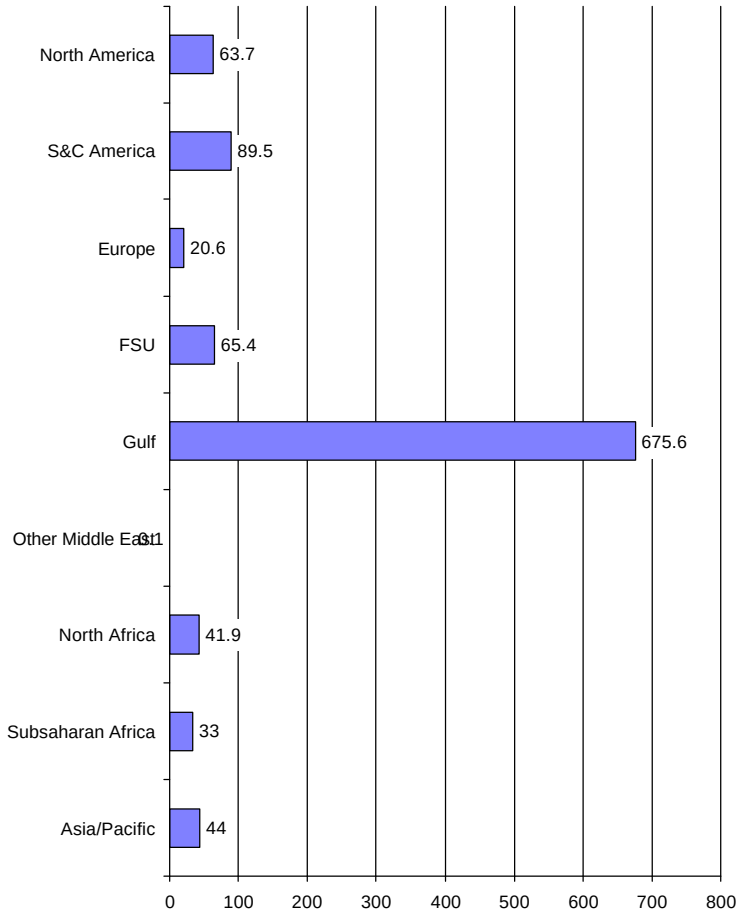


Source: Oil and Gas Journal, and BP Statistical Review of World Energy, 2000, p. 4.

Figure II.6

The Middle East and the Gulf Dominate Future Oil Supply: World Oil Reserves by Region in Billions of Barrels

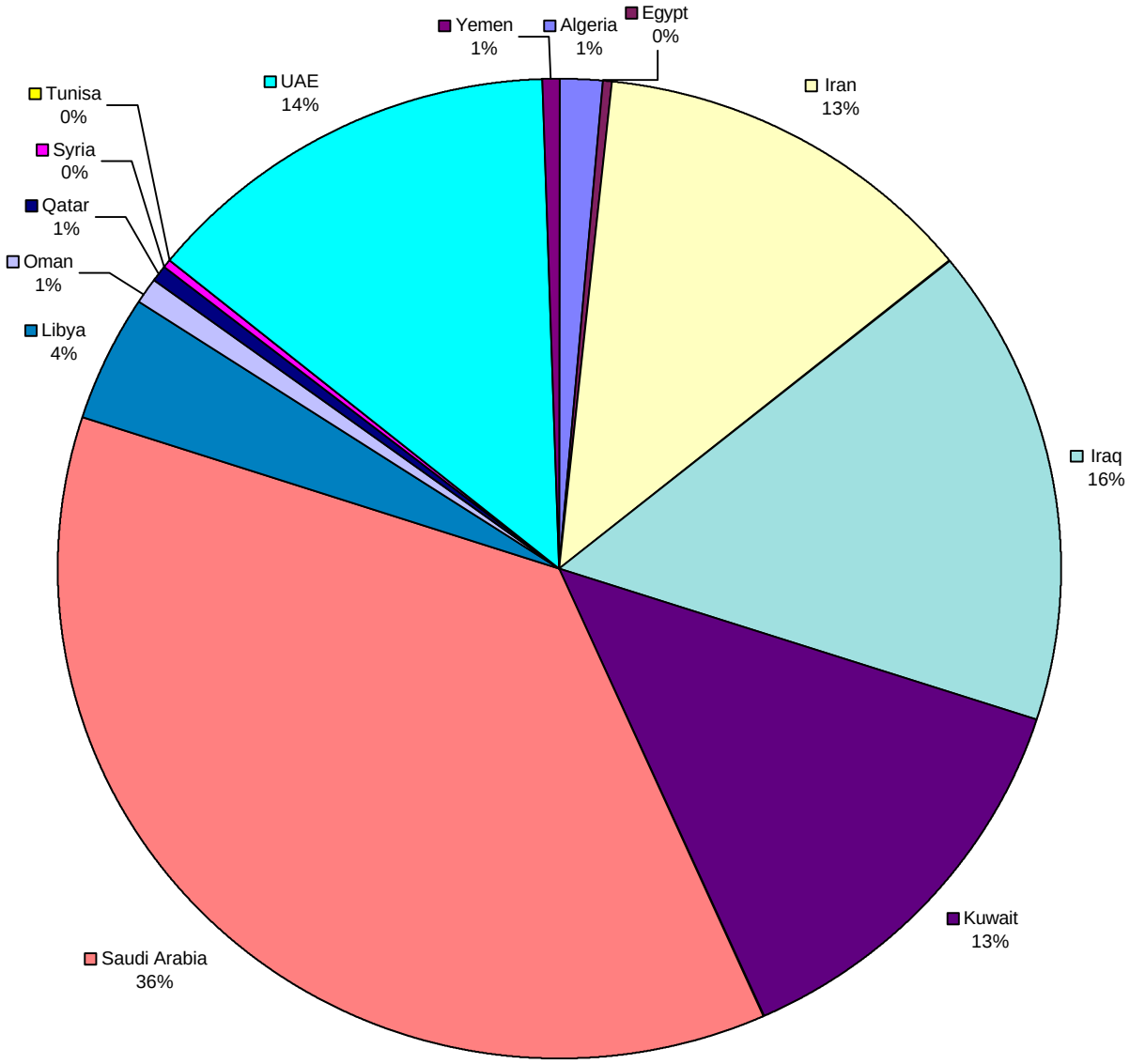
(Based on Oil and Gas Journal Forecast for and a World Total of 1,052.9 billion barrels)



Source: Oil and Gas Journal, and BP Statistical Review of World Energy, 2000, p. 4.

Figure II.7

Country Shares of Middle Eastern Oil Reserves
(in Percent of Total)



Source: BP Amoco Statistical Review of World Energy, 2000, p.4.

Figure II.8

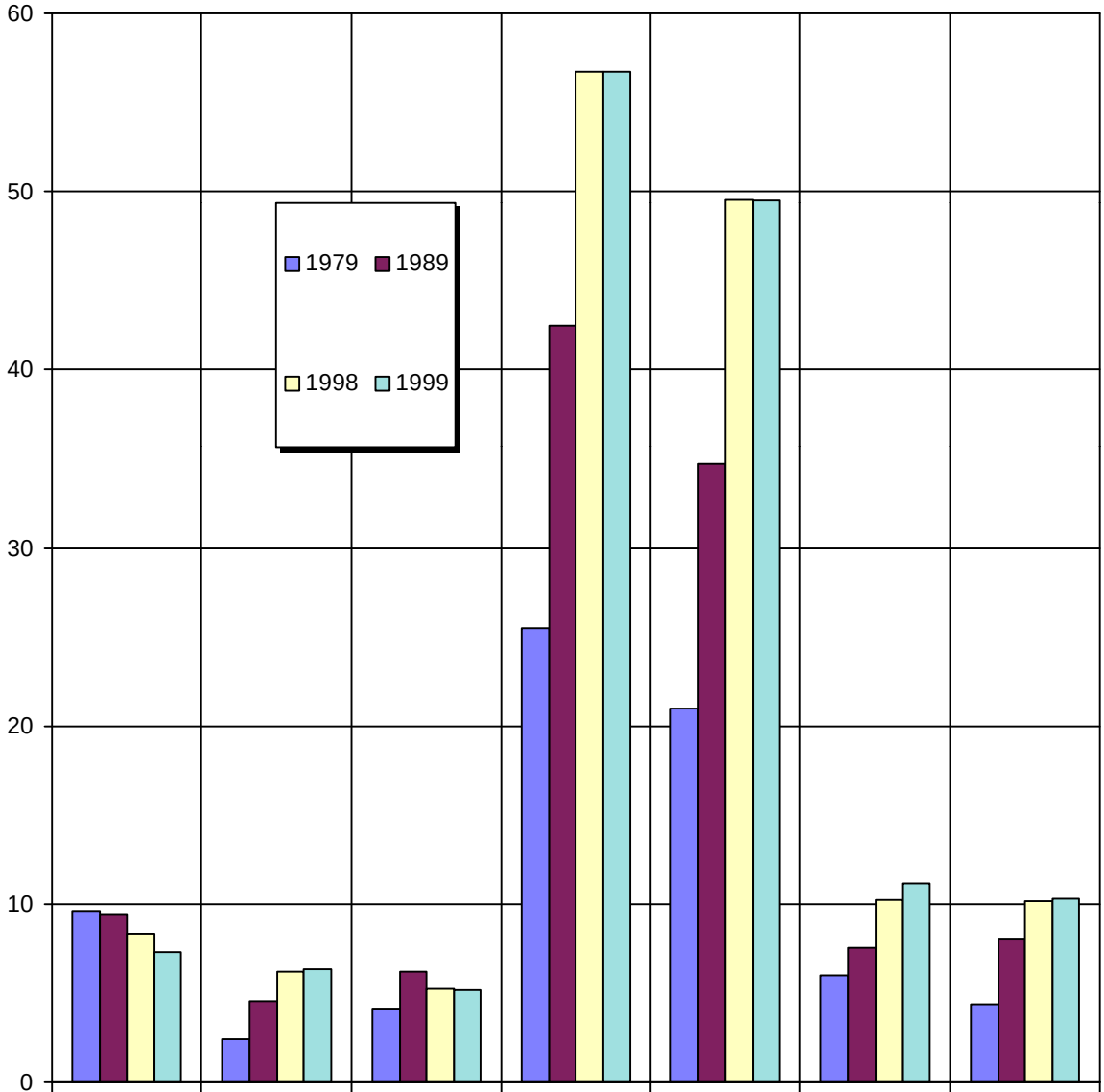
Proven Middle Eastern Oil Reserves by Country

(in Billions of Barrels)

	End 1998	End 1999	Percent of World Proven Reserves	Reserve to production Ratio Years at Current Rate
Algeria	9.2	9.2	0.9%	20.6
Egypt	3.5	2.9	0.3%	10
Iran	89.7	89.7	8.7%	69.9
Iraq	112.5	112.5	10.9%	100+
Kuwait	96.5	96.5	9.3%	100+
Libya	29.5	263.5	25.5%	57.4
Oman	5.3	29.5	2.9%	15.9
Qatar	3.7	5.3	0.5%	14.7
Saudi Arabia	261.5	3.7	0.4%	87.5
Syria	2.5	2.5	0.2%	12.3
Tunisia	0.3	0.3	0.0%	10.1
UAE	97.8	97.8	9.5%	100+
Yemen	4	4	0.4%	27.9
Total	716	717.4	69.4%	87

Source: BP Amoco Statistical Review of World Energy, 2000, p.4.

The Role of the Middle East in the Regional Balance of World Gas Reserves: 1979-1999
(Trillions of Cubic Meters)



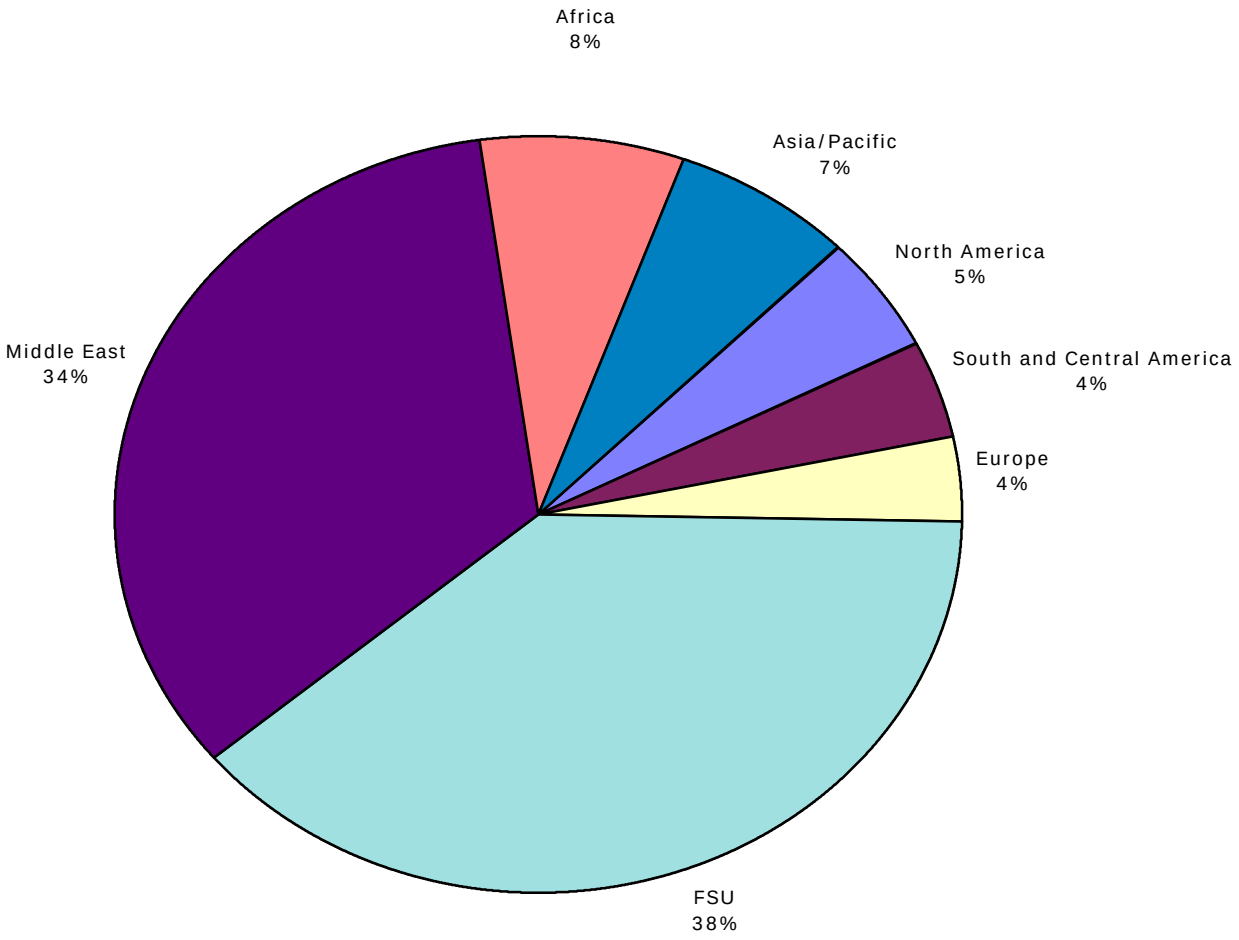
	North America	S & C America	Europe	FSU	Middle East	Africa	Asia/Pac
1979	9.58	2.42	4.13	25.48	20.95	5.96	4.35
1989	9.42	4.54	6.18	42.47	34.72	7.55	8.03
1998	8.35	6.21	5.21	56.7	49.53	10.22	10.17
1999	7.31	6.31	5.15	56.7	49.52	11.16	10.28

Source: Oil and Gas Journal, and BP Amoco Statistical Review of World Energy, 2000, p. 20.

Figure II.10

Proved Middle Eastern and the Gulf Gas Reserves as a Percent of World Total

(Based on Oil and Gas Journal Forecast for a World Total of 146.43 Trillion Cubic Meters)

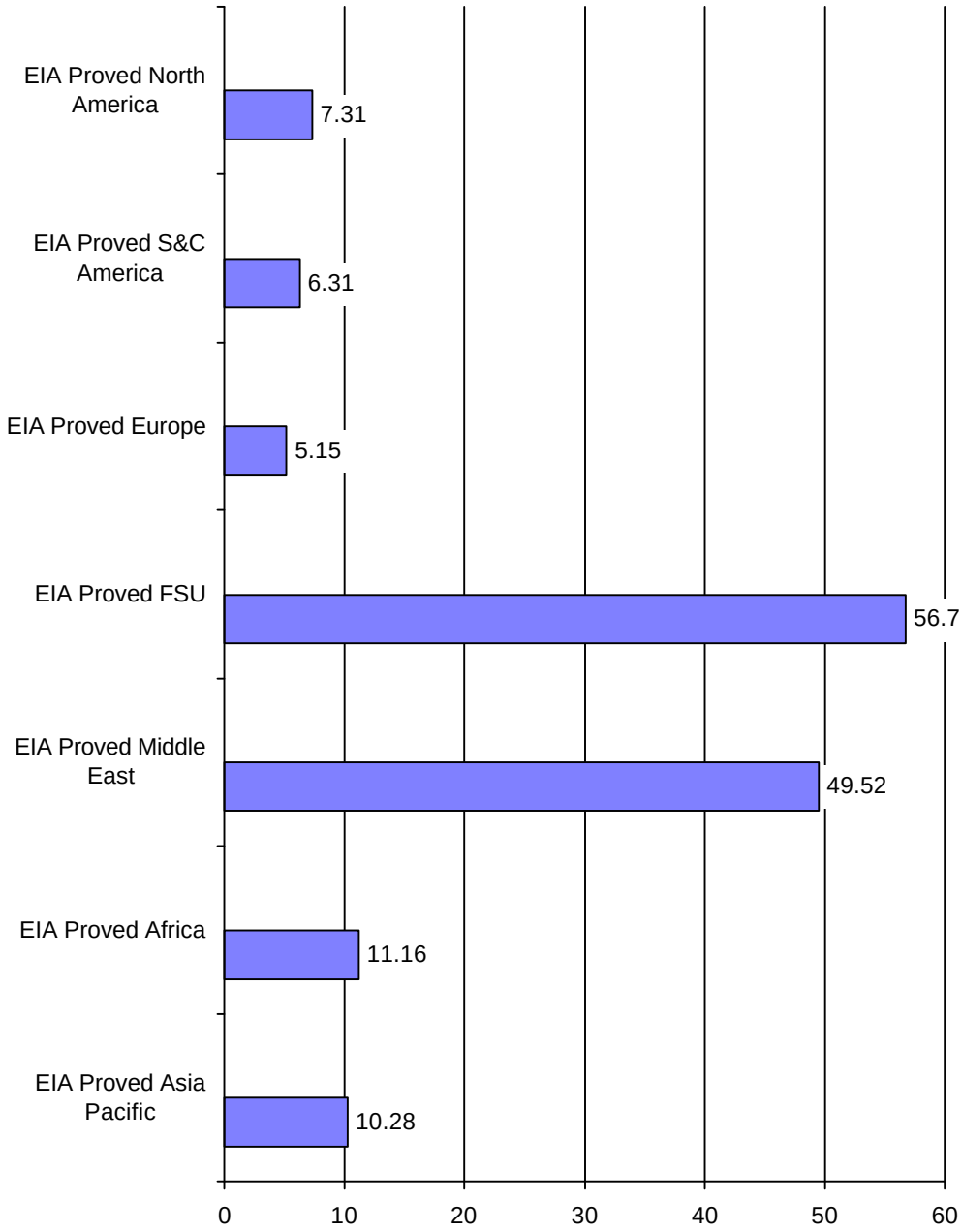


Source: Oil and Gas Journal, and BP Amoco Statistical Review of World Energy, 2000, p. 20.

Figure II.11

The FSU and the Middle East Dominate Proven World Gas Reserves

(in Trillions of Cubic Meters)

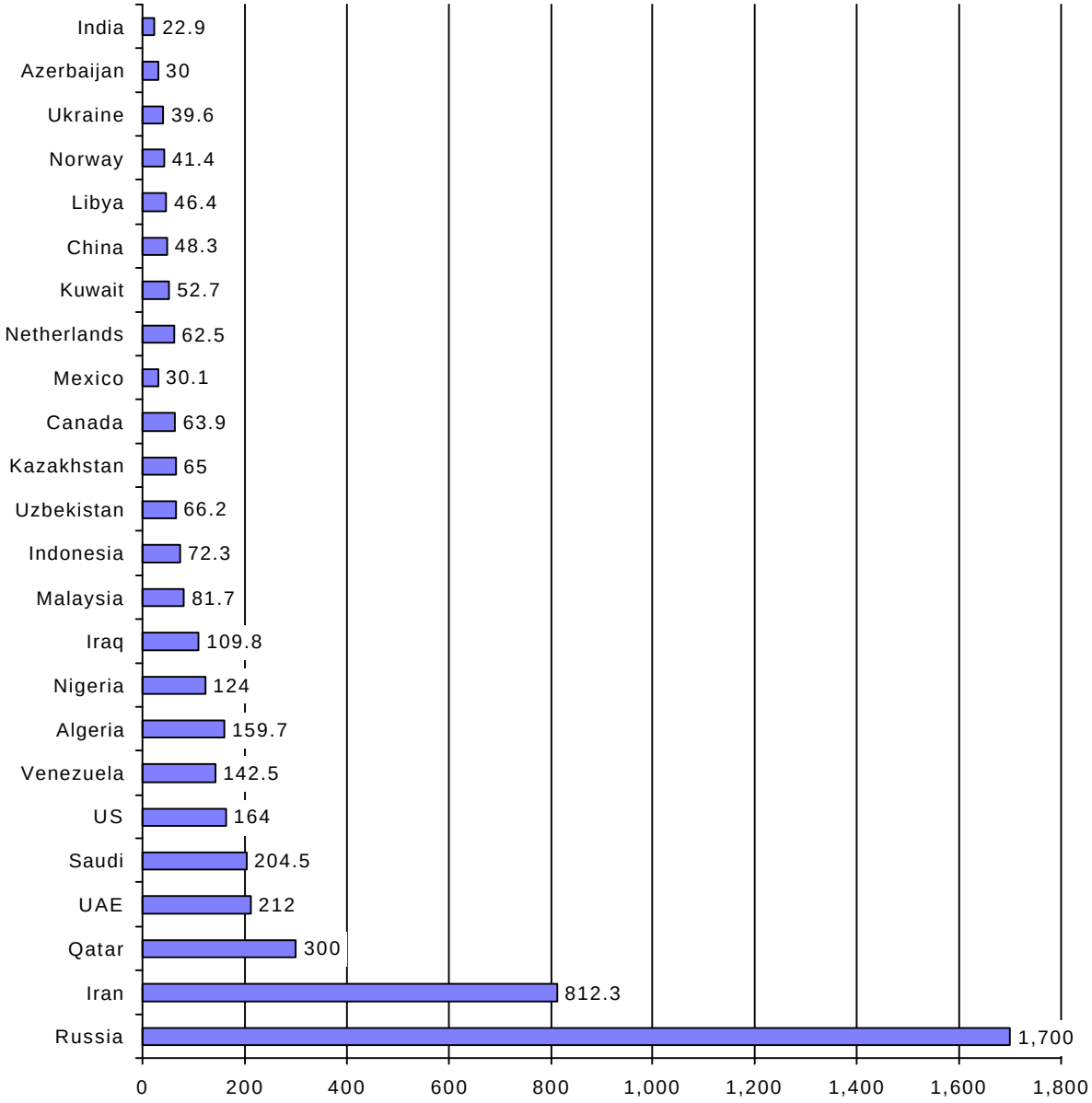


Source: Oil and Gas Journal, and BP Amoco Statistical Review of World Energy, 2000, p. 20.

Figure II.12

The Importance of Middle Eastern States in Terms of Proven World Gas Reserves by Key Nations

(Trillions of Cubic Feet in Reserves)

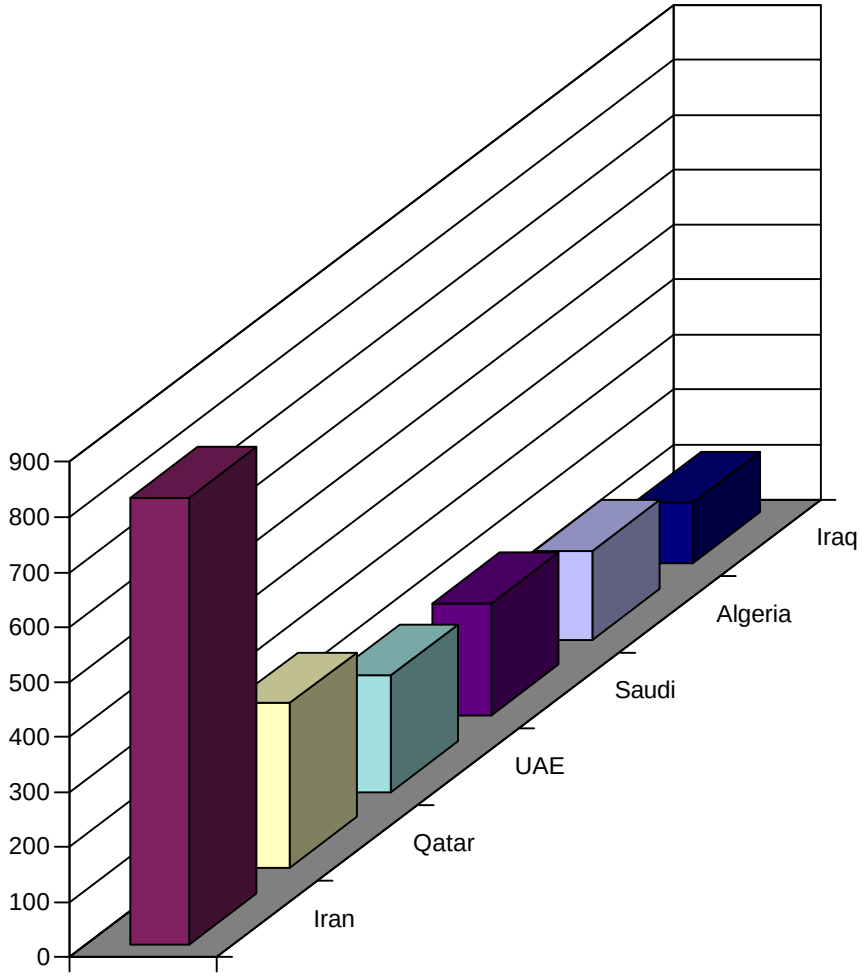


Source: Oil and Gas Journal, and BP Amoco Statistical Review of World Energy, 2000, p. 20.

Figure II.13

Proven Gas Reserves by Middle Eastern Nation

(Nations with at least 100 Trillion Cubic Feet in reserves)

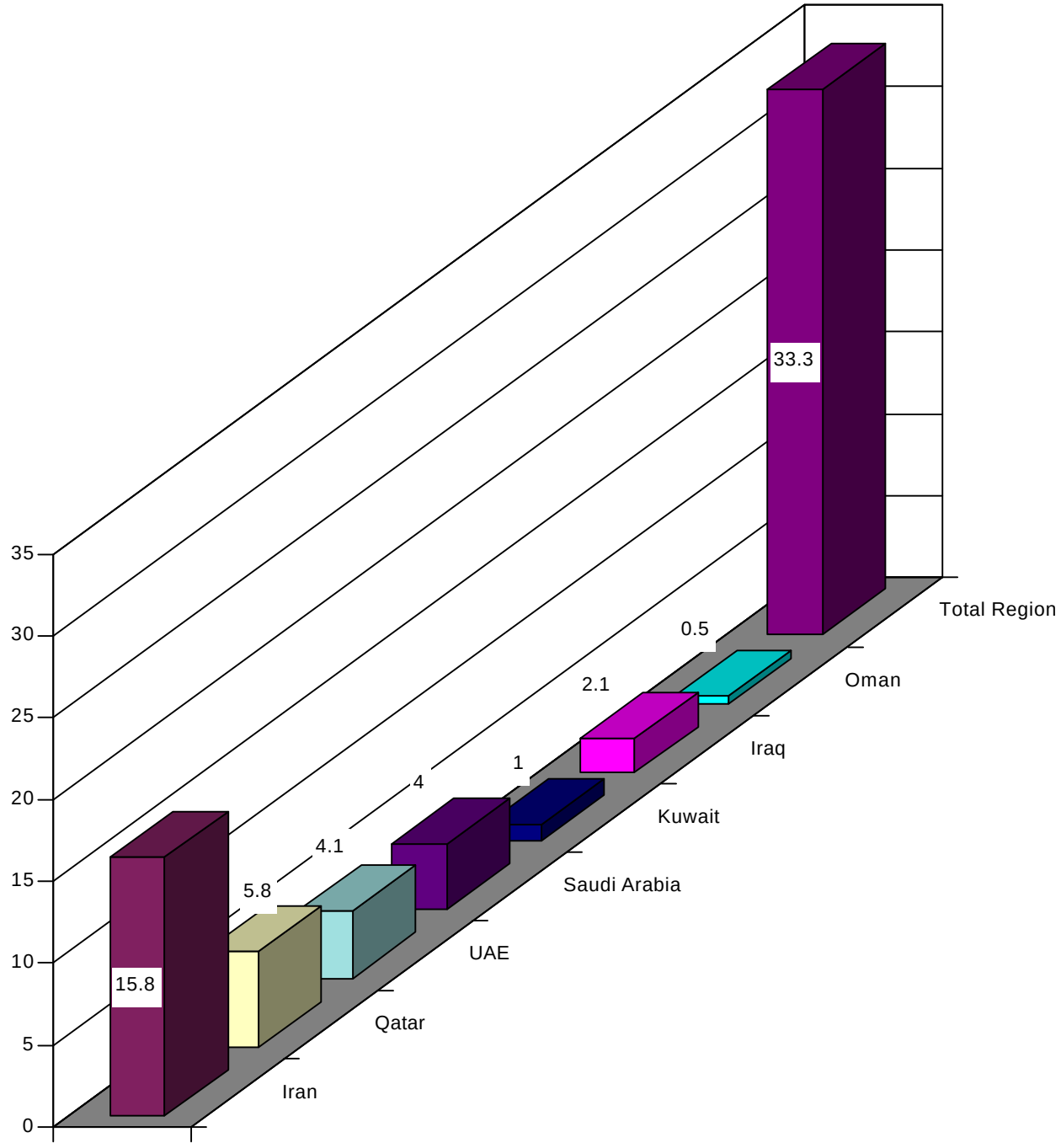


Iran	812
Qatar	300
UAE	212
Saudi	204
Algeria	160
Iraq	110

Source: Adapted by Anthony H. Cordesman from DOE/EIA, International Energy Outlook, 2000, March 2000, DOE/EIA-0484(00), Reference Case, p. 46.

Figure II.14

Proven Gulf Gas Reserves as Percent of Total Proved World Gas Reserves



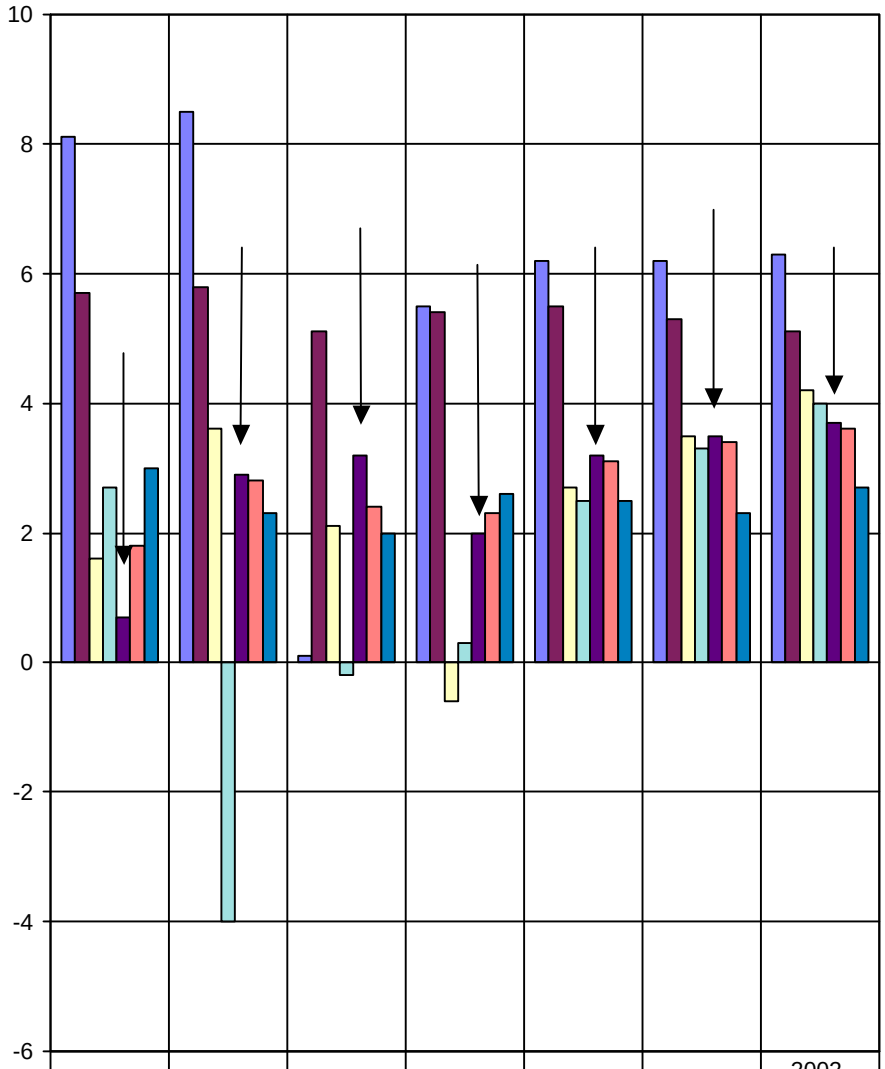
Source: Adapted by Anthony H. Cordesman from DOE/EIA, International Energy Outlook, 2000, March 2000, DOE/EIA-0484(00), Reference Case, p. 46. Oil and Gas Journal, and BP Amoco Statistical Review of World Energy, 2000, p. 20.

III. GEOPOLITICS AND THE FUTURE

Figure III.1

The Middle East's Track Record in Economic Growth: 1981-2007

(Growth as a Percent of Real GDP)



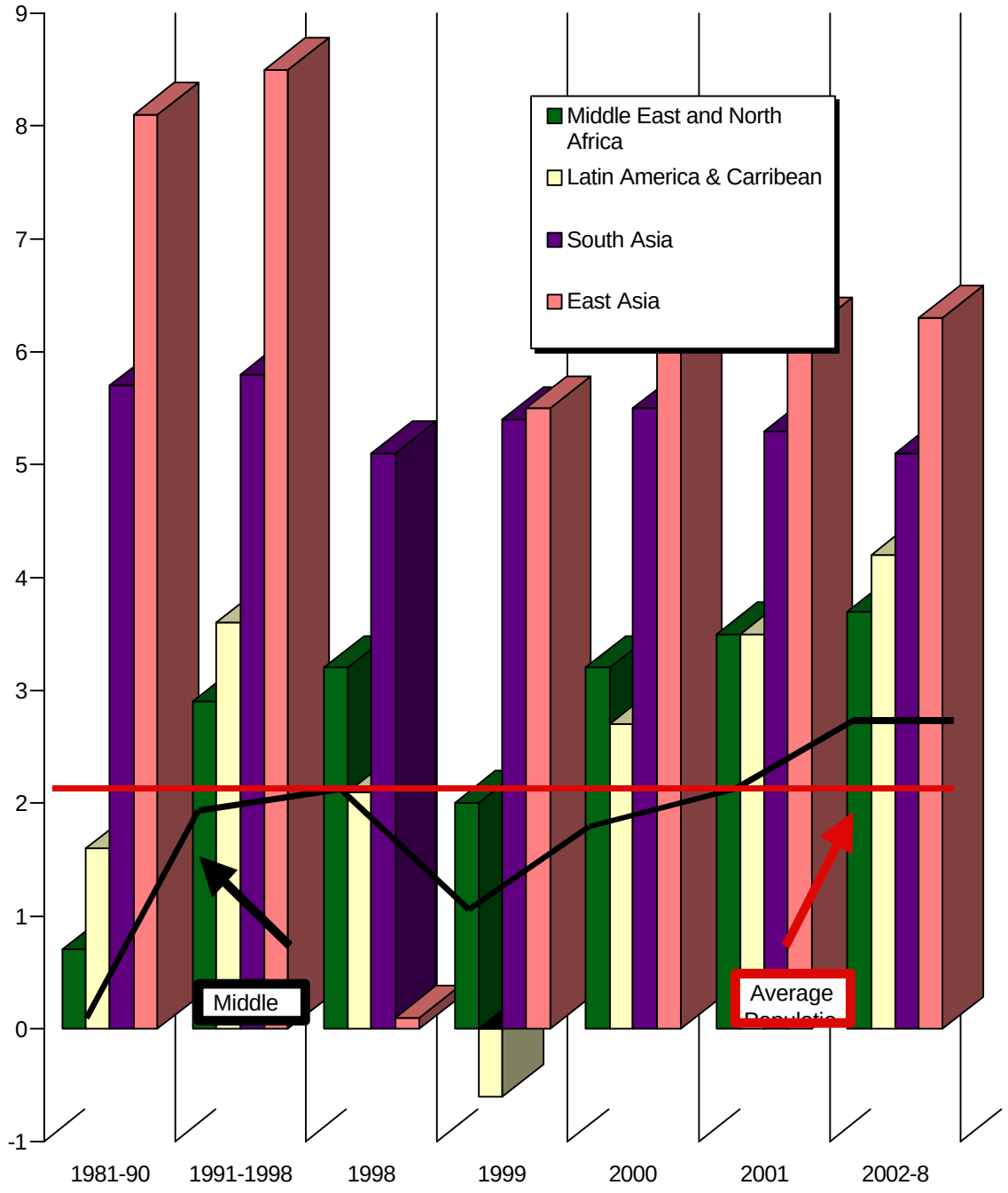
	1981-90	1991-98	Est. 1998	1999*	2000*	2001*	2002-2008*
E. Asia & Pacific	8.1	8.5	0.1	5.5	6.2	6.2	6.3
South Asia	5.7	5.8	5.1	5.4	5.5	5.3	5.1
Latin America & Carribean	1.6	3.6	2.1	-0.6	2.7	3.5	4.2
Developing Europe and Central Asia	2.7	-4	-0.2	0.3	2.5	3.3	4
Middle East and North Africa	0.7	2.9	3.2	2	3.2	3.5	3.7
Sub-Saharan Africa	1.8	2.8	2.4	2.3	3.1	3.4	3.6
High Income Countries	3	2.3	2	2.6	2.5	2.3	2.7

*Forecasts

Source: Adapted by Anthony H. Cordesman from World Bank, Annual Report 2000: Prospects for Growth and Poverty Reduction, 2000, p. 23.

Figure III.2

Economic Growth Rate Versus Other Developing Regions and the Population Growth Rate in the Middle East
(Growth as a Percent of Real GDP)

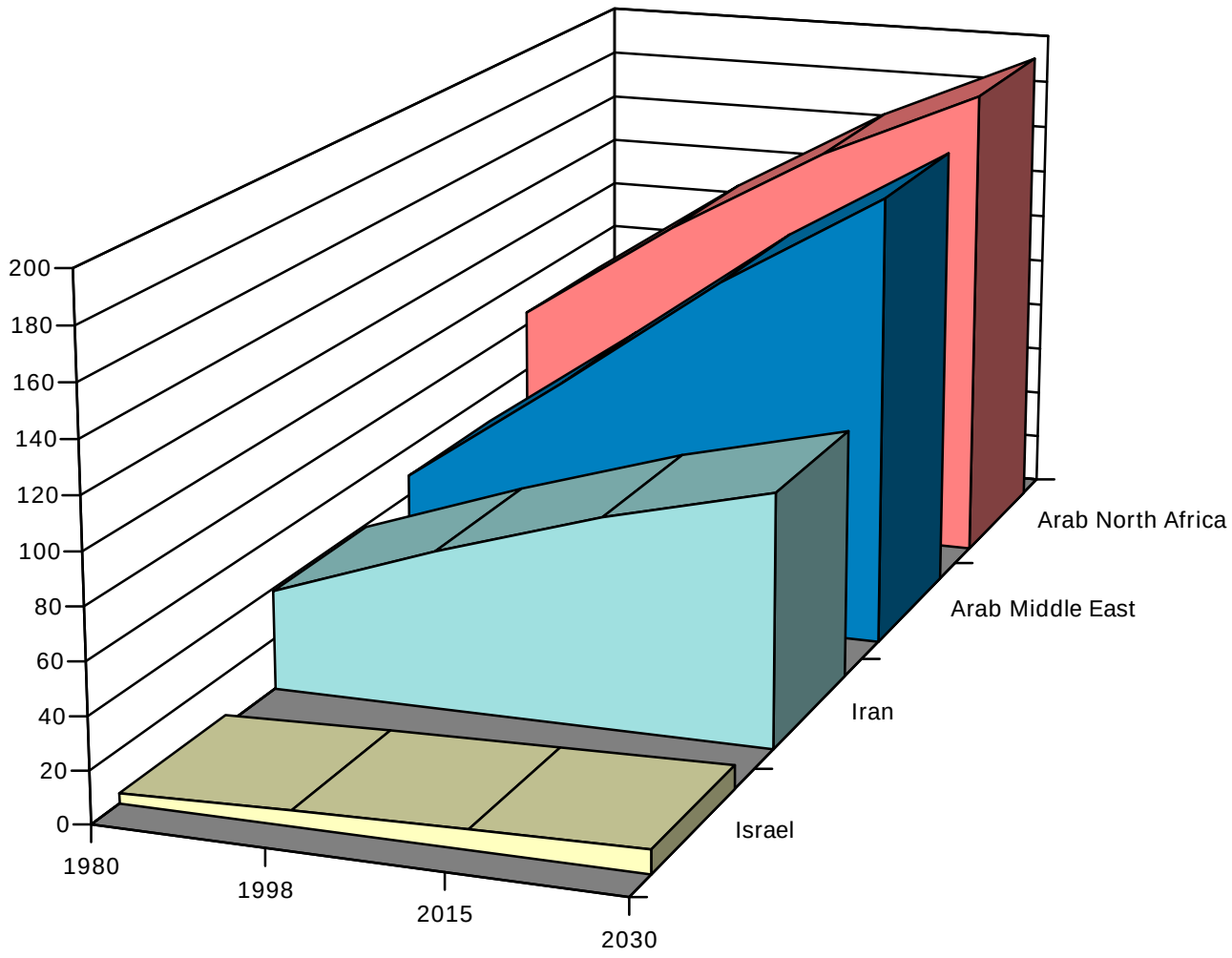


Source: Adapted by Anthony H. Cordesman from World Bank, Global Economic Prospects and the Developing Countries, 1996, p. 22

Figure III.3

The Population Time Bomb: Demographics of the Middle East: 1990-2030:

(Johns Hopkins/World Bank Estimate in Millions)

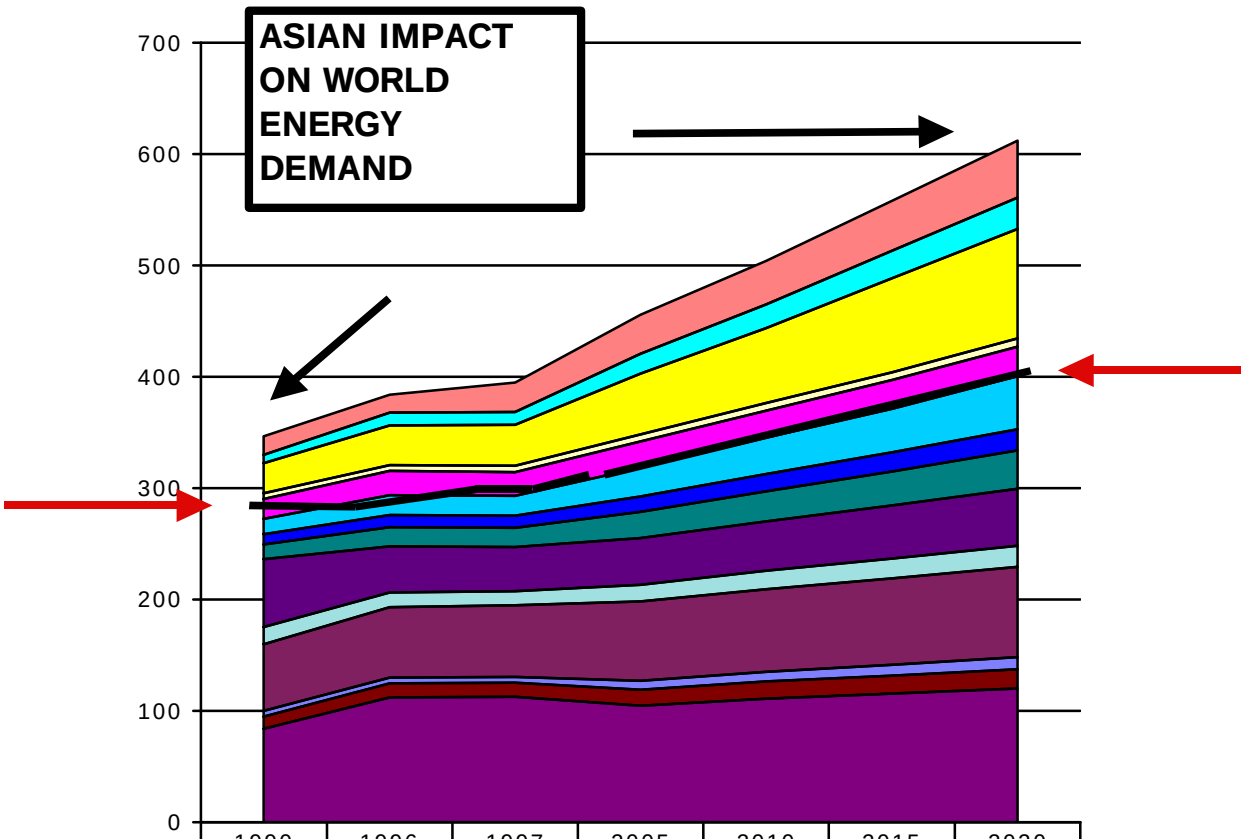


Adapted by Anthony H. Cordesman from World Bank data base for World Development Indicators, 2000.

IV. GEOPOLITICAL PROBLEMS AND POSSIBLE FUTURE "TIME BOMBS"

Figure IV.1

Rising World Energy Demand by Region: 1970-2015
(Quadrillion BTU)



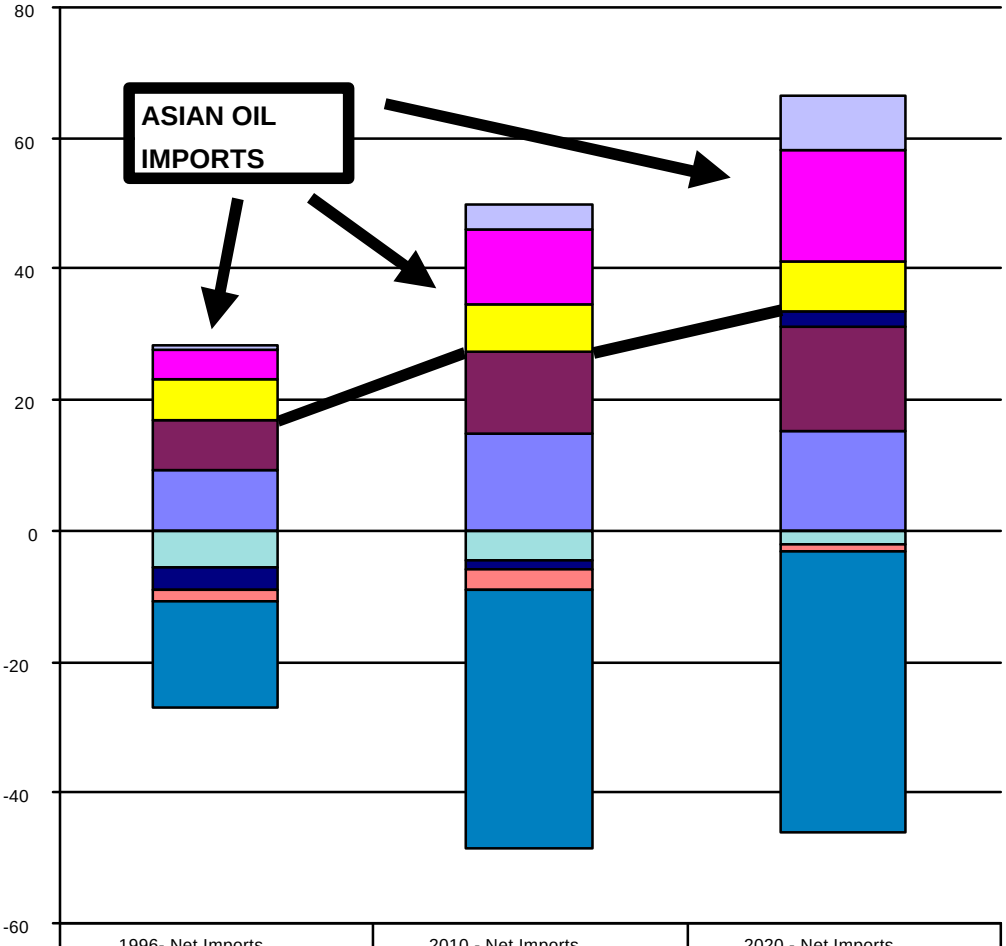
	1990	1996	1997	2005	2010	2015	2020
Other Dev. Asia	16.7	16.1	26	35	39.3	45.1	51.4
India	7.8	11.6	11.5	17.5	20.8	24.2	28.2
China	27	35.8	37.1	55	67.6	84.8	98.3
Australasia	4.9	5.4	5.5	6.2	6.5	6.8	7.1
Japan	18.1	21.4	21.4	23.3	24.4	25.6	26.5
Central/South America	13.7	17.8	17.7	26.3	32.6	39.4	47.7
Africa	9.3	11.1	11.1	13.8	15.5	17.1	18.9
Middle East	13.1	17.1	17.3	23.5	27	30.6	34.7
FSU	61	41.8	39.8	41.8	44.7	47.8	51.1
Eastern Europe	15.3	12.7	12.6	15.1	16.3	17.5	18.7
Western Europe	59.9	63.3	64	71.3	74.6	77.9	81.5
Mexico	5	5.5	5.6	7.7	8.6	9.6	10.7
Canada	10.9	12.6	12.6	14.5	15.4	16.2	17.5
US	84	112	112.5	104.7	110.8	115.5	119.9

Source: EIA, International Energy Outlook, 1999, DOE/EIA-0484(00), March 2000, p.171.

Figure IV.2

The Impact of Asia on World Oil Demand, Supply, and Imports: 1996-2020

(In Millions of Barrels Per Day)



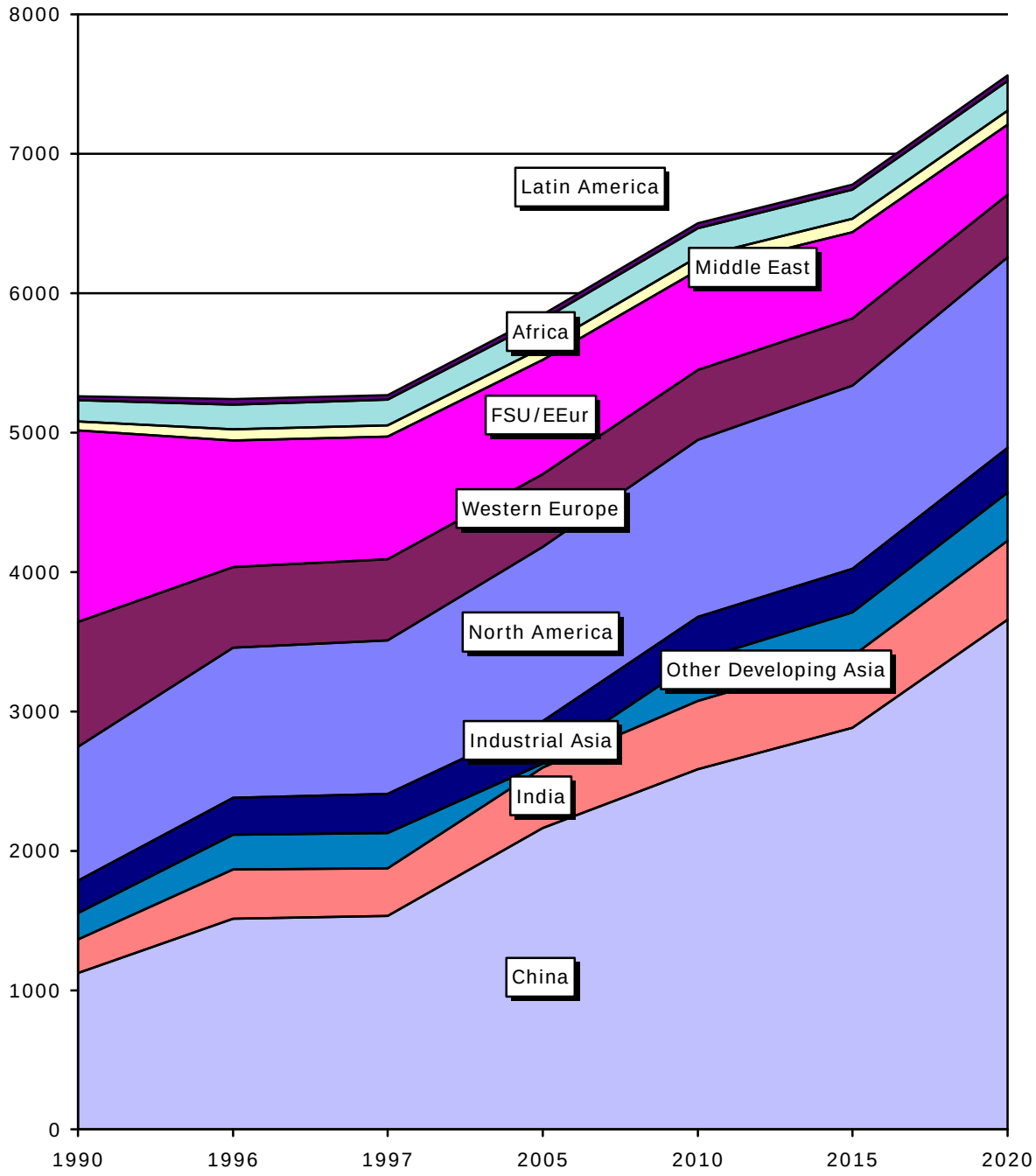
	1996- Net Imports	2010 - Net Imports	2020 - Net Imports
China	0.5	3.9	8.1
S & E. Asia	4.8	11.3	17.2
OECD Pacific	6	7.4	7.6
Middle East	-16.3	-39.7	-42.9
FSU & EE	-1.8	-3	-0.9
Latin America	-3.5	-1.4	2.5
Africa	-5.5	-4.6	-2.2
OECD Europe	7.7	12.5	15.9
OECD North America	9.3	14.8	15.1

Adapted by Anthony H. Cordesman IEA, World Energy Outlook, 1998, pp. 116-118.

Figure IV. 3

Coal Consumption and Potential Oil Demand: 1990-2020

(Million Short Tons)

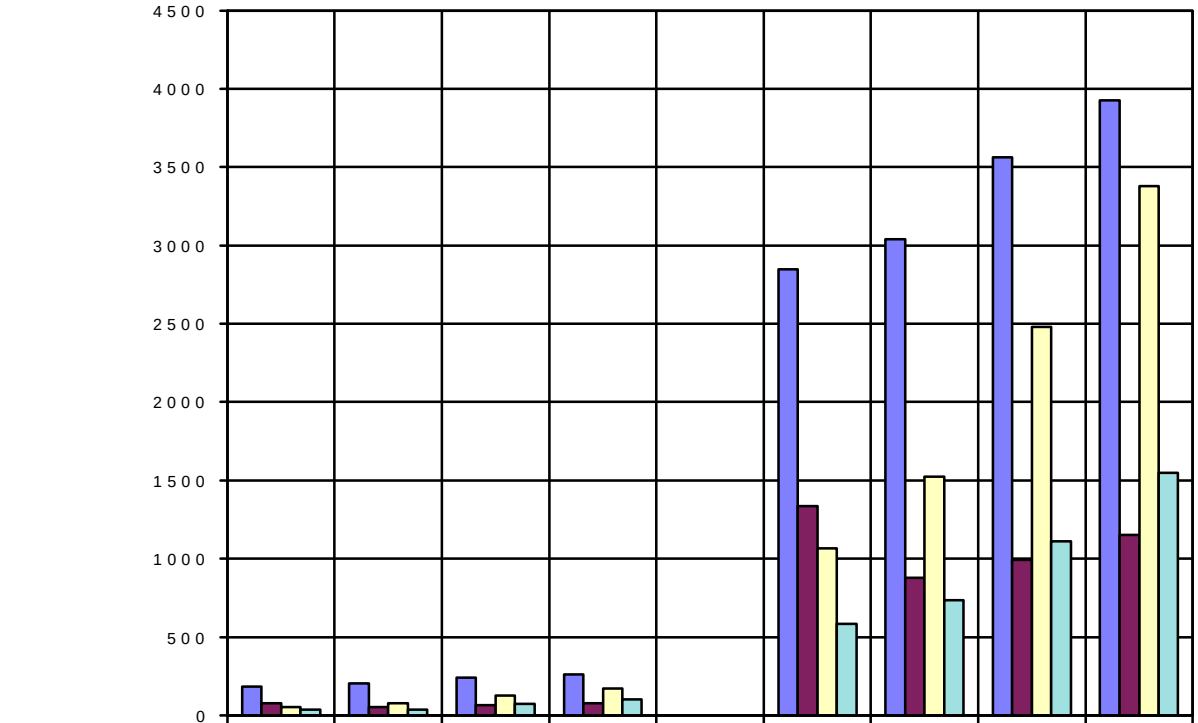


Source: Adapted by Anthony H. Cordesman from DOE/EIA, International Energy Outlook, 2000, Washington, DOE, EIA-0484(00), March 2000, p.177.

Figure IV. 4

Environmental Uncertainties and Demand: The Potential Impact of the "Kyoto Challenge" on Oil and Gas Imports

(Energy Consumption in Quads vs. Carbon Emissions In Millions of Metric Tons, EIA Reference Case)



	1990-Quads	1997-Quads	2010-Quads	2020-Quads		1990-Carbon	1997-Carbon	2010-Carbon	2020-Carbon
Industrialized	182.8	203.7	238.7	259.9		2850	3039	3563	3928
EE/FSU	76.4	53.3	63	75.7		1337	878	992	1151
Developing Asia	51.4	75.3	126.4	172.6		1067	1522	2479	3380
Other Developing	36.2	37.6	72.1	99.5		582	736	1112	1550

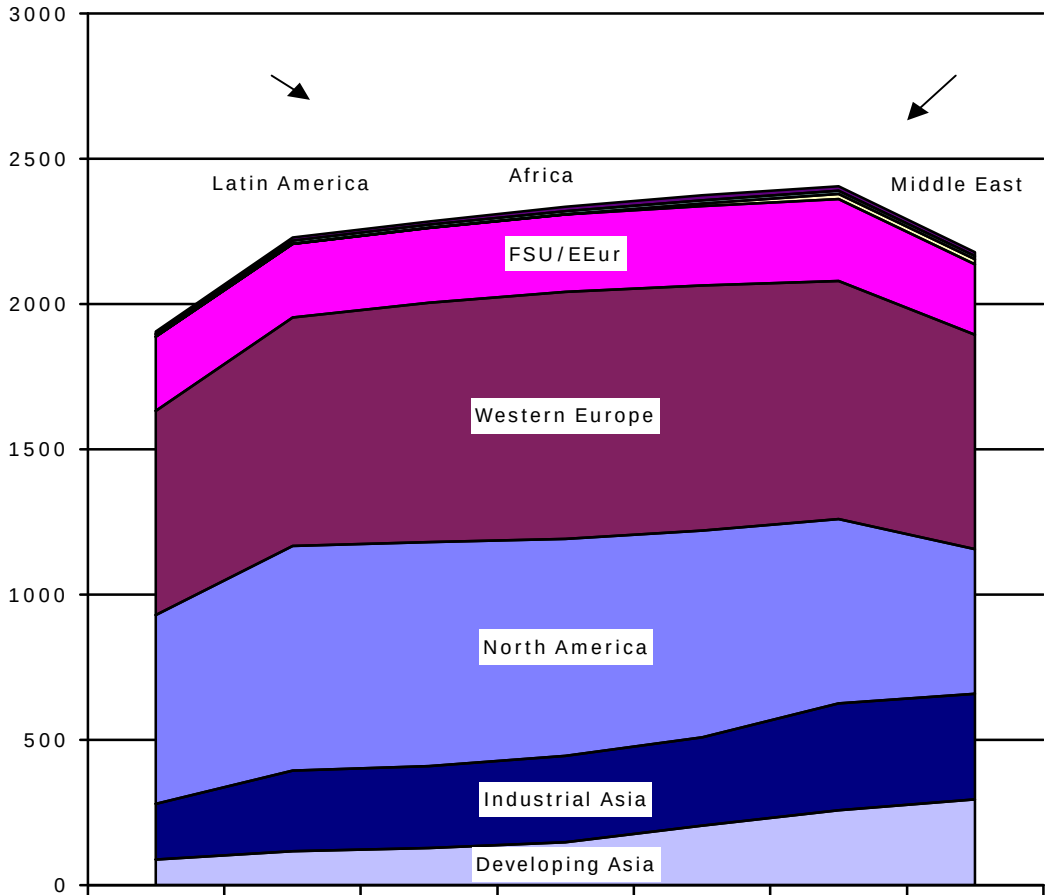
Total Annex 1	242.6	243.4	282.9	312.0		3904	3697	4255	4702
Total Developing	87.6	122.9	198.5	272.1		1649	2258	3591	4930
Total World	346.7	379.9	500.2	607.7		5836	6175	8146	10009

Source: Adapted by Anthony H. Cordesman from EIA, International Energy Outlook, 2000, DOE/EIA-0484 (00), March 2000, p. 171, 181.

Figure IV.5

Uncertain Demand for Nuclear Energy: Total World Consumption by Region: 1990-2020

(Billion Kilowatt Hours)

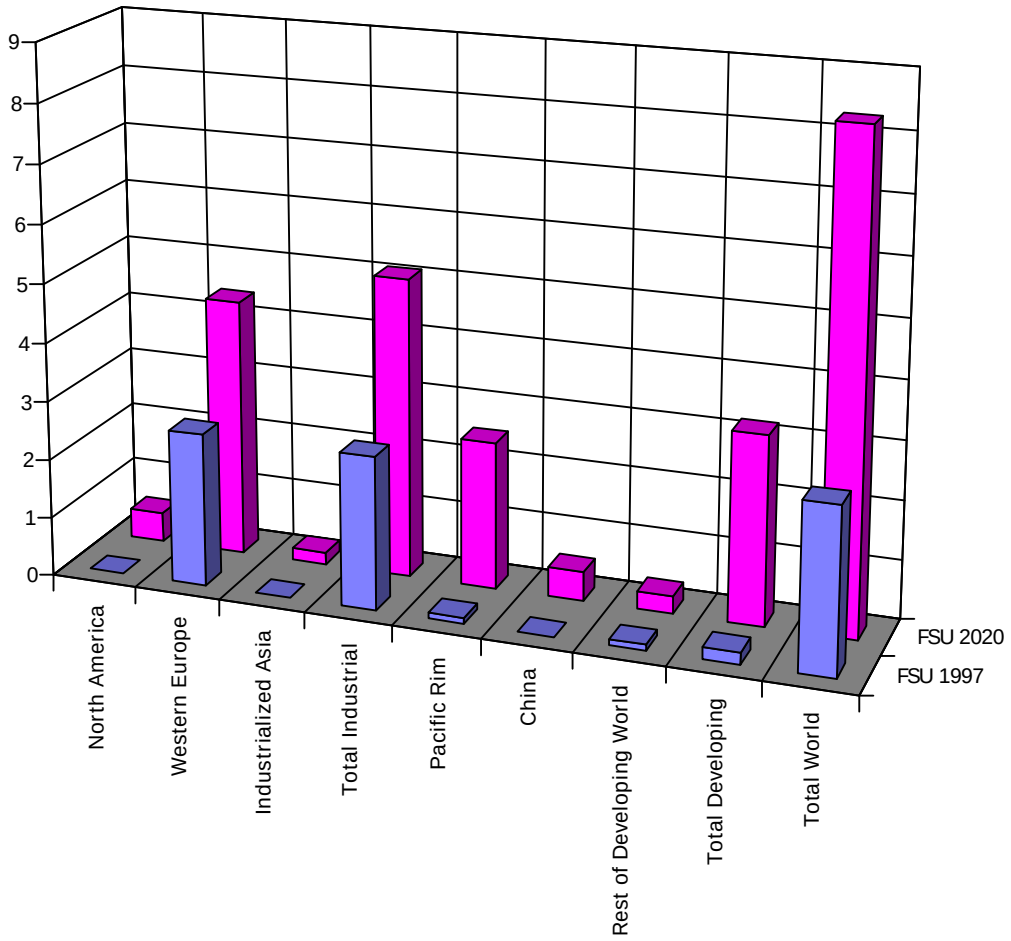


	1990	1996	1997	2005	2010	2015	2020
Latin America	9	9	10	15	17	17	13
Africa	8	12	13	11	11	11	11
Middle East	0	0	0	0	10	17	17
FSU/EEur	256	254	256	267	272	281	243
Western Europe	703	785	824	850	844	821	737
North America	649	774	770	746	710	633	498
Industrial Asia	192	277	283	299	305	368	363
Developing Asia	88	117	128	147	205	258	296

Source: Adapted by Anthony H. Cordesman from DOE/EIA, International Energy Outlook, 2000, Washington, DOE, EIA-0484(00), March 2000, p.178.

Figure IV.6

FSU Petroleum Exports by Destination: 1997 versus 2020
(in MMBD)



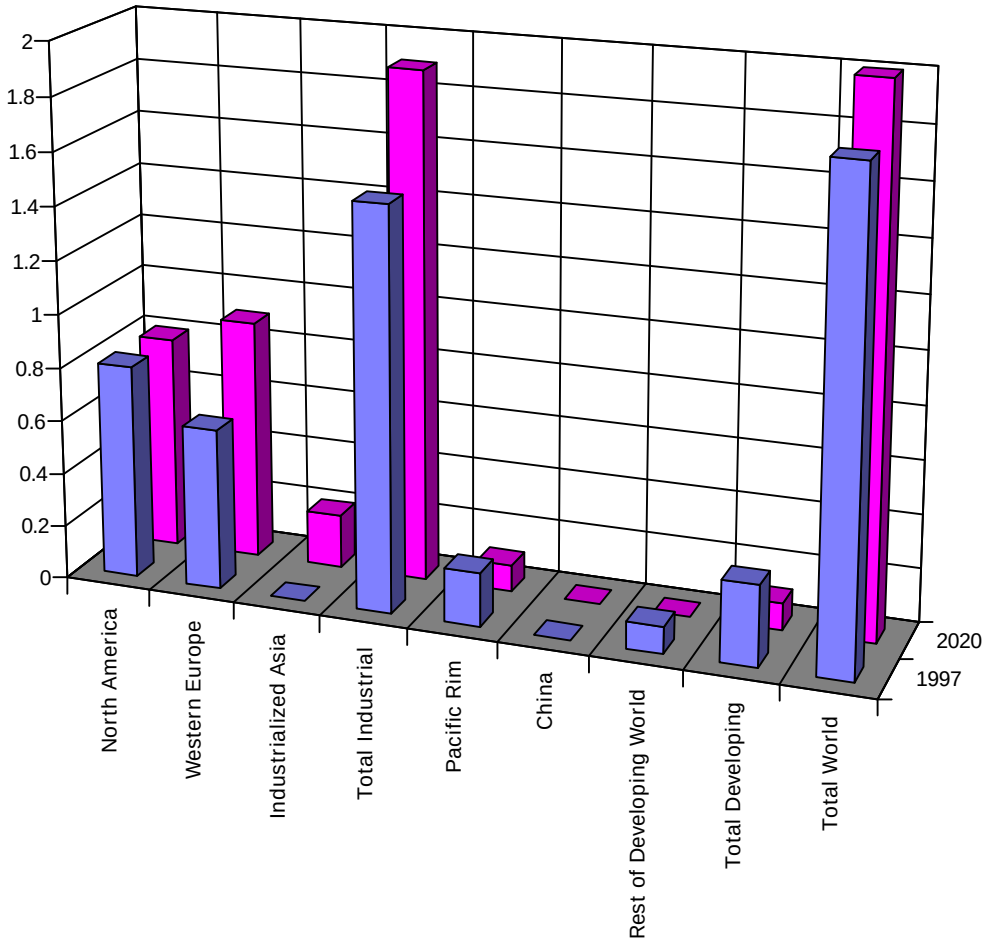
	North America	Western Europe	Industrialized Asia	Total Industrial	Pacific Rim	China	Rest of Developing World	Total Developing	Total World
FSU 1997	0	2.6	0	2.6	0.1	0	0.1	0.2	2.8
FSU 2020	0.5	4.4	0.2	5.1	2.5	0.5	0.3	3.2	8.3

Source: Adapted by Anthony H. Cordesman from EIA, International Energy Outlook, 2000, DOE/EIA-0484 (00), March 2000, p. 38.

Figure IV.7

The Other Side of the Hill: West African Oil Exports by Destination: 1997 versus 2020

(EIA Reference Case Estimate in MMBD)



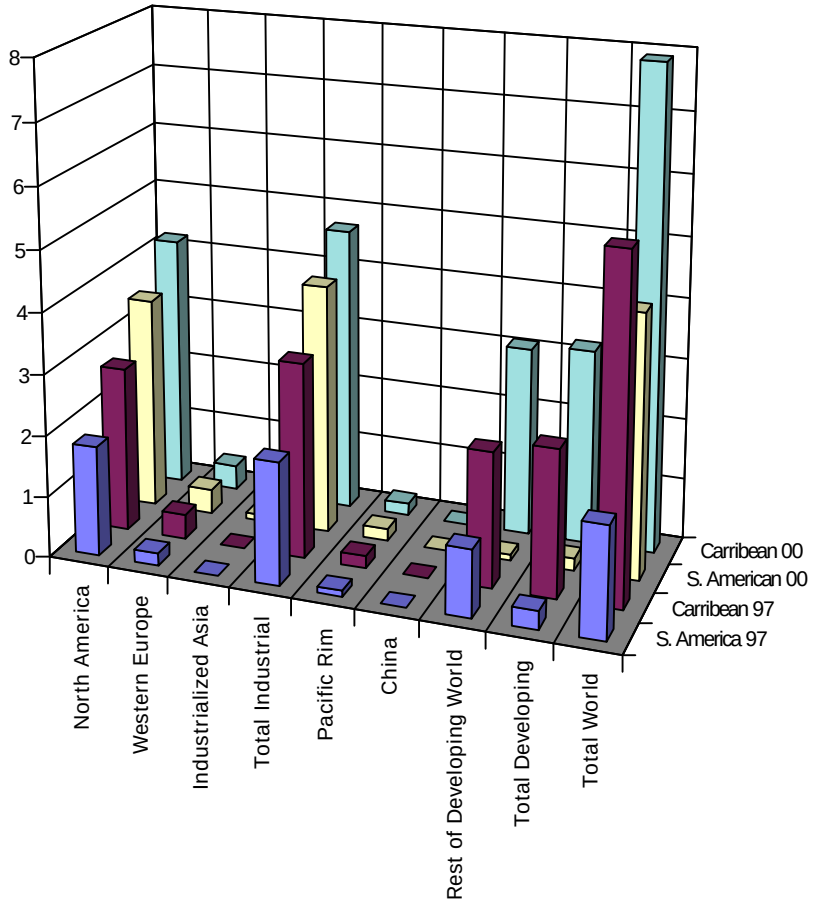
	North America	Western Europe	Industrialized Asia	Total Industrial	Pacific Rim	China	Rest of Developing World	Total Developing	Total World
1997	0.8	0.6	0	1.5	0.2	0	0.1	0.3	1.8
2020	0.8	0.9	0.2	1.9	0.1	0	0	0.1	2

Source: Adapted by Anthony H. Cordesman from EIA, International Energy Outlook, 2000, DOE/EIA-0484 (00), March 2000, p. 38.

Figure IV.8

The Other Side of the Hill: South American and Caribbean Basin Exports by Destination: 1997 versus 2020

(EIA Reference Case Estimate in MMBD)



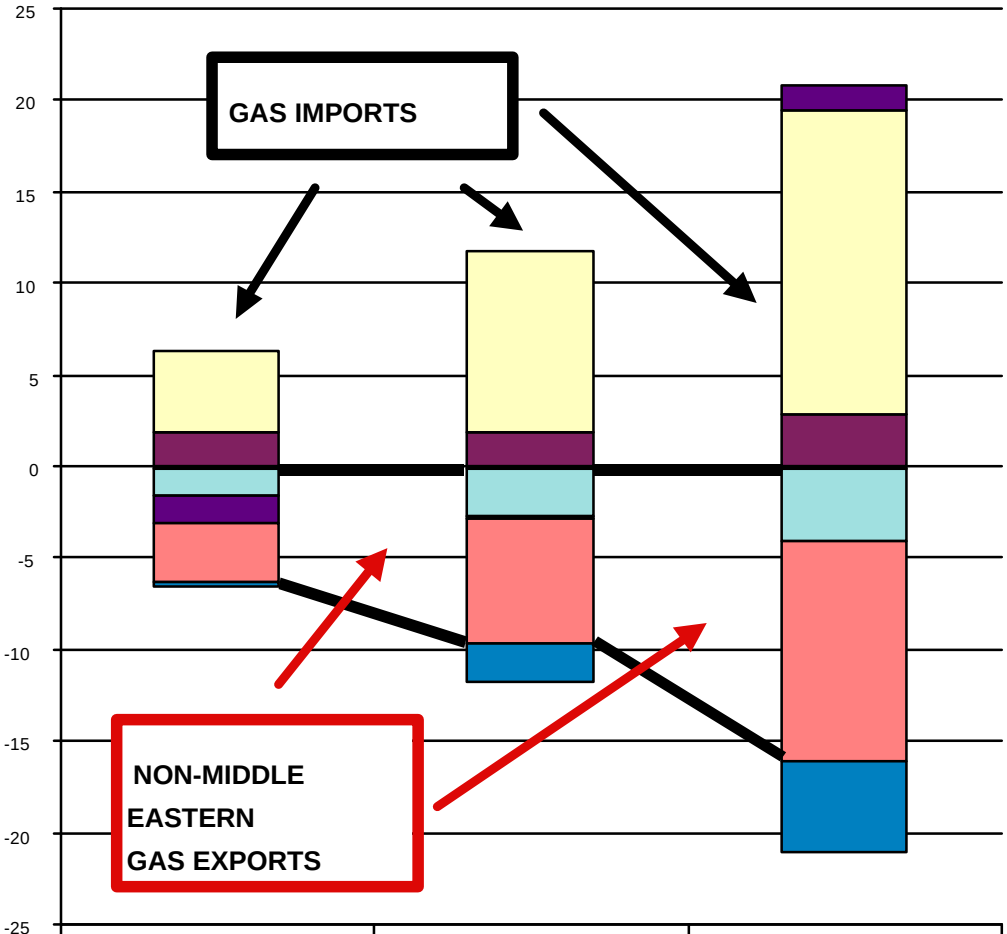
	North America	Western Europe	Industrialized Asia	Total Industrial	Pacific Rim	China	Rest of Developing World	Total Developing	Total World
S. America 97	1.8	0.2	0	2	0.1	0	1.1	0.3	1.8
Carribean 97	2.7	0.4	0	3.2	0.2	0	2.2	2.4	5.6
S. American 00	3.5	0.4	0.1	4.1	0.2	0	0.1	0.2	4.3
Carribean 00	4.2	0.4	0.1	4.7	0.2	0	3.1	3.2	7.9

Source: Adapted by Anthony H. Cordesman from EIA, International Energy Outlook, 2000, DOE/EIA-0484 (00), March 2000, p. 38.

Figure IV.9

Gas Exports from Other Regions: 1995-2020

(In Trillions of Cubic Feet)



	1995	2010	2020
China	0	0	0
Middle East	-0.2	-2.1	-4.9
FSU & EE	-3.2	-6.9	-12
S & E. Asia	-1.5	-0.1	1.4
Latin America	0	0	0
Africa	-1.5	-2.6	-4
OECD Europe	4.5	9.9	16.6
OECD Pacific	1.8	1.8	2.8
OECD North America	-0.1	-0.1	-0.1

Note: North America includes Mexico.

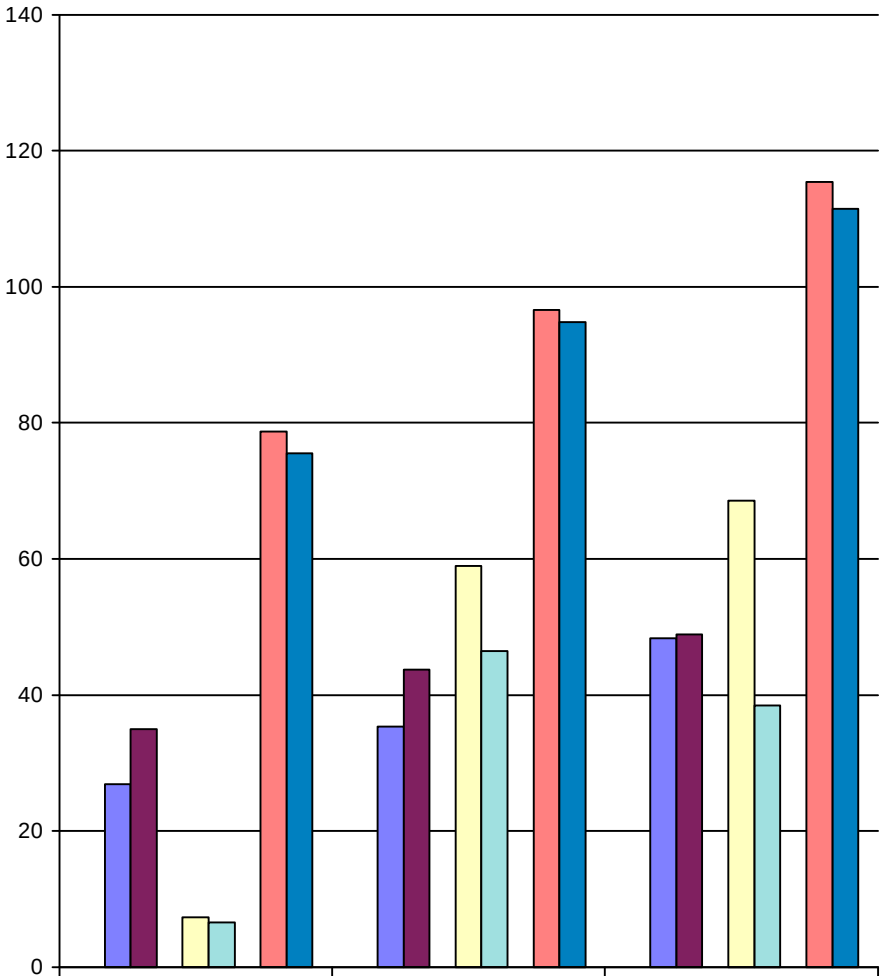
Adapted by Anthony H. Cordesman IEA, World Energy Outlook, 1998, pp. 133-134.

V. KEY REGIONAL ENERGY ISSUES IN THE MIDDLE EAST

Figure V.1

Projected Middle Eastern, Non-Middle East, and World Oil Production: IEA versus EIA

(In Millions of Barrels Per Day)



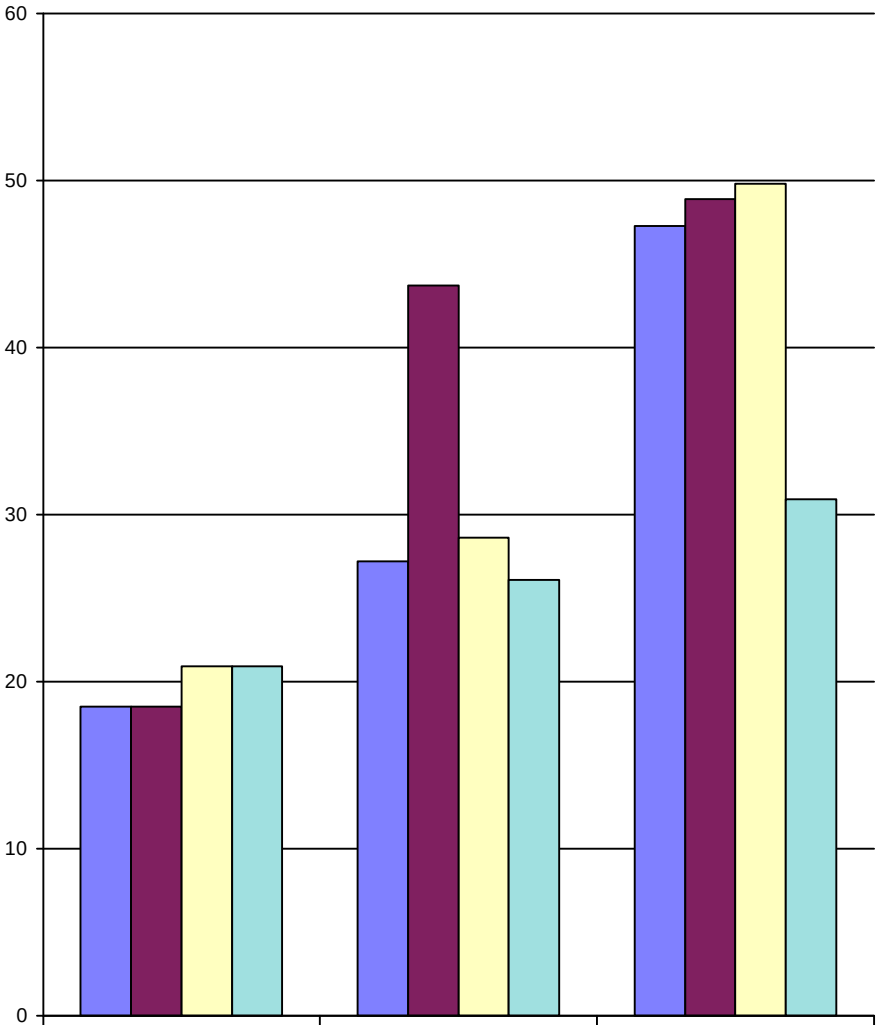
	1998	2010	2020
MIDDLE EAST OPEC			
EIA Middle East OPEC	26.9	35.3	48.3
IEA Middle East Conventional Oil and NGL	35	43.7	48.9
NON-MIDDLE EAST OPEC			
EIA Non Middle East OPEC	7.3	59	68.6
IEA Non-Middle East OPEC	6.6	46.5	38.5
TOTAL WORLD PRODUCTION			
EIA World	78.7	96.6	115.4
IEA World	75.5	94.8	111.5

Adapted by Anthony H. Cordesman from DOE/EIA, International Energy Outlook, 1998, April, 1998, DOE/EIA-484(97), Reference Case, p. 51 and IEA, World Energy Outlook, 1998, pp. 101 and 119-21.

Figure V.2

Just How Uncertain is Future Middle Eastern Production? IEA Versus EIA Versus Cordesman Guesstimate: 1995 vs. 2010 vs. 2020

(In Millions of Barrels Per Day)



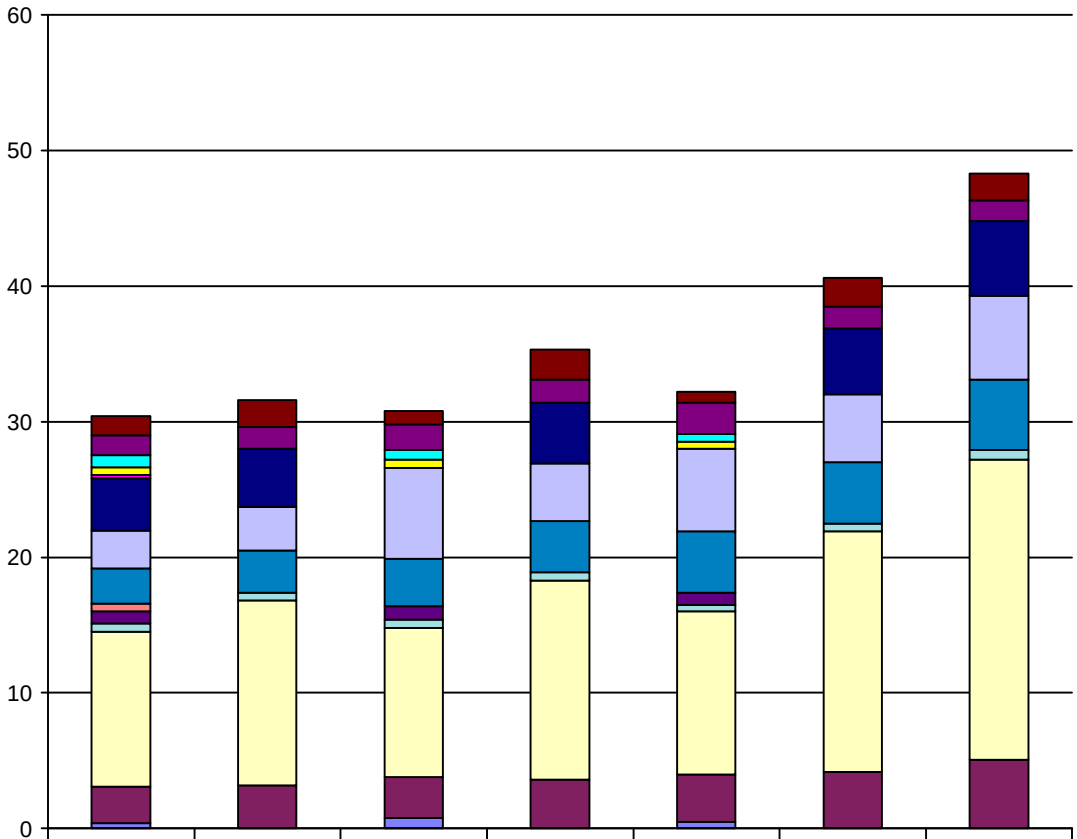
	1996	2010	2020
IEA Estimate of EIA Estimate	18.5	27.2	47.3
IEA Middle East Conventional Oil & NGL	18.5	43.7	48.9
EIA Gulf OPEC	20.9	28.6	49.8
Cordesman Guesstime of Low Gulf OPEC	20.9	26.1	30.9

Adapted by Anthony H. Cordesman from DOE/EIA, International Energy Outlook, 1998, April, 1998, DOE/EIA-484(97), Reference Case, p. 51 and IEA, World Energy Outlook, 1998, pp. 101 and 119-21.

Figure V.3

Comparative EIA and Arab Estimates of Middle Eastern Oil Production Capacity by Country

(In Millions of Barrels Per Day)



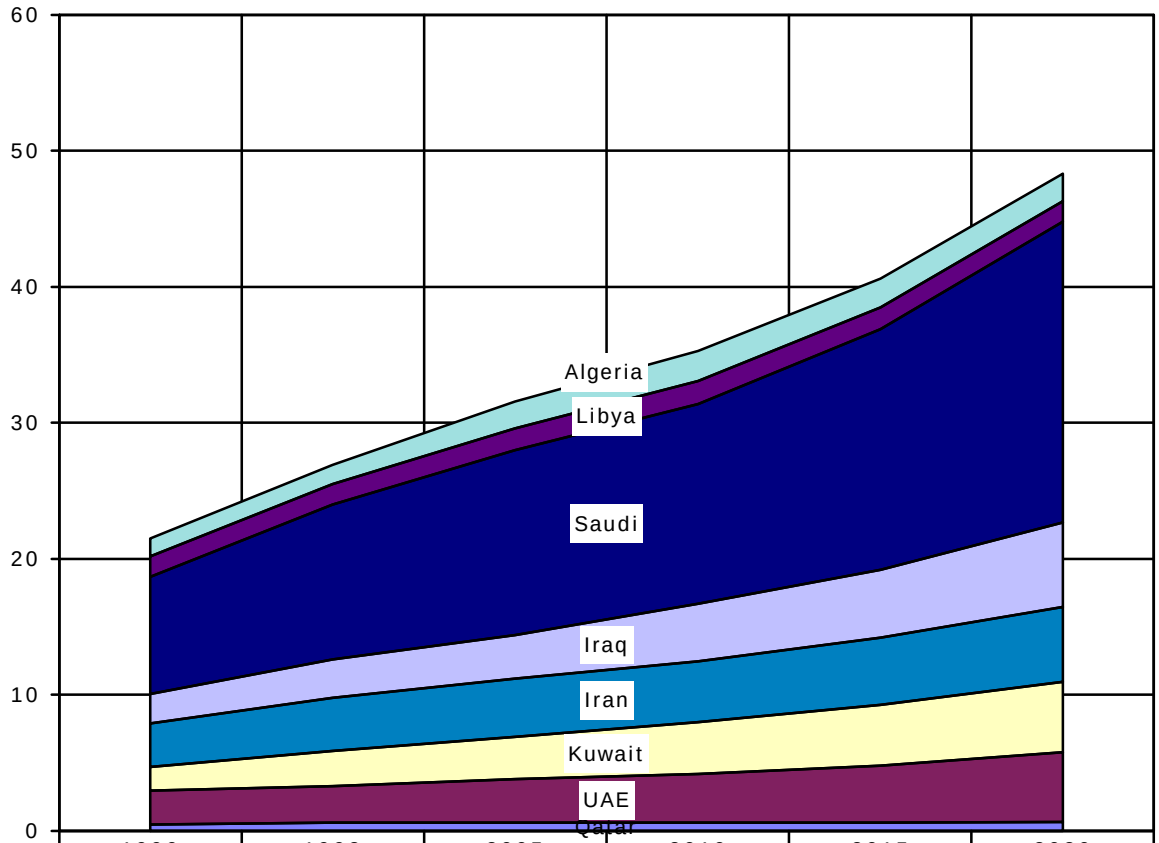
	1998	EIA2005	Lab2005	EIA2010	Lab2010	EIA2015	EIA2020
Algeria	1.4	2	1	2.2	0.8	2.1	2
Libya	1.5	1.6	1.9	1.7	2.3	1.6	1.5
Egypt	0.9	-	0.7	-	0.6	-	-
Syria	0.55	-	0.6	-	0.5	-	-
Bahrain	0.2	-	-	-	-	-	-
Iran	3.9	4.3	-	4.5	-	4.9	5.5
Iraq	2.8	3.2	6.7	4.2	6.1	5	6.2
Kuwait	2.6	3.1	3.5	3.8	4.5	4.5	5.2
Neutral Zone	0.56	-	-	-	-	-	-
Oman	0.9	-	1	-	0.9	-	-
Qatar	0.6	0.6	0.6	0.6	0.5	0.6	0.7
Saudi	11.4	13.6	11	14.7	12	17.7	22.1
UAE	2.7	3.2	3	3.6	3.5	4.2	5.1
Yemen	0.4	-	0.8	-	0.5	-	-

Adapted by Anthony H. Cordesman from DOE/EIA, International Energy Outlook, 2000, March 2000, DOE/EIA-484(00), Reference Case, p.201 and Dr. M. Mukhtar Al-Lababidi, Energy Resources in the Arab Countries, Kuwait, November 19-21, 1998. Monthly Oil Market Report, International Energy Agency (IEA), March 2000.

Figure V.4

The EIA Reference Case Estimate of Middle Eastern Production by Country: 1990-2020

(EIA Reference Case in MMBD)



	1990	1998	2005	2010	2015	2020
Algeria	1.3	1.4	2	2.2	2.1	2
Libya	1.5	1.5	1.6	1.7	1.6	1.5
Saudi	8.6	11.4	13.6	14.7	17.7	22.1
Iraq	2.2	2.8	3.2	4.2	5	6.2
Iran	3.2	3.9	4.3	4.5	4.9	5.5
Kuwait	1.7	2.6	3.1	3.8	4.5	5.2
UAE	2.5	2.7	3.2	3.6	4.2	5.1
Qatar	0.5	0.6	0.6	0.6	0.6	0.7

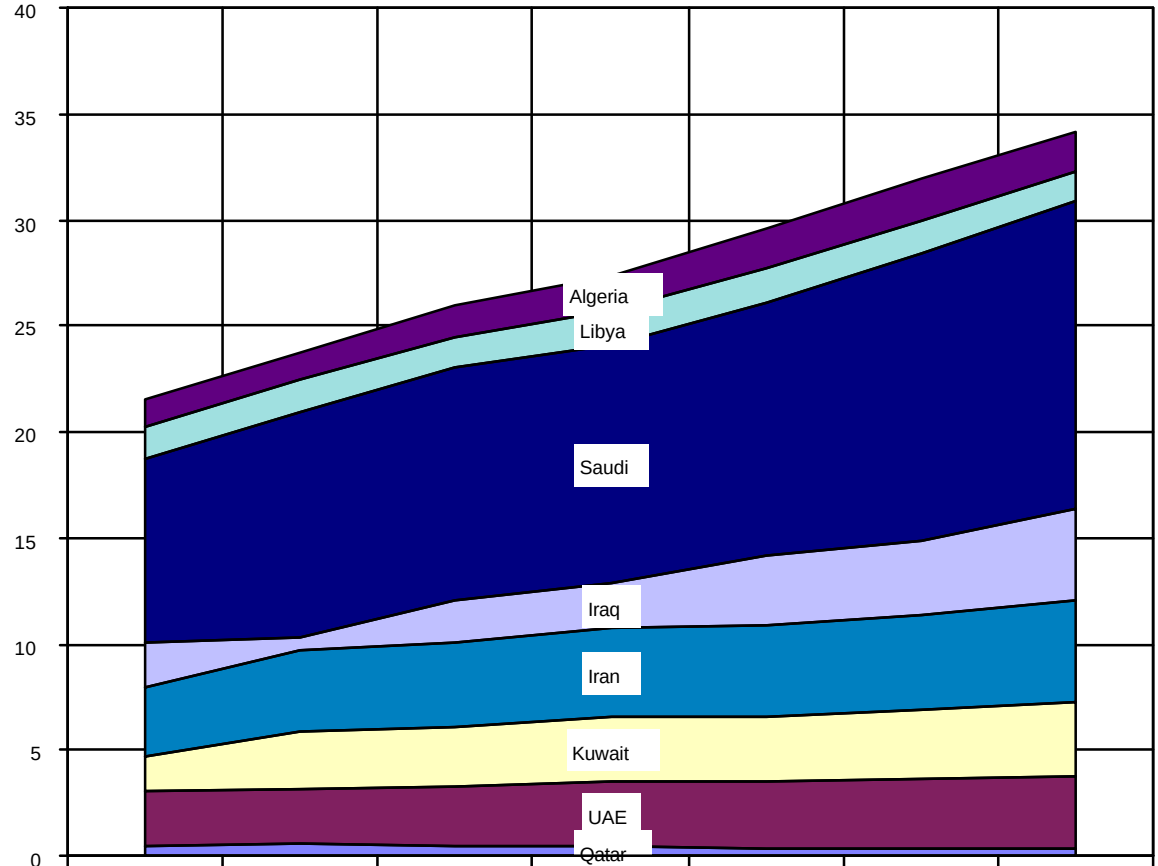
Total Gulf OPEC	18.7	24	28	31.4	36.9	44.8
Total MENA OPEC	22.9	28.8	33.8	37.6	42.7	50.3

Source: Adapted by Anthony H. Cordesman from EIA, International Energy Outlook, 2000, DOE/EIA-0484 (00), March 2000, p.229, and EIA, Monthly Energy Review, April, 1997, pp. 130-131.

Figure V.5

Cordesman Guesstimate of Middle Eastern Production by Country: 1990-2020

(Case in MMBD)



	1990	1996	2000	2005	2010	2015	2020
Algeria	1.3	1.4	1.5	1.7	1.9	2	1.8
Libya	1.5	1.5	1.5	1.6	1.6	1.5	1.4
Saudi	8.6	10.6	10.9	11.2	12	13.5	14.5
Iraq	2.2	0.6	2	2.1	3.2	3.6	4.4
Iran	3.2	3.9	4	4.3	4.3	4.4	4.8
Kuwait	1.7	2.6	2.8	3	3.1	3.3	3.5
UAE	2.5	2.6	2.8	3	3.1	3.2	3.4
Qatar	0.5	0.6	0.5	0.5	0.4	0.4	0.3

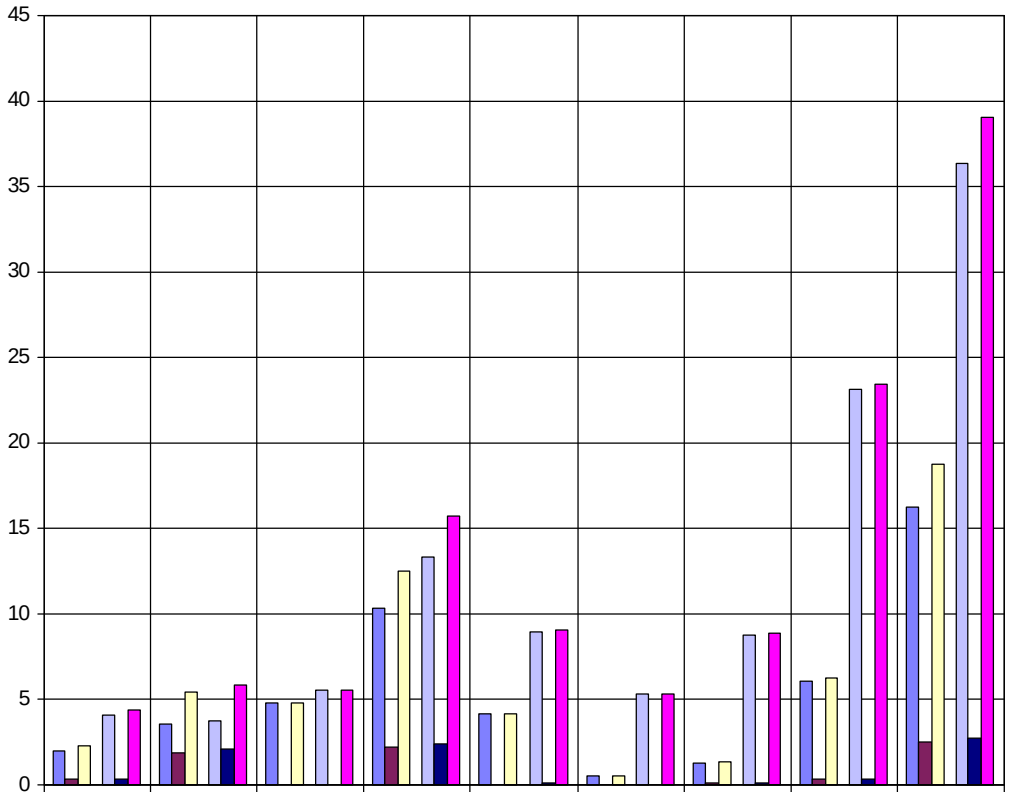
Total Gulf OPEC	18.7	20.9	23.0	24.1	26.1	28.4	30.9
Total MENA OPEC	20.6	23.8	26.0	27.4	29.6	31.9	34.1

Source: Estimated by Anthony H. Cordesman.

Figure V.6

The EIA Estimate of Middle Eastern Oil Exports by Destination: 1997 versus 2020

(in MMBD)



	North America	Western Europe	Industrialized Asia	Total Industrial	Pacific Rim	China	Rest of Developing World	Total Developing	Total World
Persian Gulf 1997	2	3.5	4.8	10.3	4.2	0.5	1.3	6	16.3
North Africa 1997	0.3	1.9	0	2.2	0	0	0.1	0.3	2.5
Total Mddle East -1997	2.3	5.4	4.8	12.5	4.2	0.5	1.4	6.3	18.8
.									
Persian Gulf 2020	4.1	3.7	5.5	13.3	9	5.3	8.8	23.1	36.4
North Africa 2020	0.3	2.1	0	2.4	0.1	0	0.1	0.3	2.7
Total Mddle East 2020	4.4	5.8	5.5	15.7	9.1	5.3	8.9	23.4	39.1

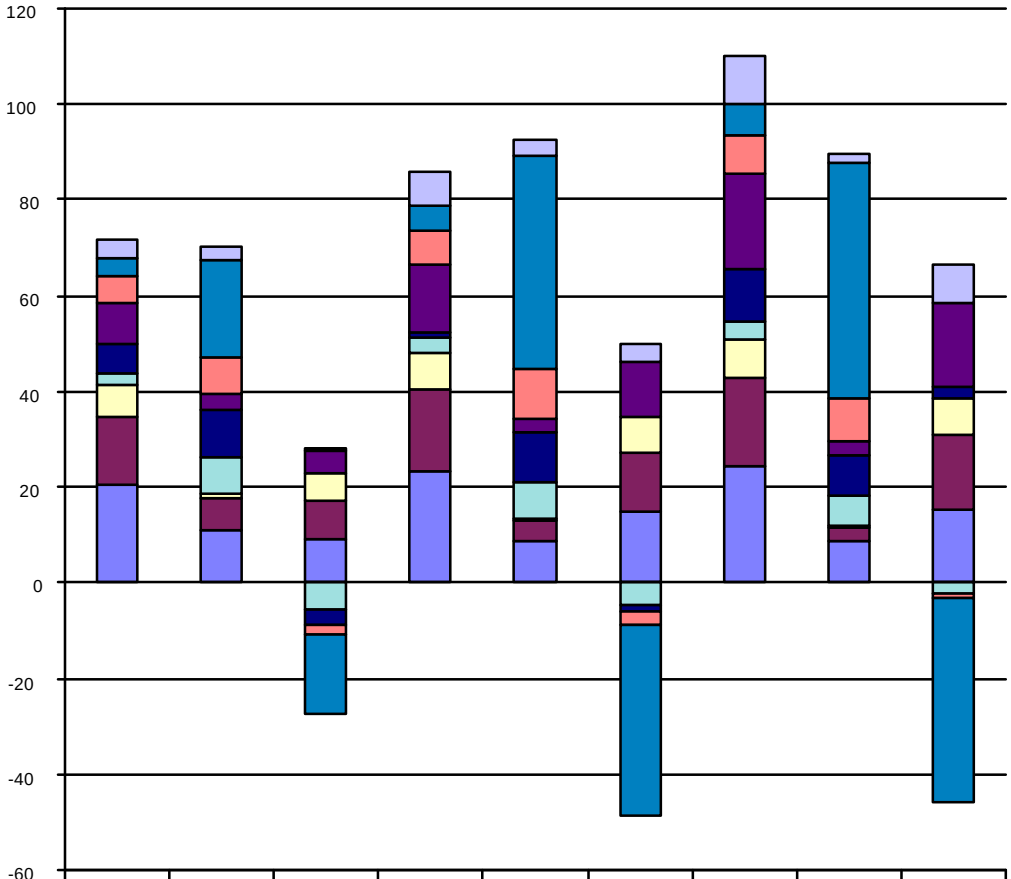
World Total Imports – 1997	11.2	16.6	5.9	33.7	12.4	0.9	6.2	19.5	53.2
World Total Imports – 2020	17.1	19.1	6.5	42.7	17.7	6.5	15.1	33.9	76.6

Source: Adapted by Anthony H. Cordesman and Michael Cohen from EIA, International Energy Outlook, 2000, DOE/EIA-0484 (00), March 2000, p.38.

Figure V.7

IEA Estimate of World Oil Demand, Supply, Imports, and Exports: 1996-2020

(In MMBD)



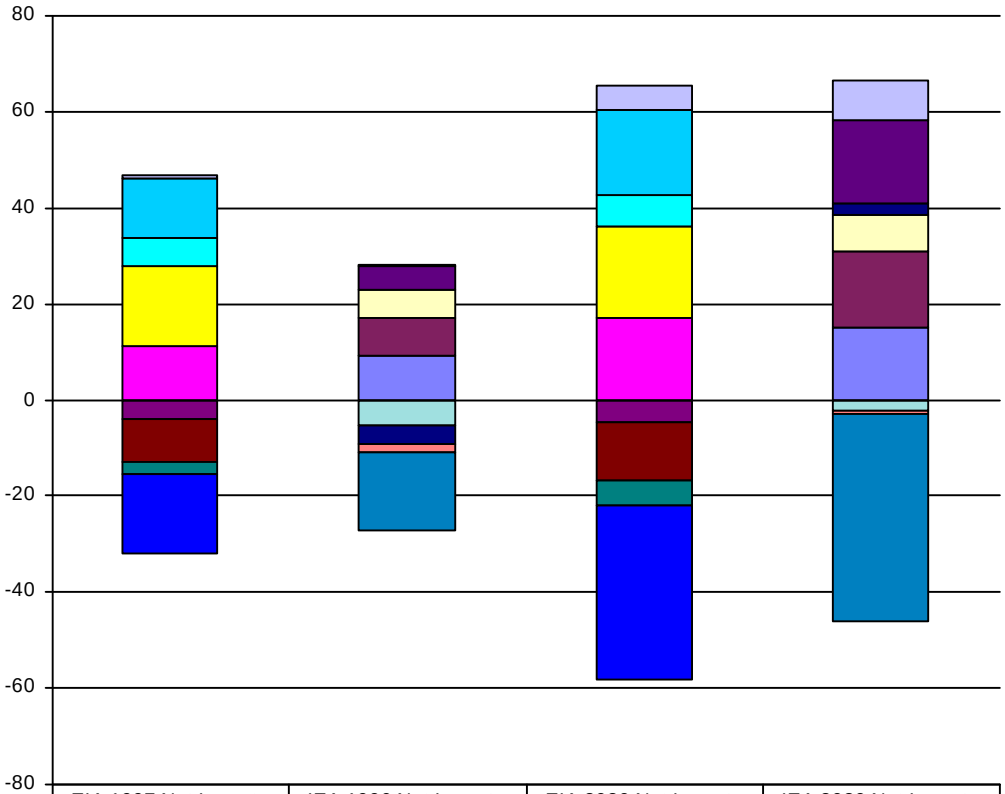
	1996 - Demand	1996 - Supply	1996- Net Imports	2010 - Demand	2010 - Supply	2010 - Net Imports	2020 - Demand	2020 - Supply	2020 - Net Imports
China	3.6	3.1	0.5	7.1	3.2	3.9	10.1	2	8.1
Middle East	4.1	20.4	-16.3	4.9	44.7	-39.7	6.3	49.2	-42.9
FSU & EE	5.5	7.3	-1.8	7.2	10.2	-3	8.5	9.4	-0.9
S & E. Asia	8.5	3.7	4.8	14.2	2.9	11.3	19.5	2.4	17.2
Latin America	6.3	9.8	-3.5	0.9	10.4	-1.4	11	8.6	2.5
Africa	2.2	7.7	-5.5	3.3	7.8	-4.6	4	6.3	-2.2
OECD Pacific	6.7	0.7	6	7.7	0.3	7.4	7.9	0.3	7.6
OECD Europe	14.4	6.7	7.7	17	4.5	12.5	18.7	2.8	15.9
OECD North America	20.3	11.1	9.3	23.4	8.6	14.8	24.1	8.9	15.1
Total World Identified	71.7	70.5	1.1	94.2	92.7	1.5	111.1	89.9	21.1
Total World	72.0	72.0	0.0	94.8	94.8	0.0	111.5	92.4	19.1

Adapted by Anthony H. Cordesman IEA, World Energy Outlook, 1998, pp. 116-118.

Figure V.8

IEA versus EIA Estimate of World Oil Imports and Exports: 1996-2020

(In Millions of Barrels Per Day)

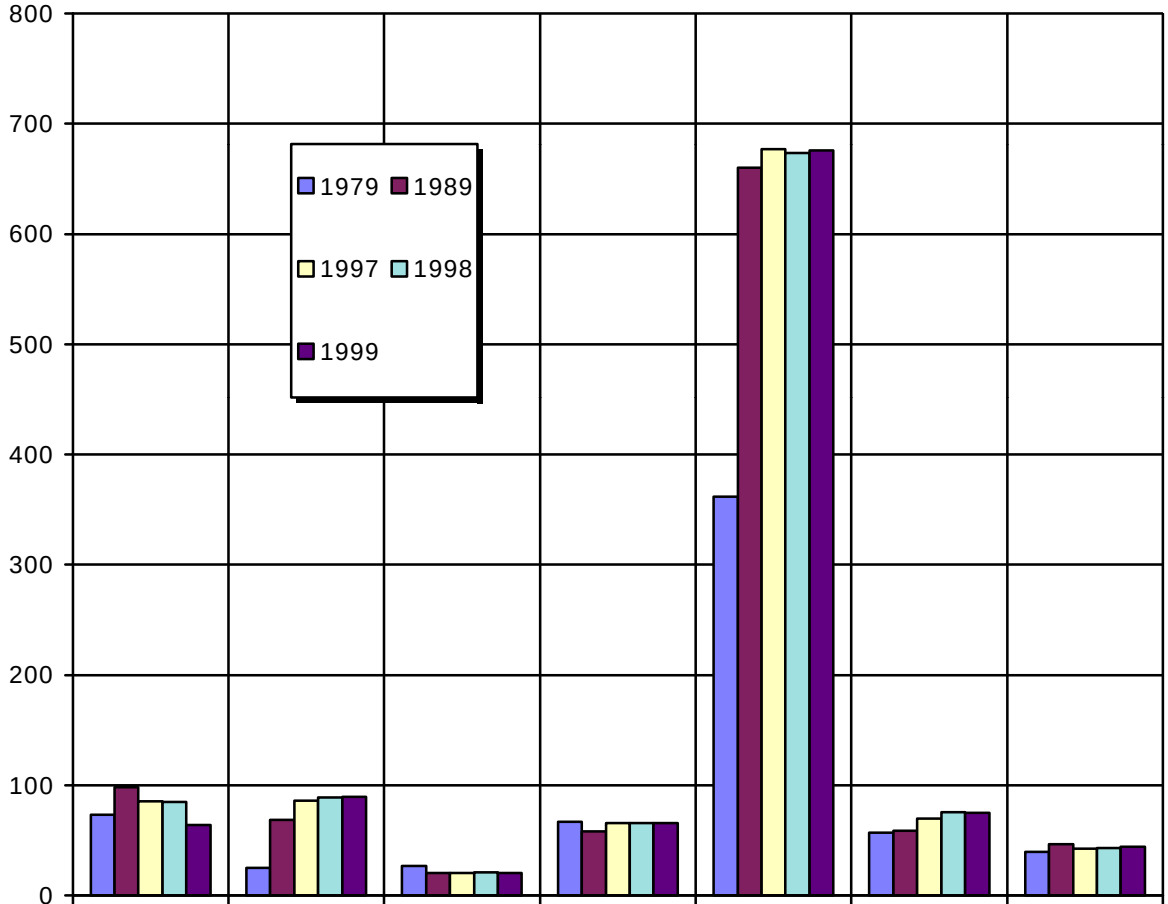


	EIA 1997 Net Imports	IEA 1996 Net Imports	EIA 2020 Net Imports	IEA 2020 Net Imports
China	0.6	0.5	5.2	8.1
Persian Gulf	-16.3		-36.4	
Middle East		-16.3		-42.9
FSU	-2.6		-5	
FSU & EE		-1.8		-0.9
Pacific Rim	12.4		17.7	
S & E. Asia		4.8		17.2
L. America & Carib	-8.8		-12.2	
Latin America		-3.5		2.5
North & West Africa	-4.1		-4.7	
Africa		-5.5		-2.2
Indust. Asia	5.9		6.5	
OECD Pacific		6		7.6
Western Europe	16.6		19.1	
OECD Europe		7.7		15.9
North America	11.2		17.1	

Adapted by Anthony H. Cordesman from DOE/EIA, International Energy Outlook, 2000, March 2000, DOE/EIA-484(00), Reference Case, p. 38 and IEA, World Energy Outlook, 2000, pp. 116-118.

Figure V.9

Shifts in the Regional Balance of Oil Reserves
(Billions of Barrels)

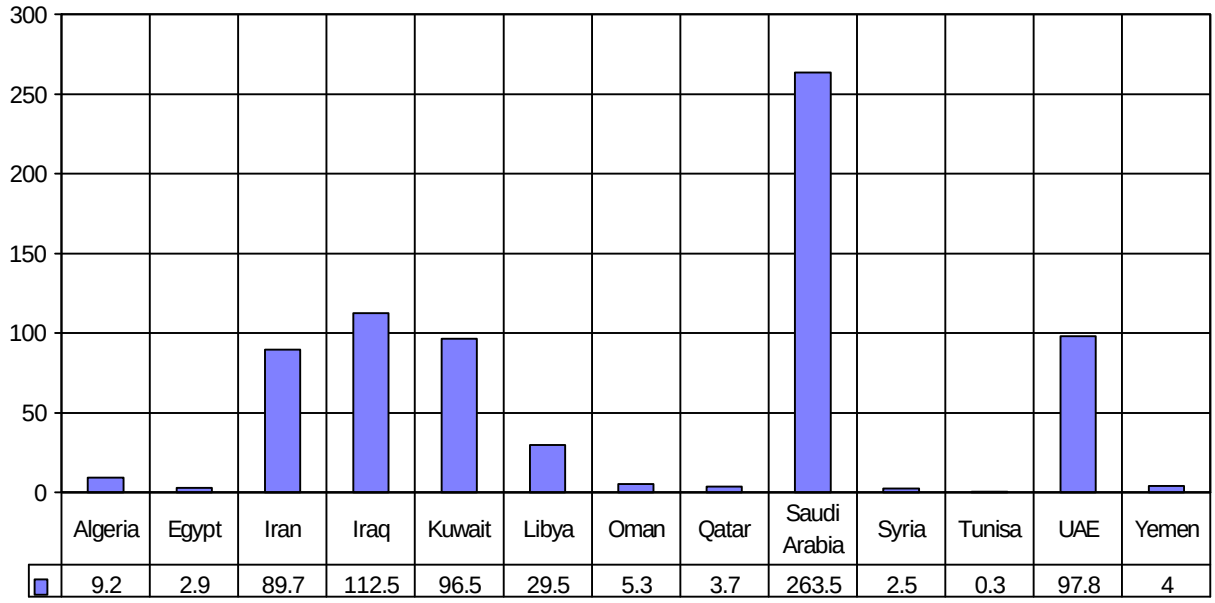


	North America	S & C America	Europe	FSU	Middle East	Africa	Asia/Pac
1979	73	25.2	26.6	67	361.8	57.1	39.4
1989	98.4	68.7	20.5	58.4	660.3	58.8	46.6
1997	85.2	86.2	20.2	65.4	676.9	70	42.3
1998	84.7	89	20.8	65.4	673.6	75.4	43.1
1999	63.7	89.5	20.6	65.4	675.7	74.9	44

Source: Oil and Gas Journal, and BP Amoco Statistical Review of World Energy, 1999 and 2000 eds., p. 4.

Figure V.10

Proven Middle Eastern Oil Reserves by Country
(in Billions of Barrels)



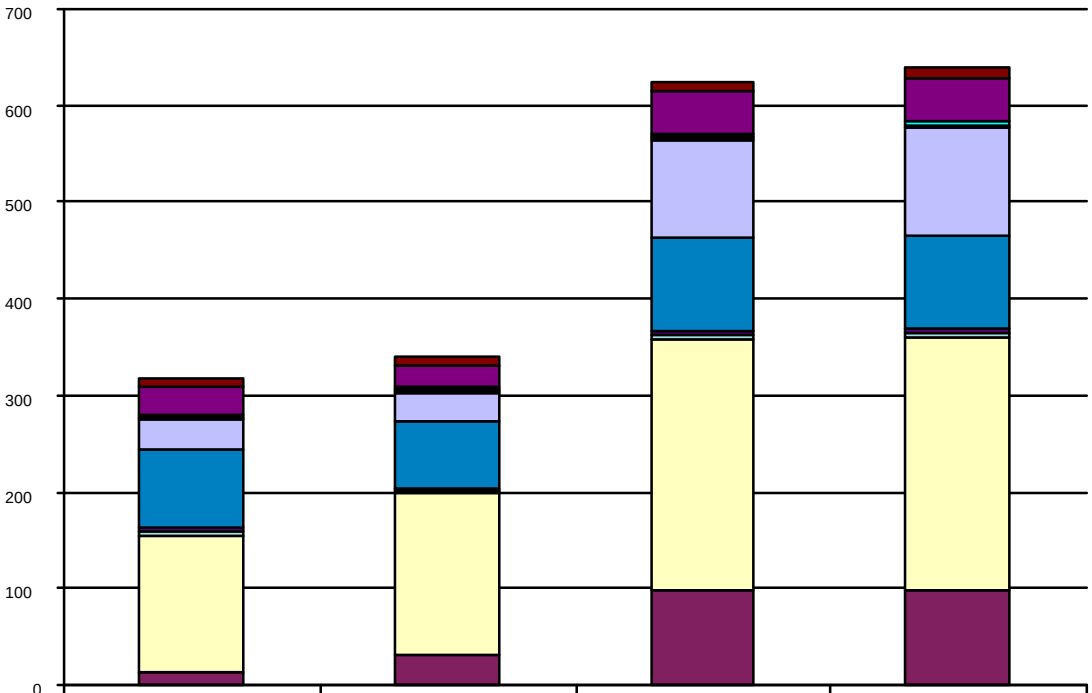
Country	End-1998	End-1999	Percent of World Proven Reserves	Reserve to Production Ratio In Years at Current Rates
Algeria	9.2	9.2	0.9	20.6
Egypt	2.9	2.9	0.3	10.0
Iran	89.7	89.7	8.7	69.9
Iraq	112.5	112.5	10.9	100+
Kuwait	96.5	96.5	9.3	100+
Libya	29.5	29.5	2.9	57.4
Oman	5.3	5.3	0.5	15.9
Qatar	3.7	3.7	0.4	14.7
Saudi Arabia	261.5	263.5	25.5	87.5
Syria	2.5	2.5	0.3	12.3
Tunisia	0.3	0.3	.05	13.9
UAE	97.8	97.8	9.4	100+
Yemen	4.0	4.0	0.4	27.9
Total World	716	718	68	83.2

Source: BP Amoco Statistical Review of World Energy, 2000, p.4.

Figure V.11

An Arab Estimate of the Trends in the Size of Middle Eastern Oil Proved Reserves by Country

(In Billions of Barrels at Year's End)



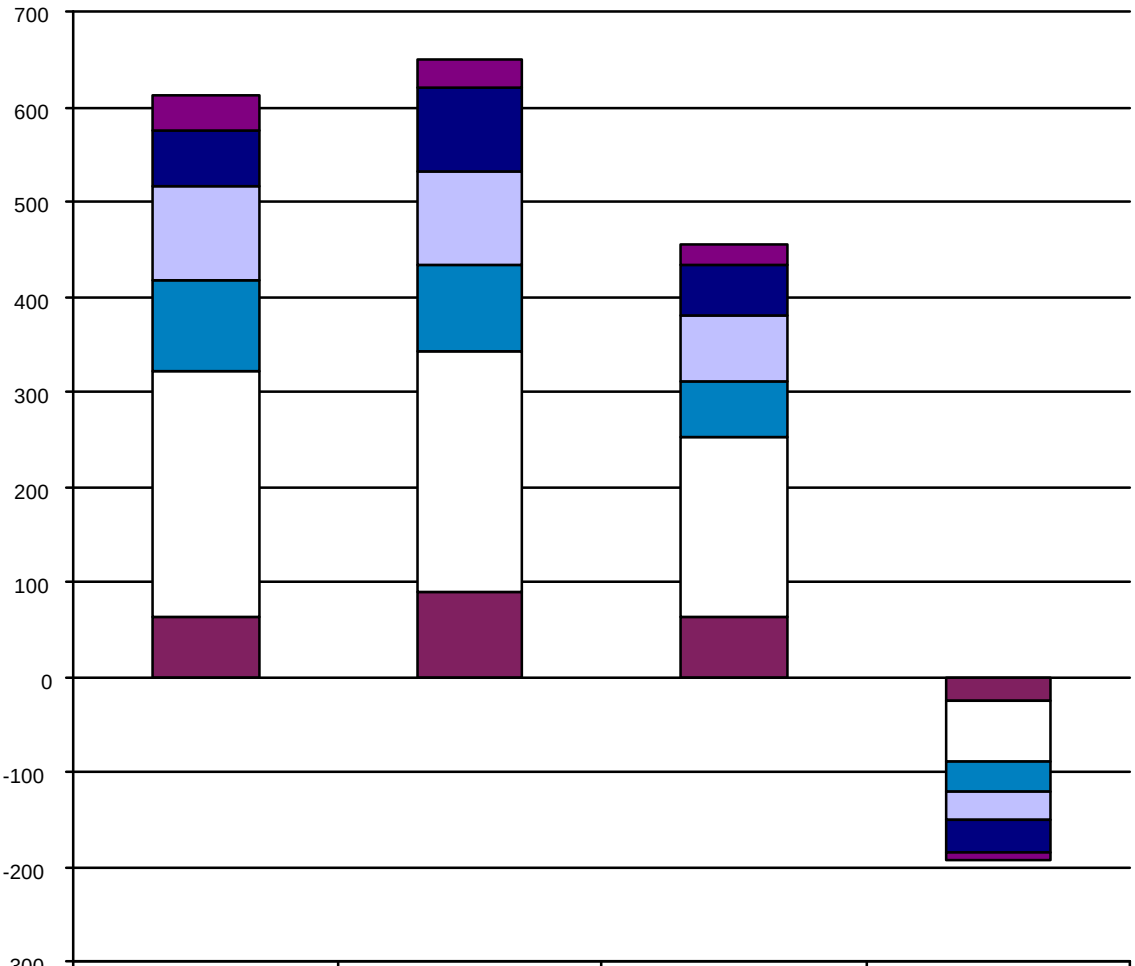
	1970	1980	1990	1996
Algeria	8.1	8.2	9.2	10
Libya	29.2	23	45	45
Tunisia	0.6	1.7	1.7	0.3
Egypt	1.5	2.9	3.5	3.7
Syria	2	1.9	1.7	2.5
Bahrain				
Iran				
Iraq	32	30	100	112
Kuwait	80	68	97	96.5
Neutral Zone				
Oman	4.7	2.3	4.3	5.1
Qatar	4.3	3.6	3	4.5
Saudi	141.4	168	260.3	261.5
UAE	12.8	30.4	98.1	97.8
Yemen				

Adapted by Anthony H. Cordesman from Dr. M. Mukhtar Al-Lababidi, Energy Resources in the Arab Countries, Kuwait, November 19-21, 1998.

Figure V.12

IEA Estimate of the Uncertainties in Middle Eastern Oil Proved Reserves by OPEC Country

(In Billions of Barrels)



	World Oil Estimate	Oil & Gas Journal Adjusted	Cambell Adjusted	Cut in World Oil Estimate
Libya	36.57	29.5	22.13	-7.37
Iran	58.65	88.2	52.92	-35.25
Iraq	99.43	97.37	68.16	-29.21
Kuwait	95.2	91.74	59.63	-32.11
Saudi	260	252.98	189.73	-63.25
Abu Dhabi	62	88.83	62.18	-26.65

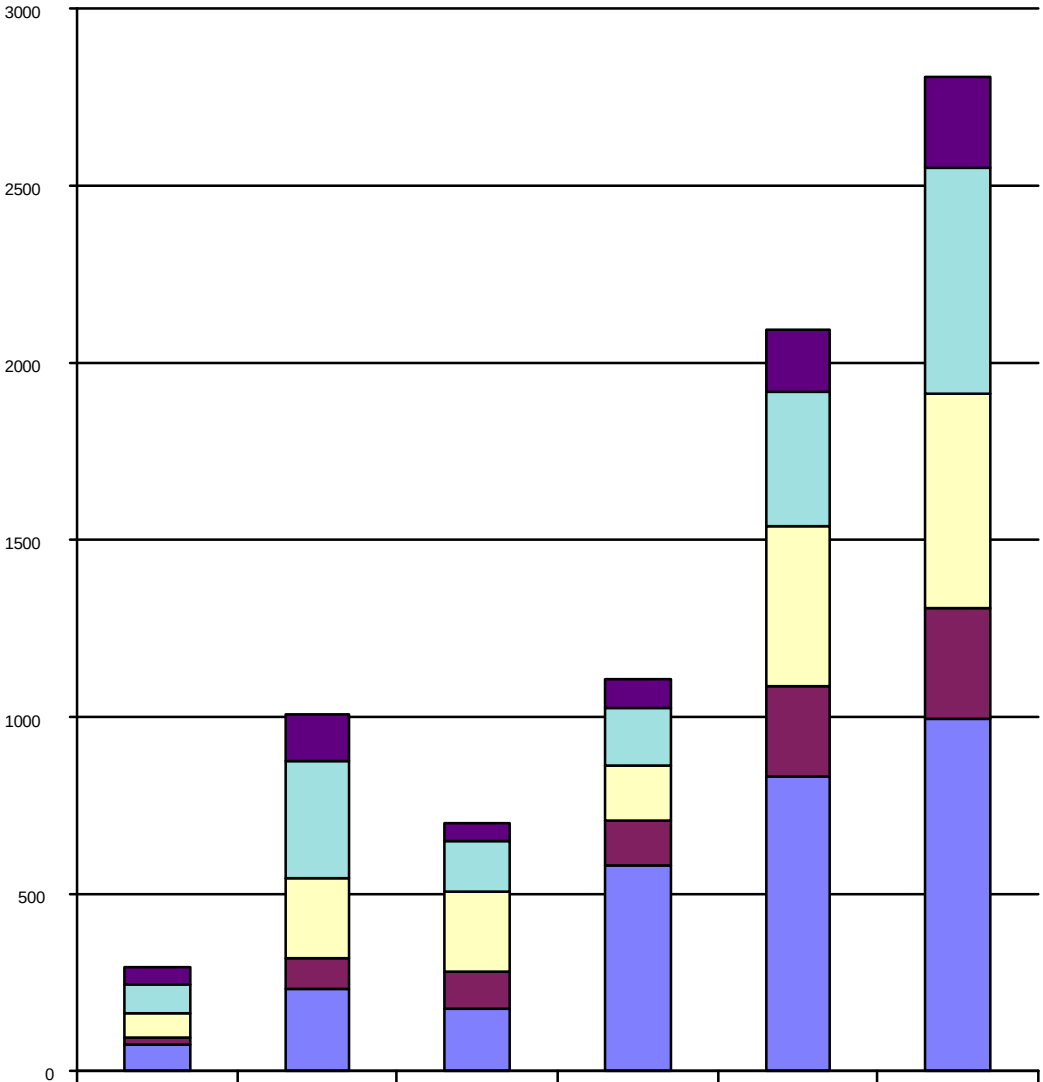
The Campbell adjusted estimate is the mean in an estimate based on Petroconsultants oil field data bas deadjusted for the years in which the published Oil and Gas Journal reserves did not alter to reflect the fact that oil production had taken place during the pervious six months.

Adapted by Anthony H. Cordesman from IEA, World Energy Outlook, 1998, Paris, IEA/OECD, 1998, pp. 94-95.

Figure V.13

EIA Estimate of Undiscovered Potential Oil Recovery of Middle Eastern Oil Producing Countries

(In Billions of Barrels)



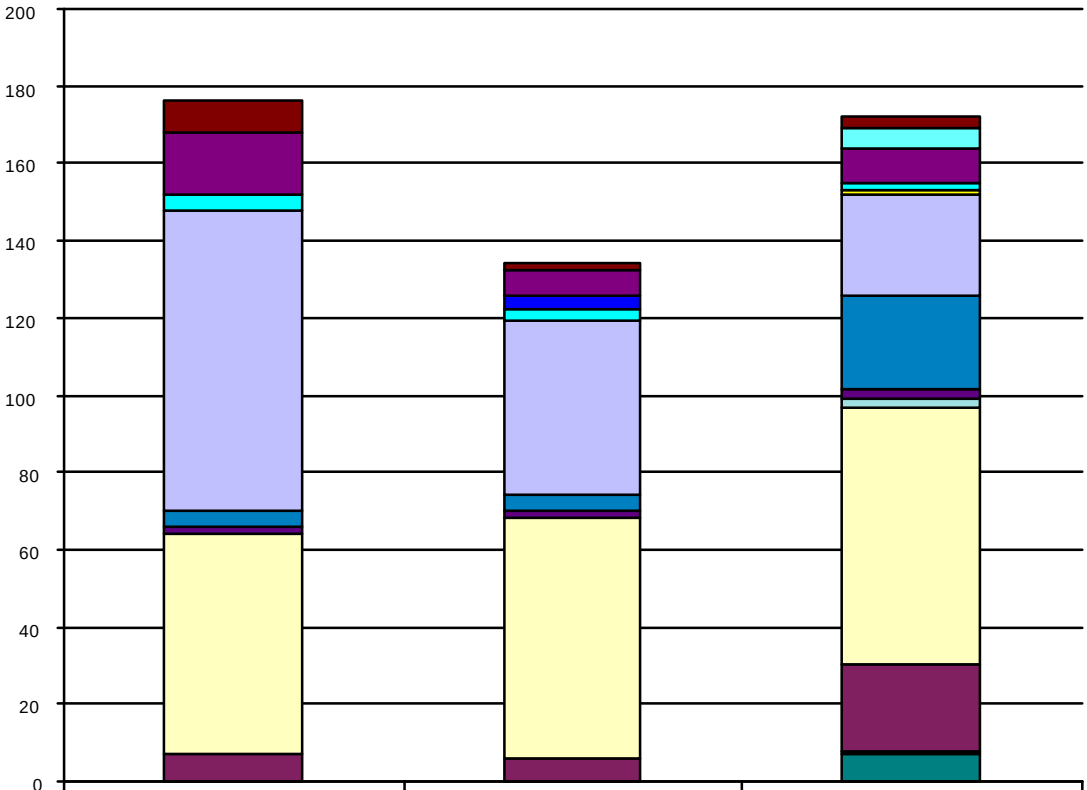
	Undiscovered-Low Estimate	Undiscovered-High Estimate	Cumulative Production	Identified Reserves	Low Estimate of Ultimate Resources	High Estimate of Ultimate Resources
Rest of World	51	130.9	48	76.7	175.7	255.6
Eurasia	77.5	330.6	142.3	163.7	383.5	636.6
OECD	68.4	223.9	225.4	156.4	450.2	605.7
Other OPEC	21.1	87.8	105.9	123.4	250.4	317.1
Persian Gulf OPEC	74.2	232	177	583	834.20	992.00
World	265.2	1005.2	698.6	1,103.2	2,094.0	2,807.0
Gulf as % of World	28.2	23.1	25.3	52.8	39.8	35.3

Adapted by Anthony H. Cordesman from DOE/EIA, International Energy Outlook, 1997, DOE/EIA-0484(97), April 1997, pp. 34-36.

Figure V.14

Arab Estimate of Undiscovered Potential Oil Recovery of Middle Eastern Oil Producing Countries

(In Billions of Barrels)



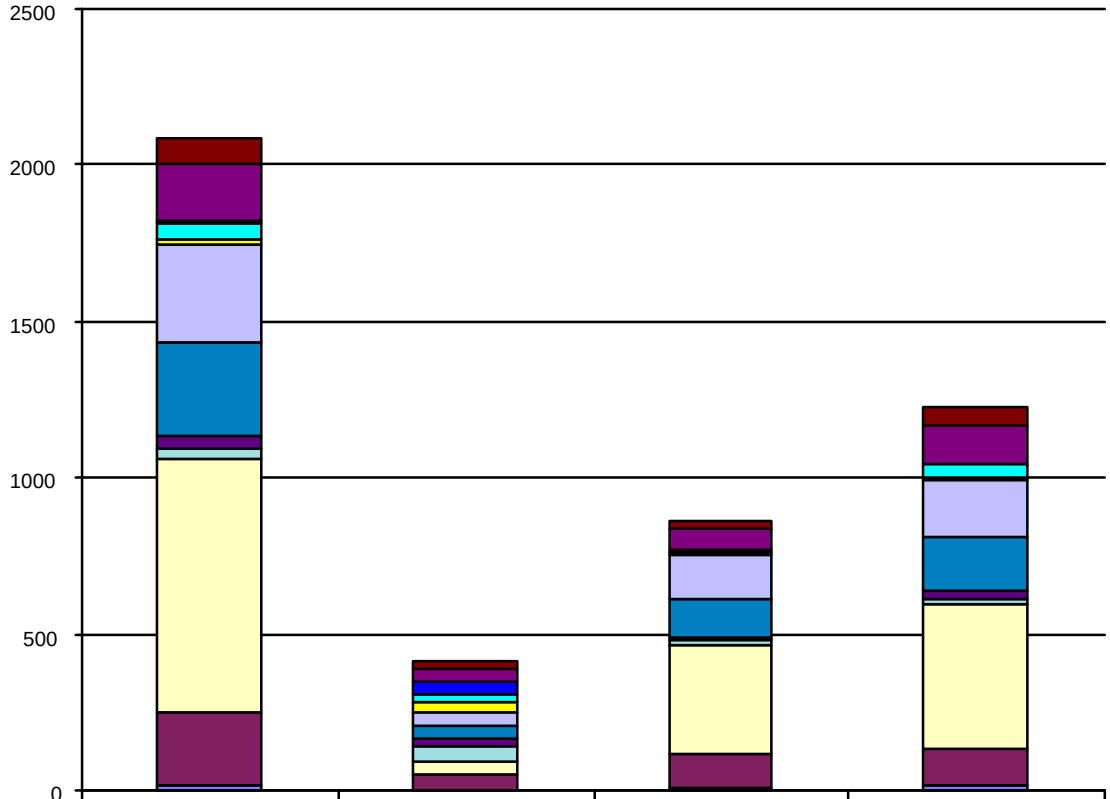
	IEA 83/84	Masters 94	Lababidi 96
Algeria	8	1.9	2.8
Morocco	-	-	5.5
Libya	16	6.5	8.7
Tunisia	-	3.5	0.2
Egypt	4	3.4	1.6
Syria	-	-	1.3
Bahrain	-	-	-
Iran	-	-	-
Iraq	78	44.7	26.2
Kuwait	4	4.4	24.4
Neutral Zone	-	-	-
Oman	2	1.8	2
Qatar	-	-	2.7
Saudi	57	62.5	66.4
UAE	7	5.7	22.1
Yemen	-	-	0.9

Does not include Lababidi's estimate of 9.3 billion barrels in Mauritania, 0.890 in Jordan, 158 in Lebanon, and 6.302 in Somalia. Adapted by Anthony H. Cordesman from Dr. M. Mukhtar Al-Lababidi, Energy Resources in the Arab Countries, Kuwait, November 19-21, 1998.

Figure V.15

Primary and Secondary Recovery Capability Versus Original Oil in Place

(In Billions of Barrels)

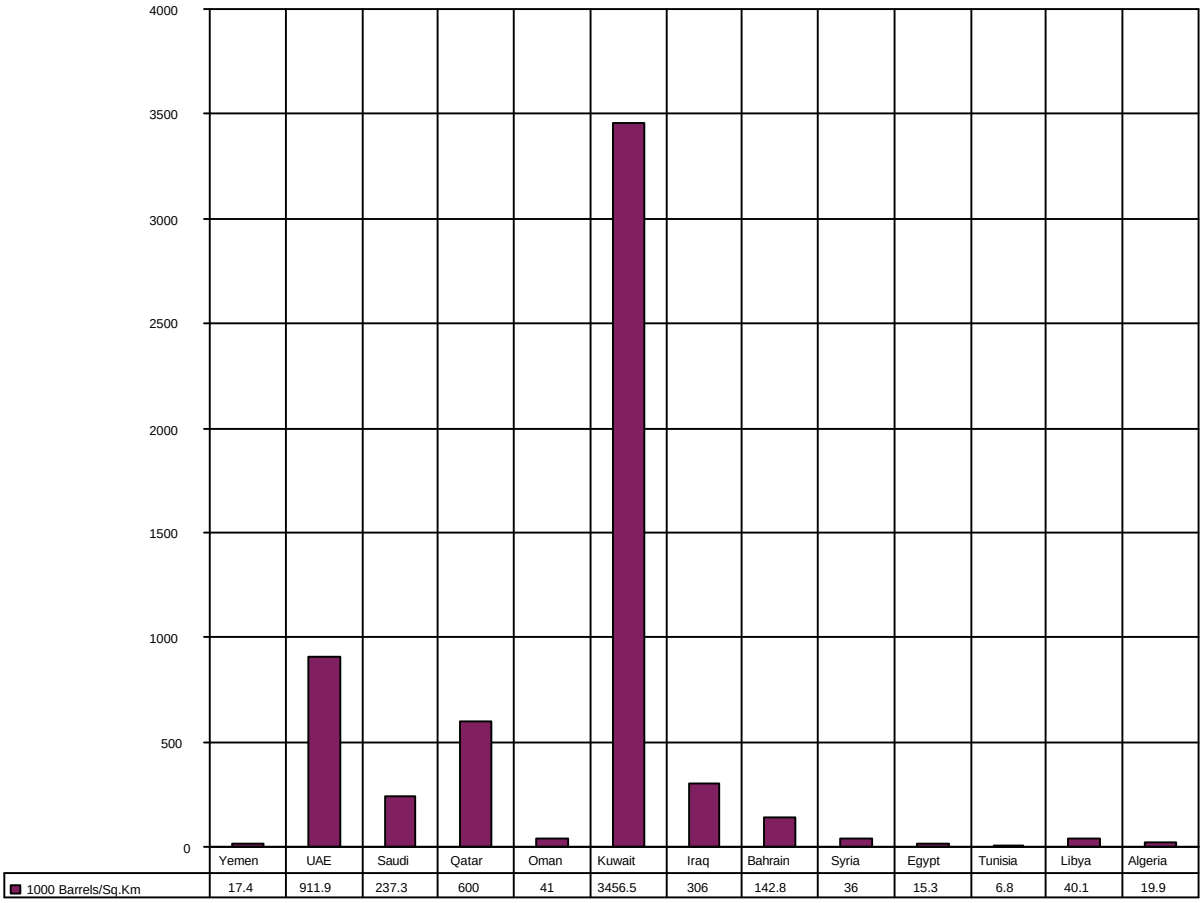


	Original Oil In Place	Recovery Factor in Percent	Rercoverable Resources	Remaining Oil
Algeria	82.8	25.6	20.9	61.6
Libya	188.2	35	65.4	122.3
Tunisia	2.8	45.7	1.4	1.5
Egypt	49.1	23.8	11.5	37.4
Syria	18.5	28.1	6.7	13.3
Bahrain				
Iran				
Iraq	311.2	42.9	136.3	174.6
Kuwait	305.5	41.8	126.7	177.8
Neutral Zone				
Oman	39.1	27.1	10.3	28.5
Qatar	29.5	47.4	13.8	15.5
Saudi	811.6	42.9	345.2	463.4
UAE	230.6	50	114.8	115.3
Yemen	19.2	25%	4.7	14.4

Adapted by Anthony H. Cordesman from Dr. M. Mukhtar Al-Lababidi, Energy Resources in the Arab Countries, Kuwait, November 19-21, 1998.

Figure V.16

Average Discovery Ratio Per Unit in Middle Eastern Countries



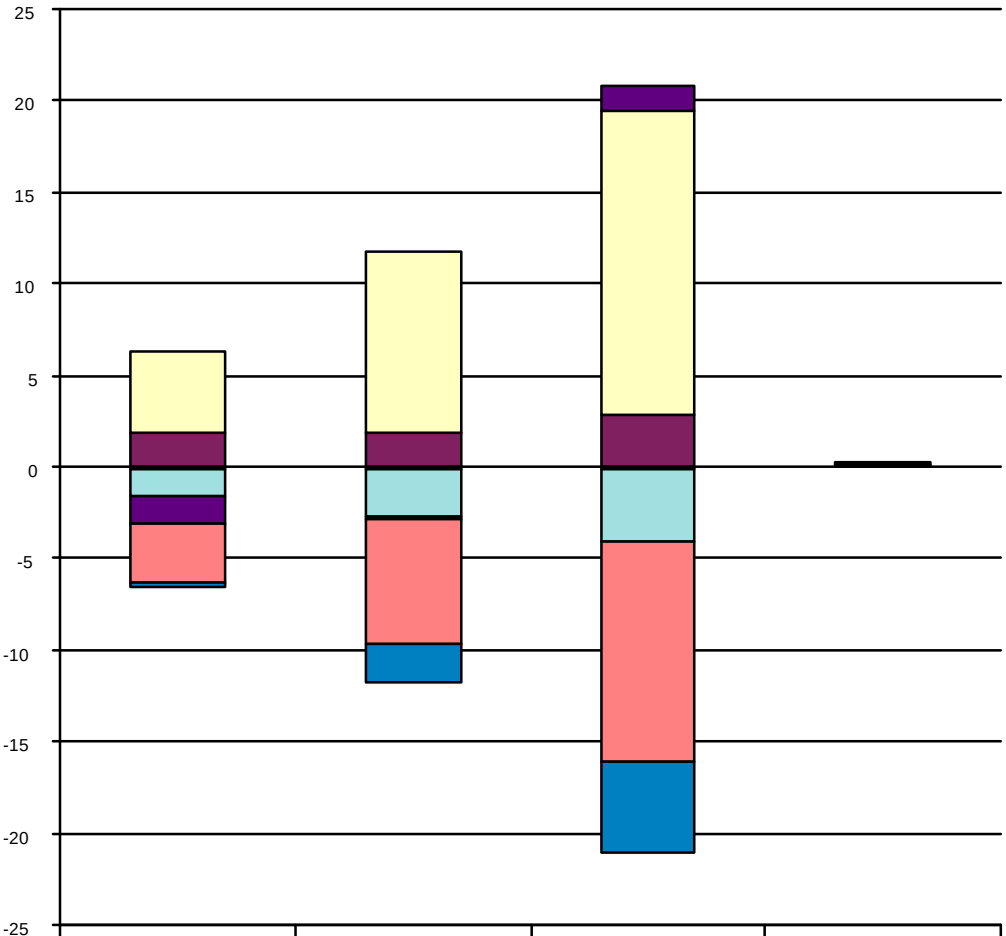
	Sedimentary Area in Sq. Km.	Discovered Reserves in Billions of Barrels	1000 Barrels/Sq. Km.
Sudan	-	-	-
Yemen	270,000	4.7	17.4
UAE	125,890	114.8	911.9
Saudi	1,455,000	345.2	237.3
Qatar	23	13.8	600
Oman	251,100	10.3	41
Neutral Zone			
Kuwait	36,656	126.7	3456.5
Iraq	445,480	136.3	306
Iran			
Bahrain	7000	1	142.8
Gulf Area	2,093,026	737.8	352.5
Syria	186,300	6.7	36
Egypt	753,000	11.5	15.3
Tunisia	206,600	1.4	6.8
Libya	1,631,500	65.4	40.1
Algeria	1,108,500	20.9	19.9
World	83,800,000	2272.5	27.1

Adapted by Anthony H. Cordesman from Dr. M. Mukhtar Al-Lababidi, Energy Resources in the Arab Countries, Kuwait, November 19-21, 1998.

Figure V.17

IEA Estimate of World Gas Imports and Exports: 1995-2020

(In Trillions of Cubic Feet)



	1995	2010	2020	Annual Growth Rate
China	0	0	0	na
Middle East	-0.2	-2.1	-4.9	9.10%
FSU & EE	-3.2	-6.9	-12	4.50%
S & E. Asia	-1.5	-0.1	1.4	na
Latin America	0	0	0	0%
Africa	-1.5	-2.6	-4	3.20%
OECD Europe	4.5	9.9	16.6	4.30%
OECD Pacific	1.8	1.8	2.8	1.70%
OECD North America	-0.1	-0.1	-0.1	0.00%

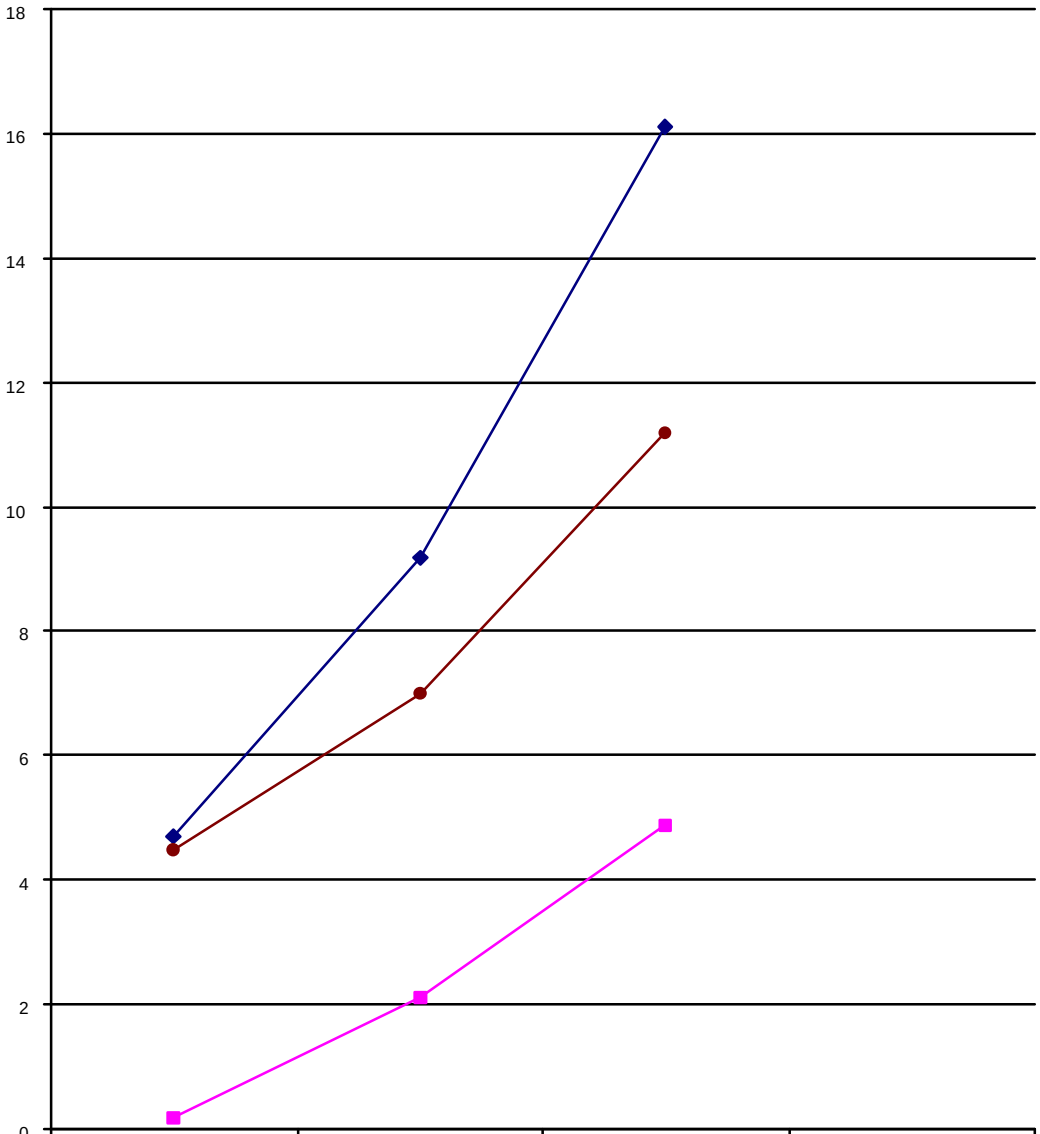
Note: North America includes Mexico.

Adapted by Anthony H. Cordesman IEA, World Energy Outlook, 1998, pp. 133-134.

Figure V.18

IEA Estimate of Middle East Gas Production, Consumption, and Exports: 1995-2020

(In Trillions of Cubic Feet)



	1995	2010	2020	Annual Growth Rate
Production	4.7	9.2	16.1	*4.5%
Exports	0.2	2.1	4.9	*9.1%
Consumption	4.5	7	11.2	*3.4%

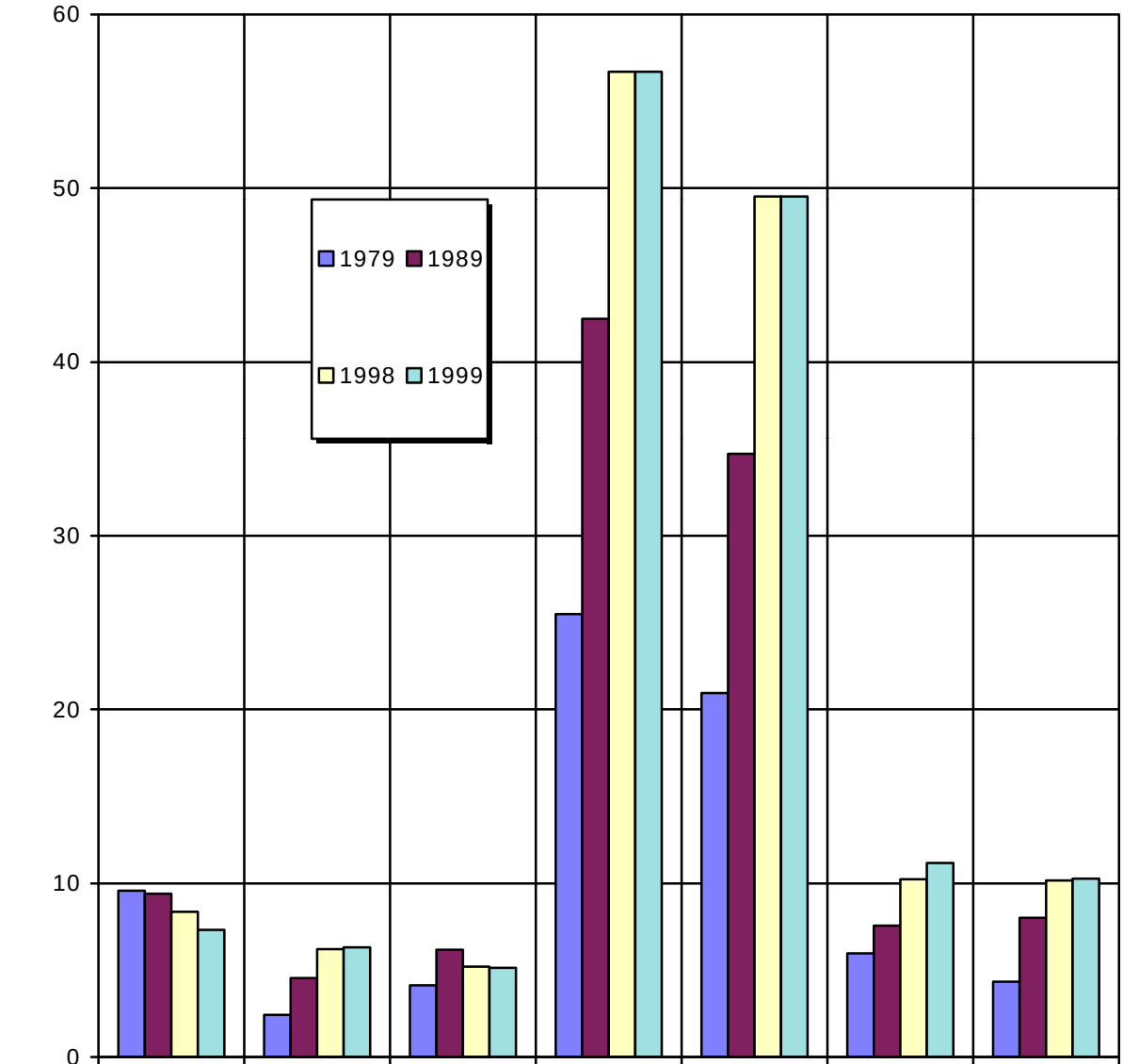
Note: North America includes Mexico.

Adapted by Anthony H. Cordesman IEA, World Energy Outlook, 1998, pp. 133-134.

Figure V.19

The Role of the Middle East in the Regional Balance of World Gas Reserves: 1979-1999

(Thousand Million Barrels)

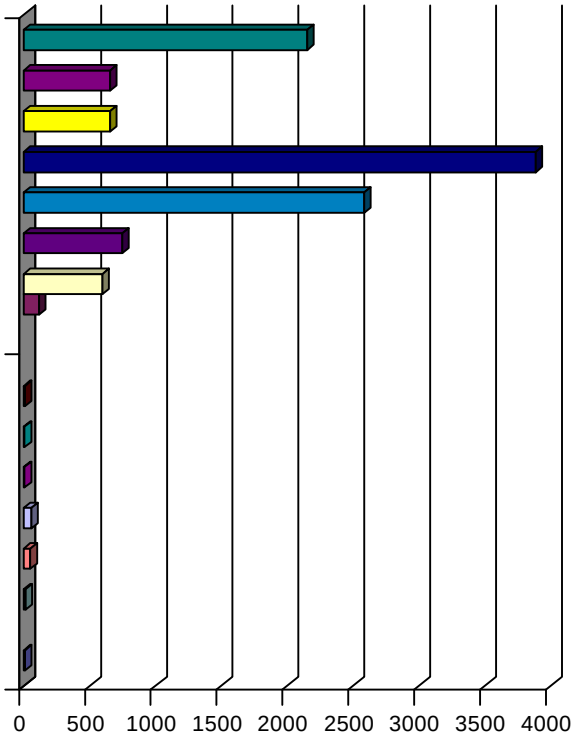


	North America	S & C America	Europe	FSU	Middle East	Africa	Asia/Pac
1979	9.58	2.42	4.13	25.48	20.95	5.96	4.35
1989	9.42	4.54	6.18	42.47	34.72	7.55	8.03
1998	8.35	6.21	5.21	56.7	49.53	10.22	10.17
1999	7.31	6.31	5.15	56.7	49.52	11.16	10.28

Source: Oil and Gas Journal, and BP Amoco Statistical Review of World Energy, 2000, p. 20.

Figure V.20

The Massive Uncertainties in World Gas Reserves: BP Amoco Estimates of Proved and IEA Estimates Ultimate World Gas Reserves by Region
(In Trillions of Cubic Meters)



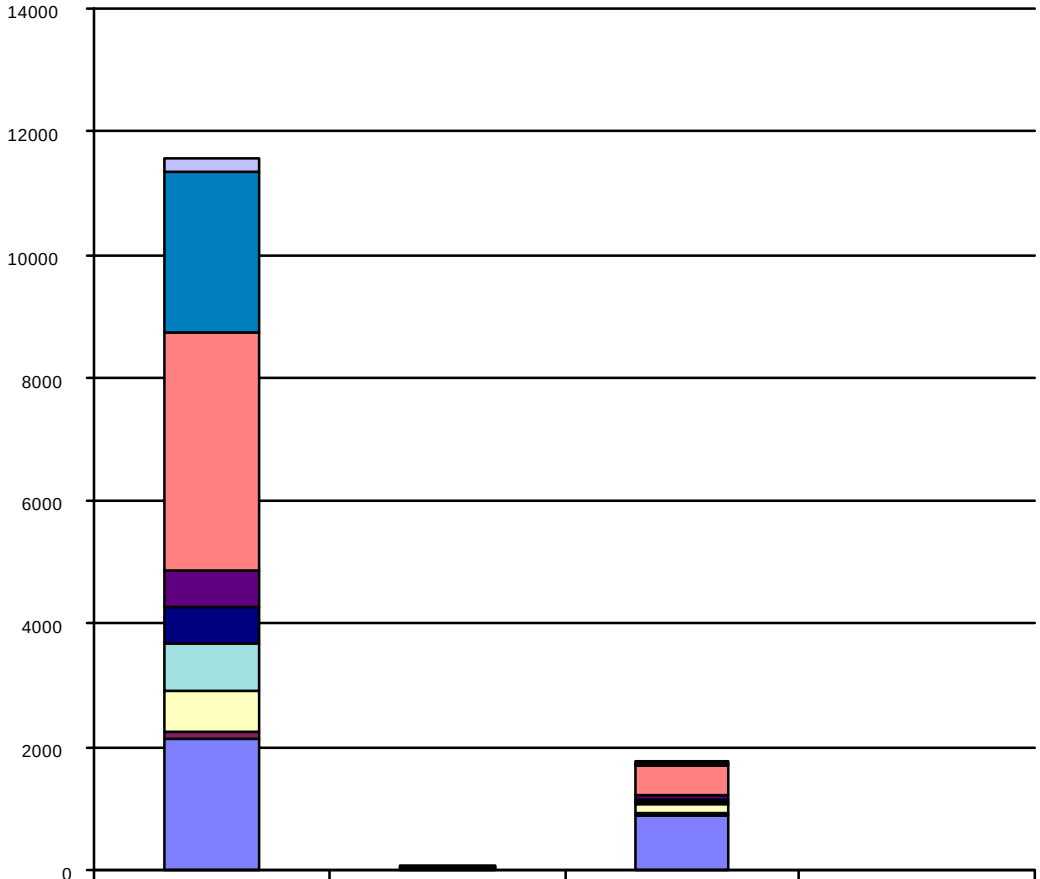
IEA Ultimate OECD North America		2151.9
BP Proved North America	7.31	
IEA Ultimate Latin America		655.7
BP Proved S&C America	6.31	
IEA Ultimate OECD Europe		655.7
BP Proved Europe	5.15	
IEA Ultimate Transition		3886.6
BP Proved FSU	56.7	
IEA Ultimate Middle East		2585.6
BP Proved Middle East	49.52	
IEA Ultimate Africa		746.6
BP Proved Africa	11.16	
IEA Ultimate S and E. Asia		596

Source: Oil and Gas Journal, and BP Amoco Statistical Review of World Energy, 2000, p. 20; IEA World Energy Outlook, 1998, Paris, IEA/OECD, 1998, pp. 129-130.

Figure V.21

Another View of Uncertainty: USGS Estimate of Ultimate World Gas Reserves by Region

(In Trillions of Cubic Feet)

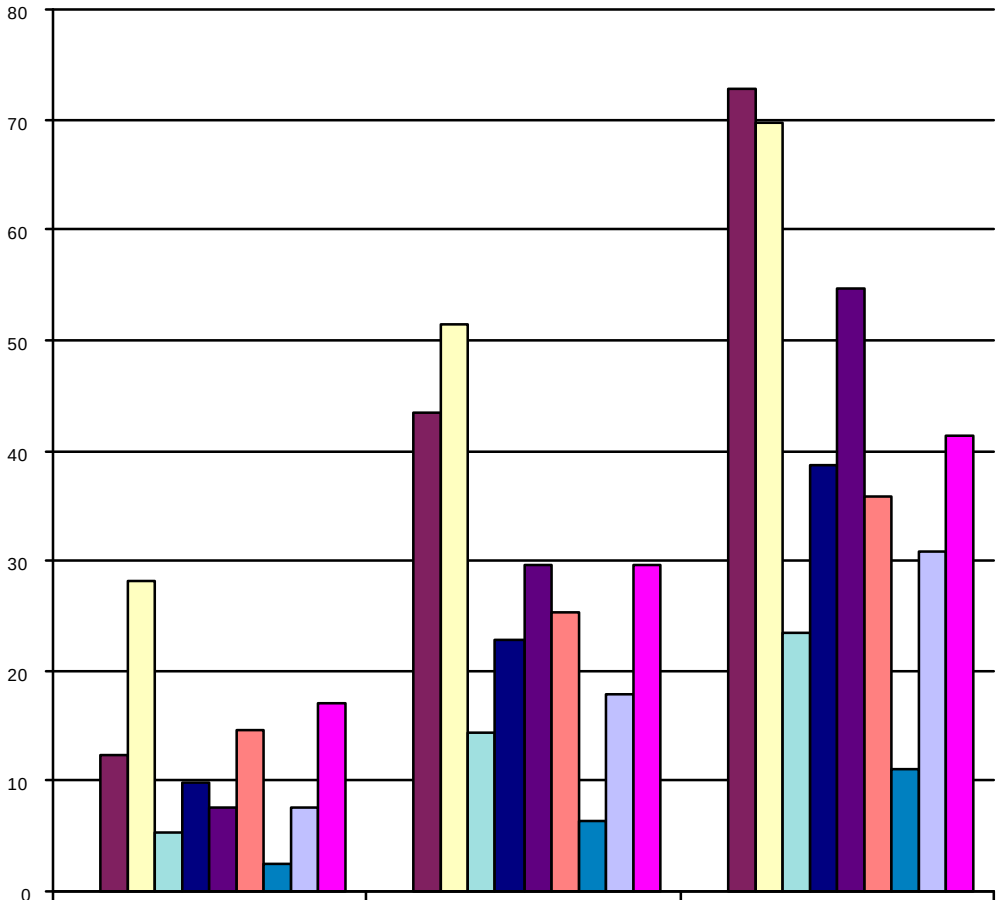


	Ultimate Reserves	Production (1992)	Cumulative Production (End-92)	Cumulative Production/Ultimate Reserves
China	227	0.6	15.2	6.70%
Middle East	2585.6	3.7	49.8	1.90%
FSU & EE	3886.6	27.5	493.5	12.70%
S & E. Asia	596	5.1	51.8	8.70%
Latin America	596	5.1	51.8	8.70%
Africa	746.6	3	31.1	4.20%
OECD Europe	655.7	7.6	159.8	24.40%
OECD Pacific	113.2	1.1	10.2	9.00%
OECD North America	2151.9	23.3	899.1	41.80%
Total World	11,448.0	74.2	1,750.2	15.3%

Adapted by Anthony H. Cordesman IEA, World Energy Outlook, 1998, pp. 129-131.

Figure V.22

How Quickly Will Middle Eastern and World Gas Reserves be Consumed? IEA Estimate of Future World Gas Production as a Percent of USGS Estimated Conventional Gas Reserves: 1995-2020



	1995	2010	2020
OECD North America	na	na	na
OECD Pacific	12.3	43.4	72.9
OECD Europe	28.1	51.5	69.8
Africa	5.4	14.3	23.5
Latin America	9.8	22.8	38.6
S & E. Asia	7.7	29.6	54.7
FSU & EE	14.7	25.3	35.7
Middle East	2.4	6.4	11.2
China	7.6	17.9	30.9
WORLD	17.1	29.7	41.3

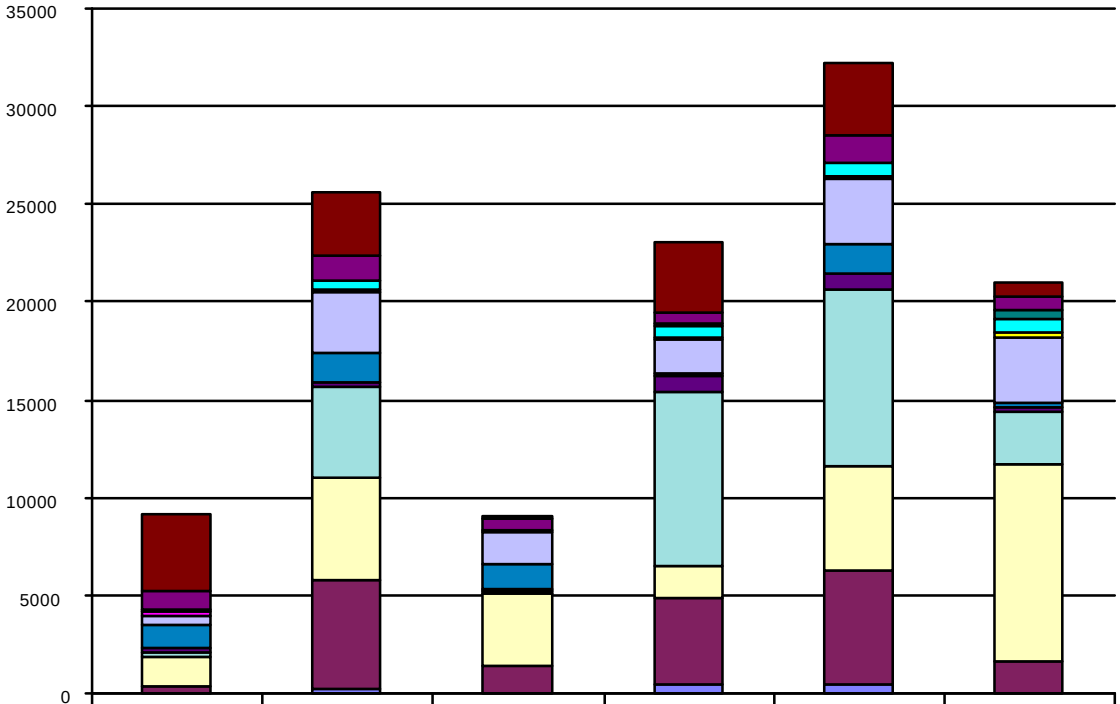
Note: North America includes Mexico .

Adapted by Anthony H. Cordesman IEA, World Energy Outlook, 1998, pp. 136-138..

Figure V.23

An Arab Estimate of Arab Natural Gas Reserves by Country

(In Billions of Cubic Meters)



	1970	1990	1996 Assoc.	1996 Non-Assoc.	Total	Potential Undiscovered
Algeria	3993	3300	141	3579	3720	691
Libya	849	1208	637	660	1297	677
Tunisia	28	85	4	66	70	473
Egypt	142	399	52	579	631	705
Syria						250
Bahrain	142	173	3	144	147	
Iran						
Iraq	524	3107	1586	1755	3341	3396
Kuwait	1189	1518	1366	132	1498	193
Neutral Zone						
Oman	253	204	73	776	849	215
Qatar	227	4615	64	8921	8995	2700
Saudi	1515	5223	3702	1653	5355	10042
UAE	290	5623	1385	4417	5802	1660
Yemen	-	198	57	422	479	
Total Arab	9175	25809	9105	23569	32674	22520
Gulf Arab	4163	20817	8271	18685	26956	18456
North African Arab	5012	4992	834	4884	5718	4064
Arab as % of World	23.3%	19.8%	62.1%	17.4%	21.7%	NA

Adapted by Anthony H. Cordesman from Dr. M. Mukhtar Al-Lababidi, Energy Resources in the Arab Countries, Kuwait, November 19-21, 1998.

Table V.1

OPEC and Non-OPEC Quotas and Actual Production in 1998

(Production in thousands of barrels per day)

Country	Actual Production 2/98	OPEC Base 2/98	Cutbacks Effective 4/1/98	OPEC Quota 7/1/98	Cutbacks Effective 7/1/98	Actual Production 9/98	Actual Production Q398
Algeria	860	868	50	788	30	790	793
Indonesia	1,340	1,380	70	1,280	30	1,330	1,323
Iran	3,600	3,623	140	3,318	165	3,650	3,532
Iraq+++	-	-	-	2,550	-	2,900	2,961
Kuwait+	2,210	2,205	125	1,980	100	1,972	2,205
Libya	1,450	1,453	80	1,323	50	1,335	1,345
Nigeria	2,153	2,258	125	2,033	100	1,900	1,951
Qatar	700	700	30	640	30	630	640
Saudi Arabi	8,760	8,748	300	8,023	425	8,173	8,225
UAE+++	2,355	2,382	125	2,157	100	2,220	2,213
Venezuela	3,370	3,370	200	2,845	325	2,900	2,961
Total OPEC					NA	27,450	27,490
Mexico	3,140	NA	100	-	100	-	-
Norway	3,230	NA	100	-	-	-	-
Russia	6,040	NA	-	-	100	-	-
Oman	910	NA	30	-	20	-	-
Yemen	380	NA	20	-	-	-	-
Egypt	860	NA	-	-	20	-	-
Total Non-OPEC	14560	NA	250	-	240	-	-
TOTAL	41358	NA	1495	-	1595	-	-

Table V.2

OPEC and Non-OPEC Quotas and Actual Production in 1999 and 2000

(Production in thousands of barrels per day)

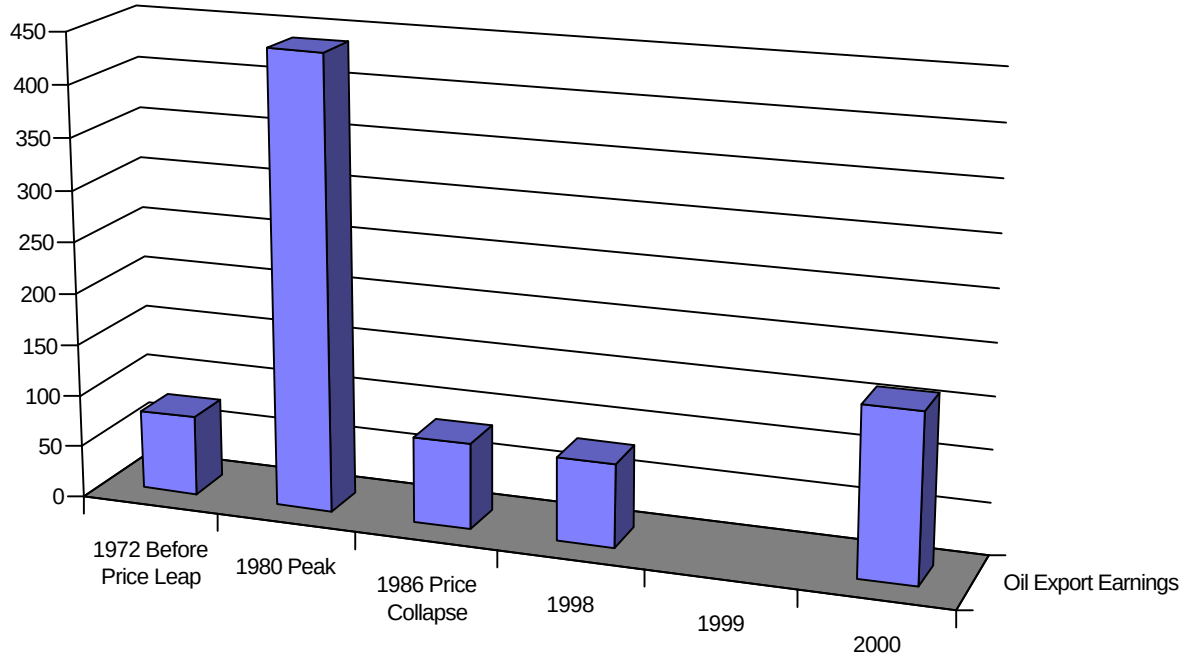
Country	April 1, 1999 Production Target Levels	2Q99	3Q99	4Q99	1Q00	April 1, 2000 Production Target Levels	2Q00
Saudi Arabia	**7,438**	7,647	7,684	7,858	7,864	**8,023**	8,150
Iran	**3,359**	3,410	3,477	3,450	3,541	**3623***	3,650
Venezuela	**2,720**	2,740	2,720	2,733	2,780	**2,845**	2,845
UAE	**2,000**	2,060	2,058	2,055	2,185	**2,157**	2,200
Nigeria	**1,885**	2,057	2,030	2,016	1,940	**2,033**	2,100
Kuwait	**1,836**	1,810	1,858	1,917	2,005	**1,980**	2,075
Libya	**1,227**	1,303	1,293	1,320	1,366	**1,323**	1,375
Indonesia	**1,187**	1,343	1,303	1,300	1,260	**1,280**	1,340
Algeria	**731**	763	757	760	760	**788**	800
Qatar	**593**	647	650	653	667	**640**	670
OPEC 10	**22,976**	**23,780**	**23,831**	**24,063**	**24,369**	**24,692**	**25,205**
Iraq	**NA**	2,568	2,833	2,087	2,331	**NA**	2,600
Total OPEC	**NA**	**26,348**	**26,664**	**26,150**	**26,700**	**NA**	**27,805**

*Quotas are based on crude oil production.
***Crude oil does not include natural gas liquids or lease condensate.*
+Kuwaiti and Saudi Arabian figures each include half of production from *the Neutral Zone between the two countries.*
++Quota applies only to Abu Dhabi.
+++Iraqi oil production is constrained by the United Nations' limits on *its exports and as such has not been a part of any OPEC agreements in 1998. The numbers provided as Iraqi quotas are EIA estimates of what OPEC may have assumed in coming up with the cutback agreements.*
Source: EIA On-Line Factsheets, July 14, 1998 and December 1, 1998.

Figure V.24

The "Oil Shock in Reverse:" Shifts in OPEC Earnings

($1990 Billions) Total



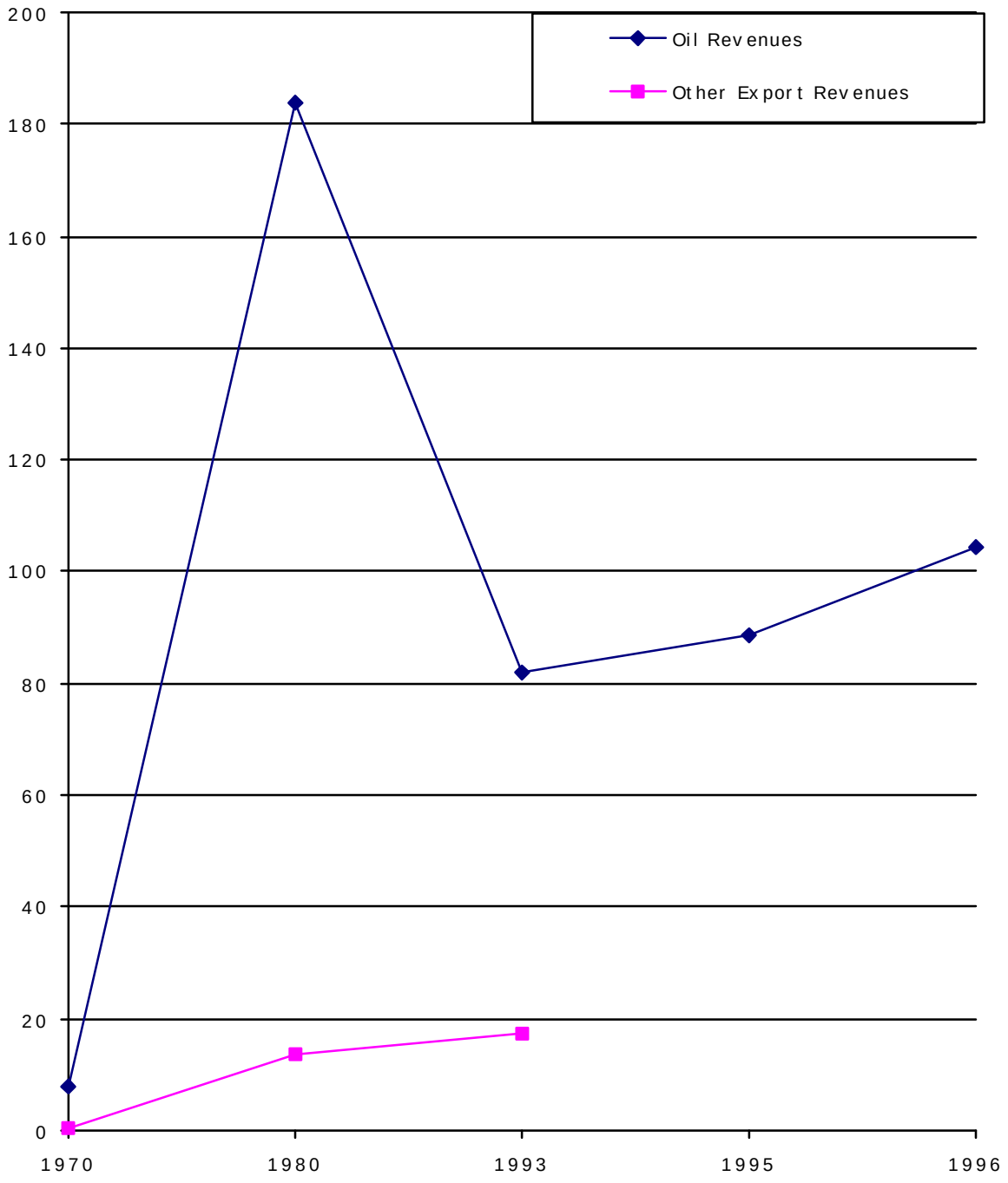
	1972 Before Price Leap	1980 Peak	1986 Price Collapse	1998	1999	2000
Oil Export Earnings	77	439	83	80	102*	162

*Computed using 1.3 price deflator from 1999 figure
Adapted by Anthony H. Cordesman from data provided by DOE/EIA. June 1999.

Figure V.25

The "Oil Shock in Reverse:" Shifts in Gulf Export Earnings 1970-1996

($Current Billions)

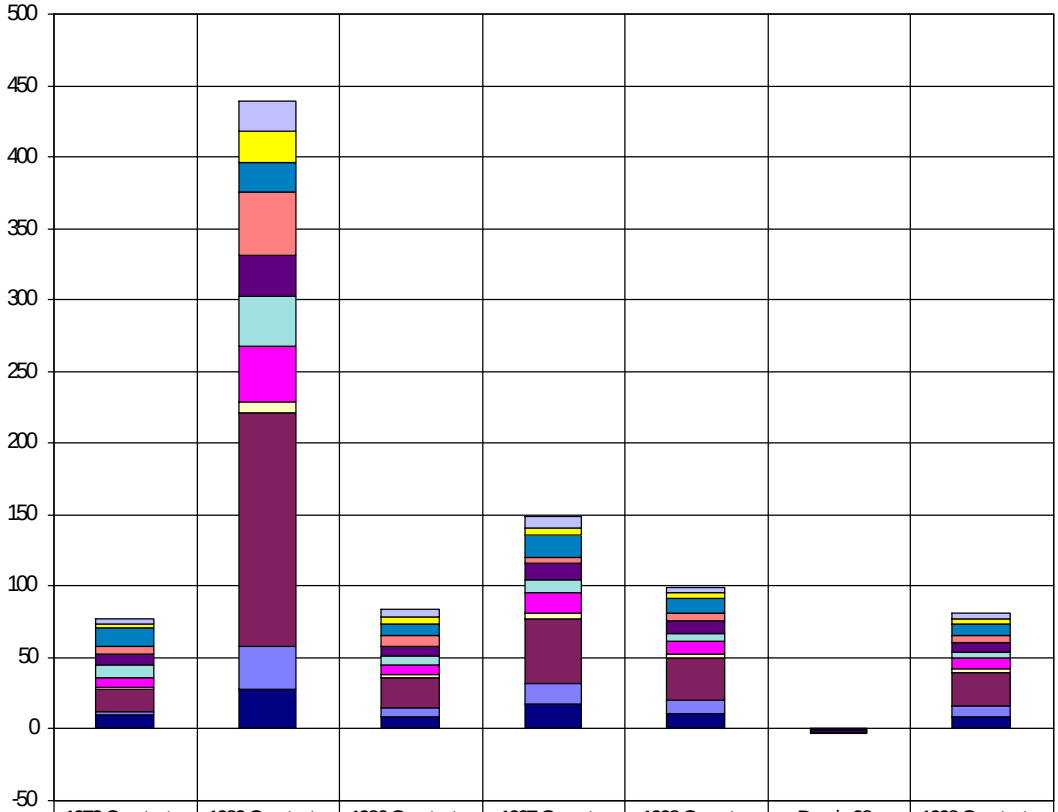


Adapted by Anthony H. Cordesman from data provided by Hubert des Longchamps of Elf Aquitaine and The Economist, December 21, 1996, p. 54.

Figure V.26

The "Oil Shock in Reverse:" Shifts in OPEC Earnings by Major Country: 1972-1998

(in $US Current and 1990 Constant Billions)



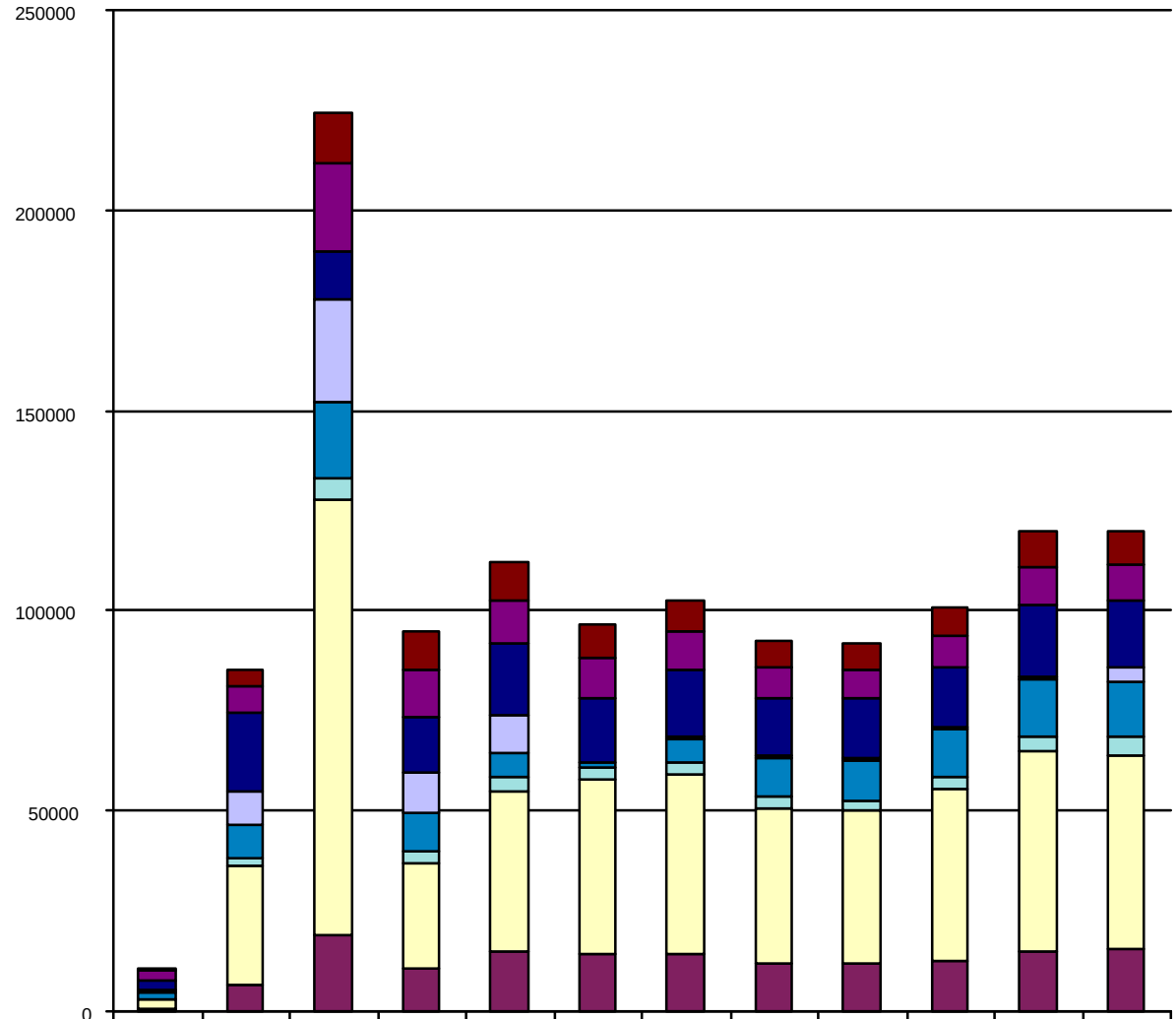
	1972 Constant	1980 Constant	1986 Constant	1997 Current	1998 Current	Drop in 98	1998 Constant
Algeria	4.2	20.2	4.8	7.5	4.8	-35%	3.9
Indonesia	2.8	22.5	5.6	5.1	2.8	-31%	2.8
Iran	12.9	20.9	6.7	15.7	10.5	-35%	8.1
Iraq	4.5	43.6	8	4.2	6.2	45%	4.9
Kuwait	8.5	28.5	7.1	11.8	8	-33%	6.4
Libya	9.1	35.3	5.5	9	5.6	-38%	4.6
Nigeria	6.6	38.6	7.7	14.5	8.8	-38%	7.4
Qatar	1.4	8.5	1.6	4	2.9	-26%	2.4
Saudi Arabia	14.5	162.7	21.4	45.5	29.4	-35%	23.6
UAE	3.3	29.9	6.8	13.7	9.3	-32%	7.5
Venuzuela	9.4	28.2	7.8	17.7	11.2	-37%	8.9
Total	77.2	438.8	83.0	148.7	100.6	-32%	80.5

Source: Adapted by Anthony H. Cordesman from data provided by the EIA as of May 1999.

Figure V.27

The Boom in 1980 versus the Mid-1980s and 1990s: Shifts in Middle Eastern Oil Export Earnings By Country

($Current Billions)



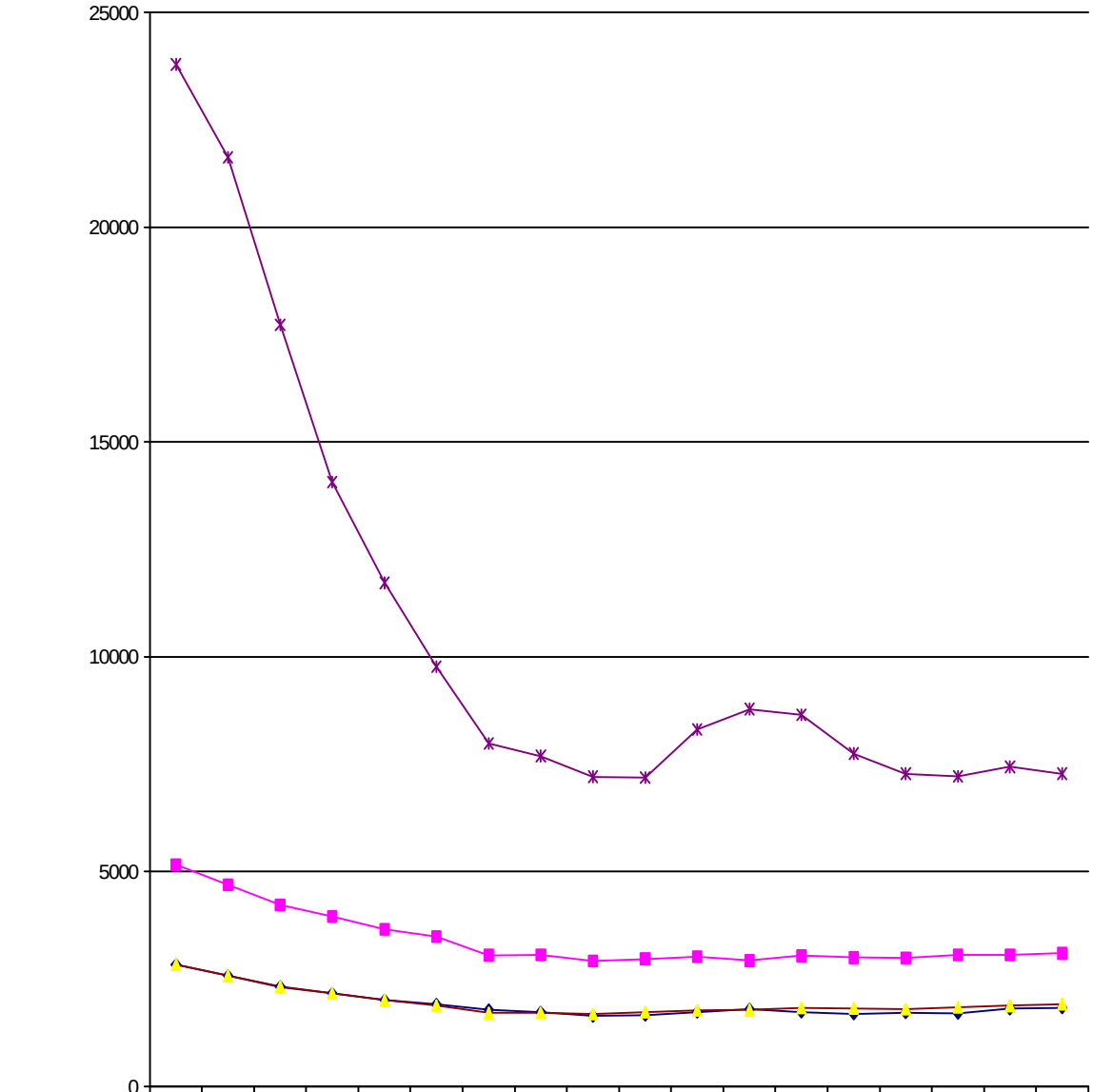
	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997
Algeria	681	4295	12971	9668	9588	8464	7885	6902	6335	6938	9164	8745
Libya	2379	6767	21906	12132	10715	10211	9326	7689	7170	7763	9543	8866
Iran	2358	19634	11693	13710	17906	15767	16802	14251	14801	14944	17660	16476
Iraq	788	8227	26096	10097	9594	351	482	425	421	461	680	3513
Kuwait	1582	8593	18935	9451	6385	874	6224	9708	10482	12217	14099	13646
Qatar	231	1754	5372	3068	3273	2828	2870	2811	2623	2987	3801	4743
Saudi	2418	29473	108175	25937	40130	43701	44754	38621	38139	42502	50046	48835
UAE	523	6806	19390	10896	14846	14356	14251	12118	11683	12822	14980	15286
Total ME OPEC	7900	74487	189661	73159	92134	77877	85383	77934	78149	85933	191266	192499

Adapted by Anthony H. Cordesman from Cambridge Energy Associates, World Oil Trends, 1998, Cambridge,, Mass., 1998, pp. 60-61.

Figure V.28

The Decline in Real Per Capita Income in the Middle East, North Africa, OPEC and Saudi Arabia: 1980-1997

($US Constant 1995 Dollars)

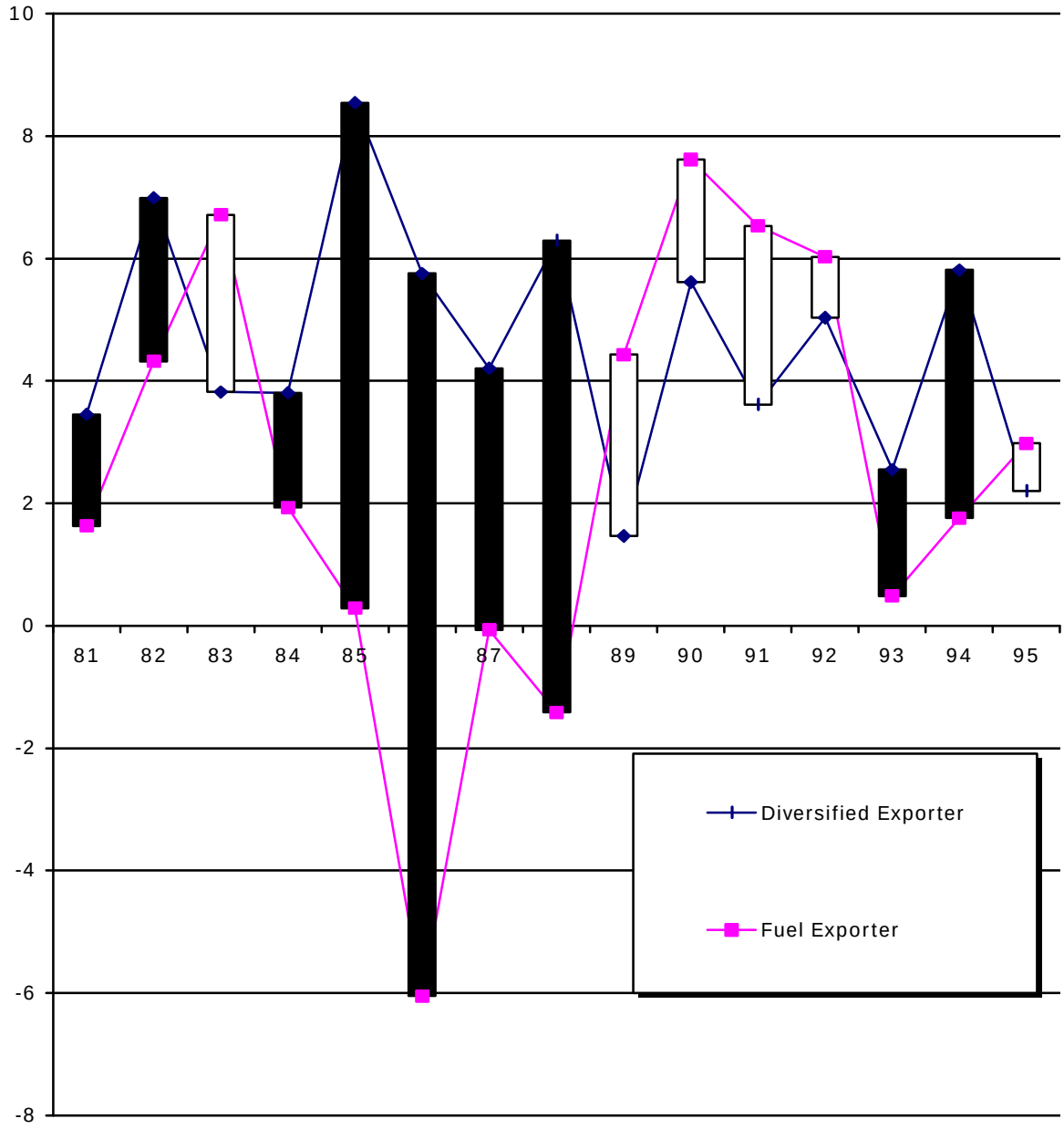


	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
North Africa	2836	2578	2321	2169	2008	1912	1781	1730	1640	1660	1730	1800	1730	1690	1720	1700	1810	1830
Middle East	5,163	4693	4228	3951	3659	3485	3053	3060	2920	2970	3020	2930	3040	3000	2990	3060	3060	3100
Saudi Arabia	23788	21624	17725	14067	11723	9769	7983	7690	7210	7190	8310	8780	8650	7750	7280	7220	7440	7280
OPEC	2833	2575	2319	2168	2008	1887	1711	1720	1690	1730	1770	1780	1830	1820	1800	1840	1880	1920

Adapted by Anthony H. Cordesman from Arms Control and Disarmament Agency (ACDA), World Military Expenditures and Arms Transfers, Washington, GPO, Table I, various editions..

Figure V.29

The GDP Growth of MENA Fuel Exporters Lagged Behind That of Diversified Exporters and Was Far More Vulnerable to Oil Prices
(Percent of GDP Growth)

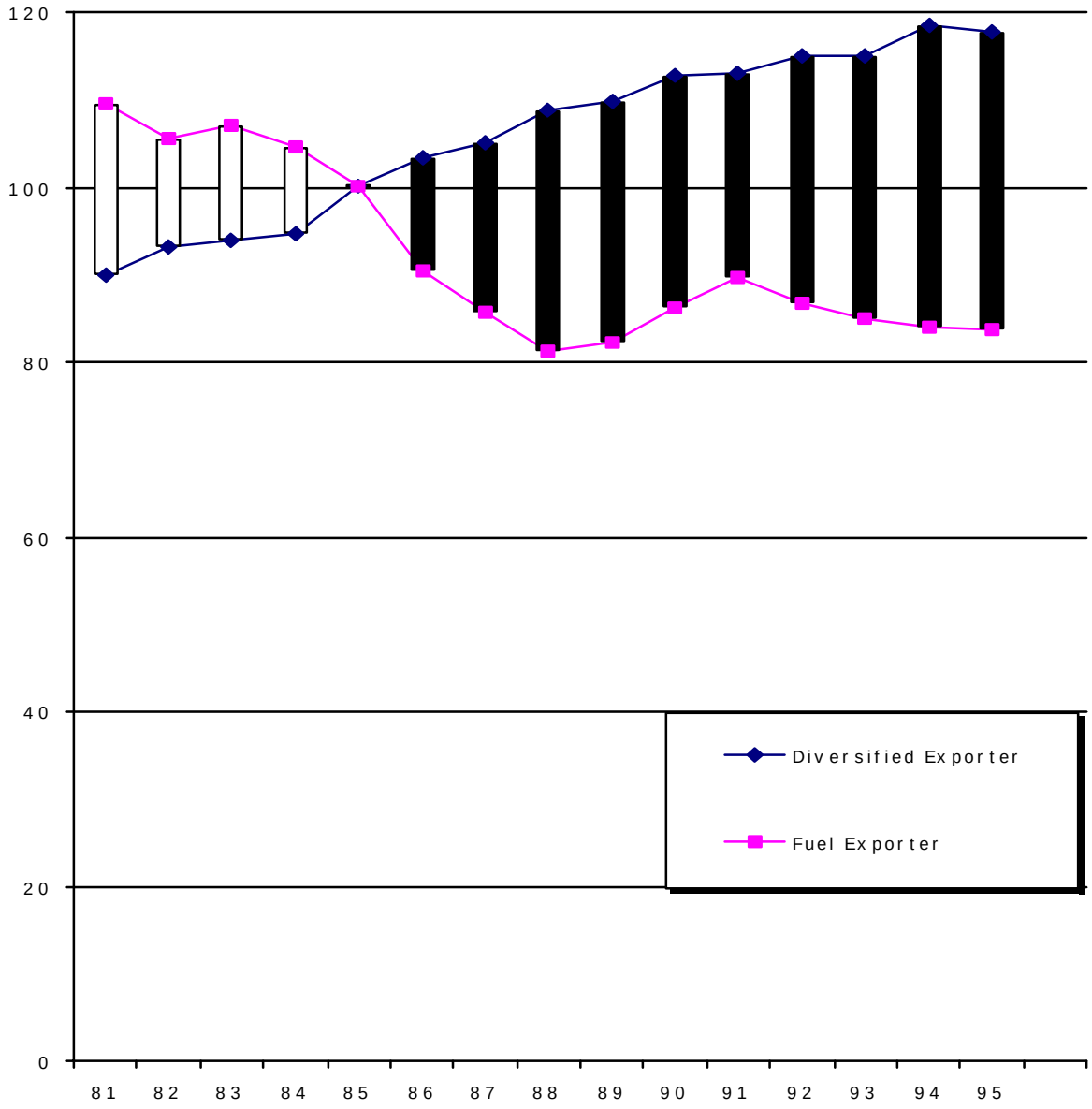


Diversified exporter = Egypt, Israel, Jordan, Morocco, Syria, and Tunisia.
Fuel exporter = Algeria, Bahrain, Iran, Kuwait, Oman, Qatar, Saudi Arabia, and the UAE.
Adapted by Anthony H. Cordesman from IMF, World Economic Outlook, Washington, IMF, May, 1996, pp. 98-105.

Figure V.30

The Per Capita Income Growth of MENA Fuel Exporters Lagged Behind That of Diversified Exporters and Was Far More Vulnerable to Oil Prices

(Percent of Change in Per Capita Income; 1985 = 100)

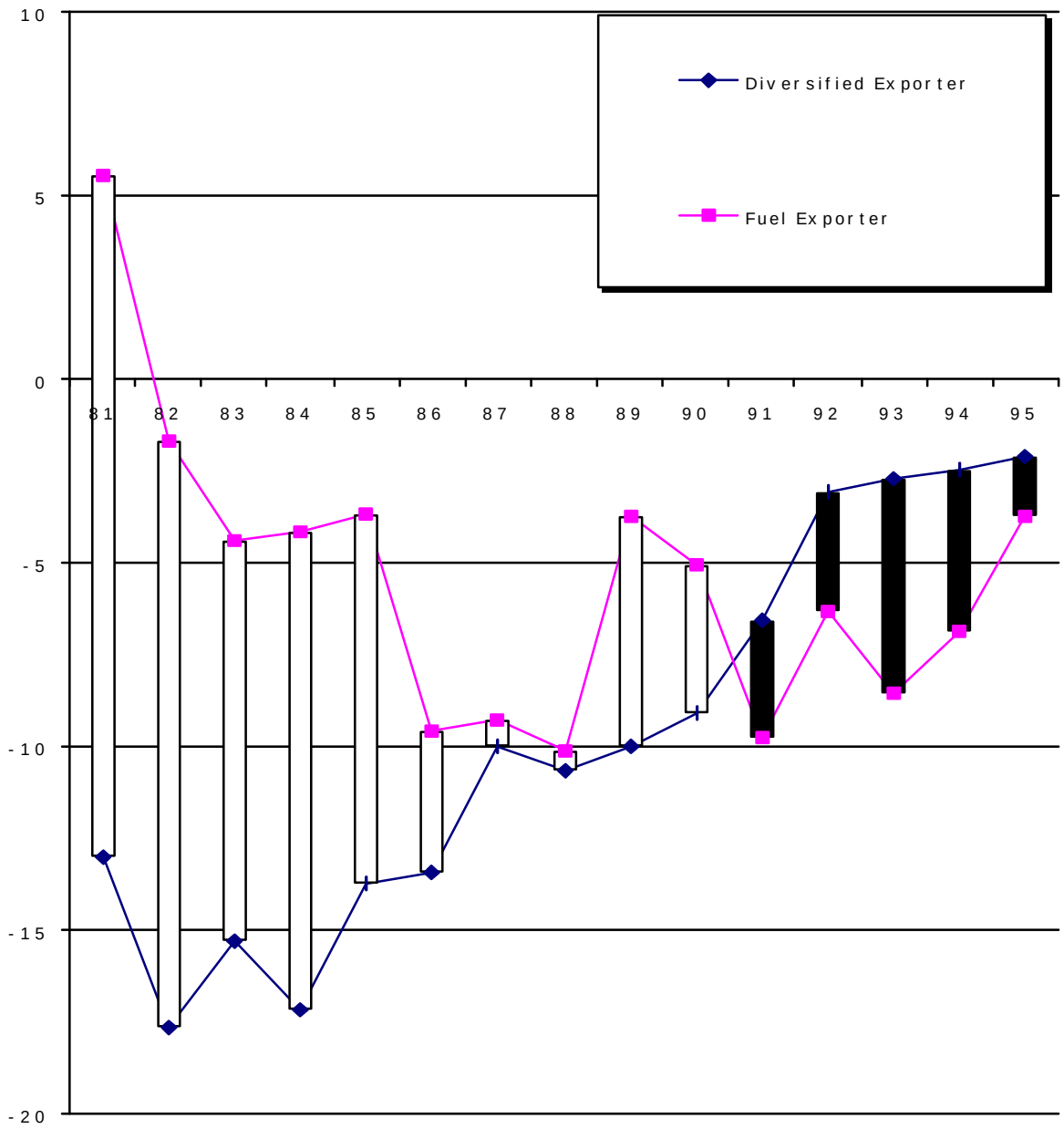


Diversified exporter = Egypt, Israel, Jordan, Morocco, Syria, and Tunisia.
Fuel exporter = Algeria, Bahrain, Iran, Kuwait, Oman, Qatar, Saudi Arabia, and the UAE.
Adapted by Anthony H. Cordesman from IMF, World Economic Outlook, Washington, IMF, May, 1996, pp. 98-105.

Figure V.31

The Fiscal Balances of MENA Fuel Exporters Deteriorated Relative to Those of Diversified Exporters

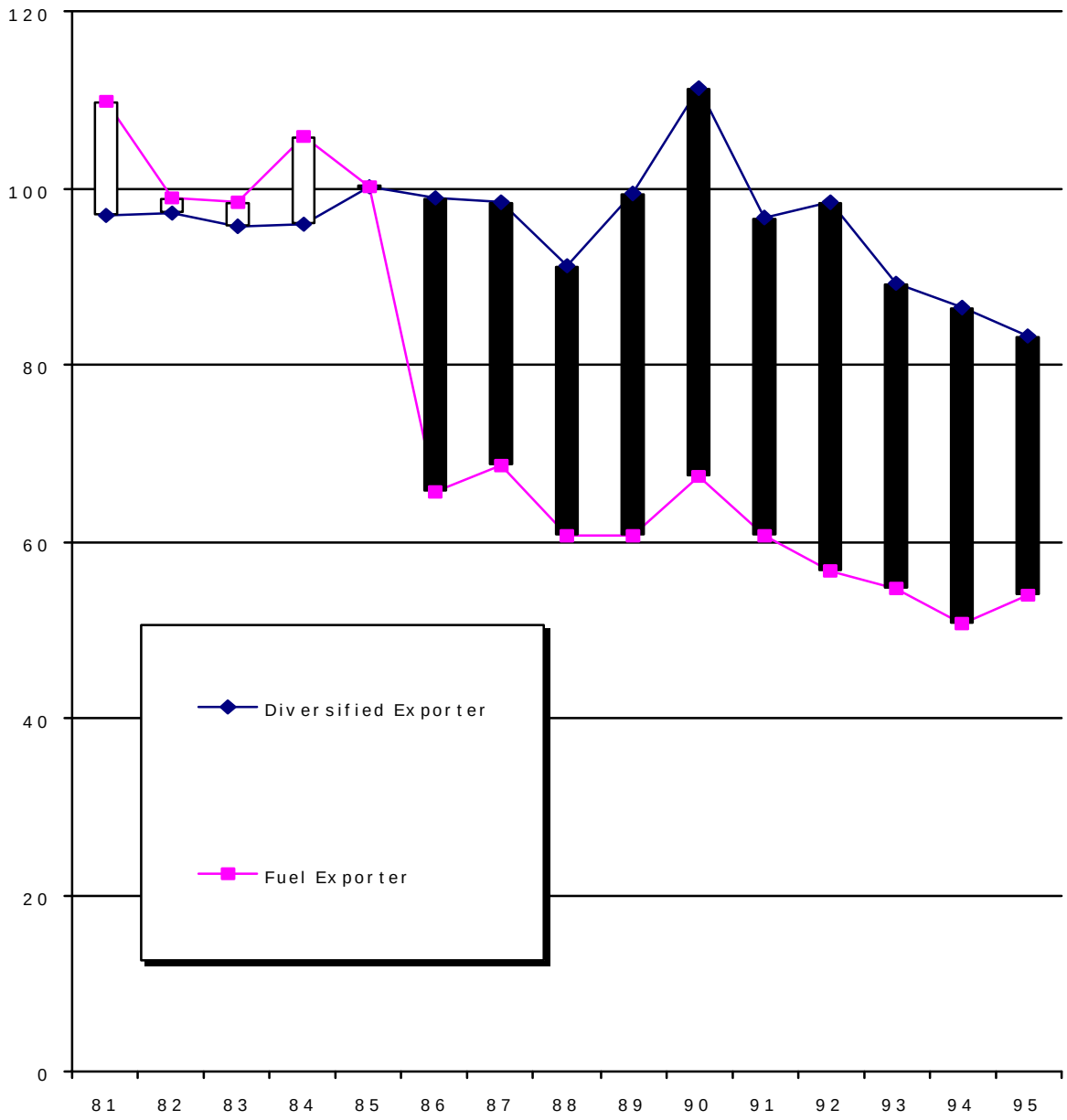
(Budget Deficits as a Percent of GNP)



Diversified exporter = Egypt, Israel, Jordan, Morocco, Syria, and Tunisia.
Fuel exporter = Algeria, Bahrain, Iran, Kuwait, Oman, Qatar, Saudi Arabia, and the UAE.
Adapted by Anthony H. Cordesman from IMF, World Economic Outlook, Washington, IMF, May, 1996, pp. 98-105.

Figure V.32

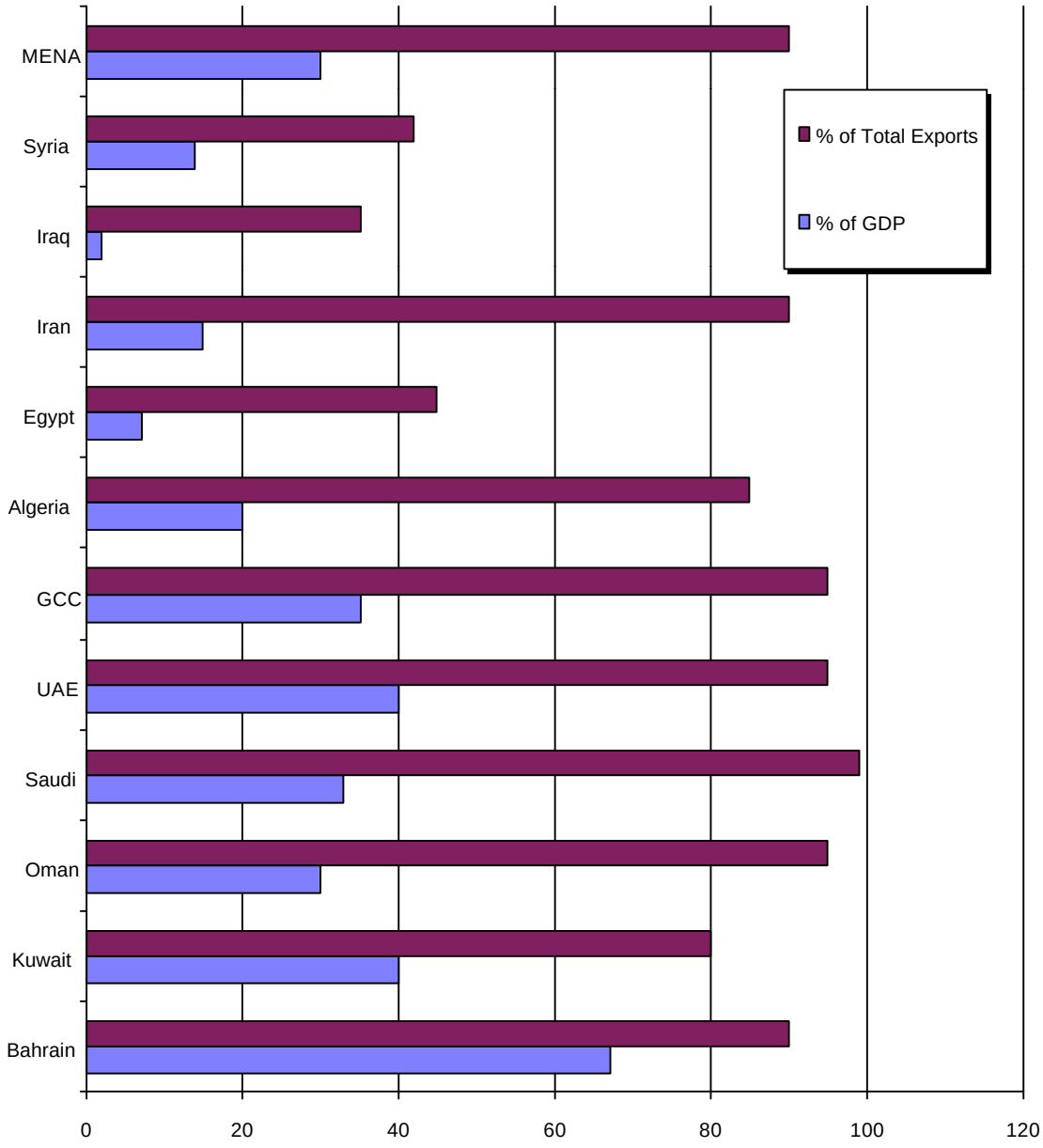
The Terms of Trade of MENA Fuel Exporters Deteriorated Relative to Those of Diversified Exporters
(1985=100)



Diversified exporter = Egypt, Israel, Jordan, Morocco, Syria, and Tunisia.
Fuel exporter = Algeria, Bahrain, Iran, Kuwait, Oman, Qatar, Saudi Arabia, and the UAE.
Adapted by Anthony H. Cordesman from IMF, World Economic Outlook, Washington, IMF, May, 1996, pp. 98-105.

Figure V.33

Economies Failed to Diversify and Remained Over-Dependent on Oil: Oil and Petroleum Exports as a Share of Gulf and Middle Eastern Economies in 1993



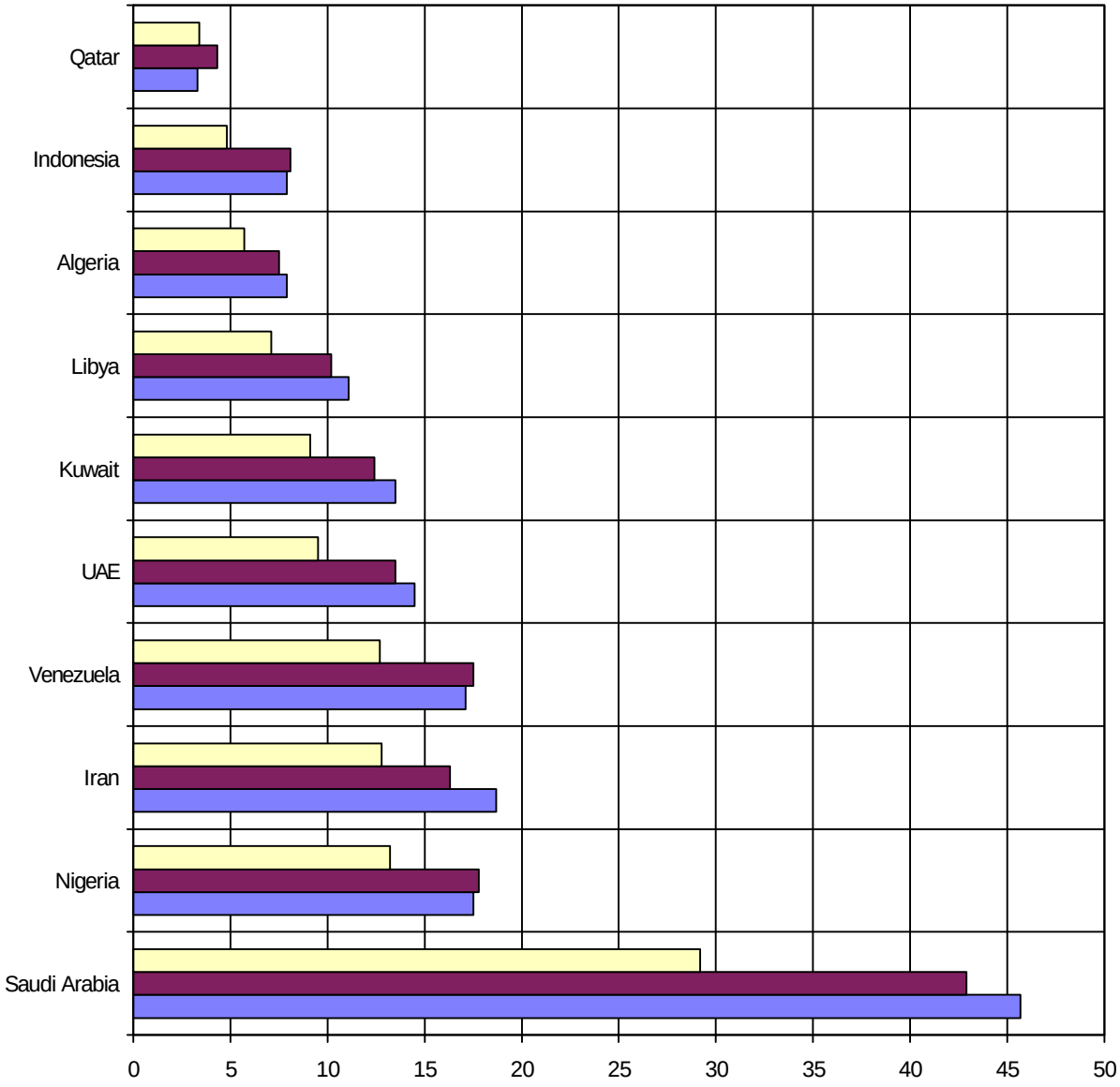
	Bahrain	Kuwait	Oman	Saudi	UAE	GCC	Algeria	Egypt	Iran	Iraq	Syria	MENA
% of Total Exports	90	80	95	99	95	95	85	45	90	35	42	90
% of GDP	67	40	30	33	40	35	20	7	15	2	14	30

Source: Adapted by Anthony H. Cordesman from World Bank, Claiming the Future, pp. 16-18.

Figure V.34

Middle Eastern and North African Oil Revenues by Country: 1996-1998: The Impact of Oil Prices on Revenues

(in US $Current Billions)



	Saudi Arabia	Nigeria	Iran	Venezuela	UAE	Kuwait	Libya	Algeria	Indonesia	Qatar
1998	29.2	13.2	12.8	12.7	9.5	9.1	7.1	5.7	4.8	3.4
1997	42.9	17.8	16.3	17.5	13.5	12.4	10.2	7.5	8.1	4.3
1996	45.7	17.5	18.7	17.1	14.5	13.5	11.1	7.9	7.9	3.3

Total oil exports = 2,734 thousand barrels per day.
Source: Adapted by Anthony H. Cordesman from projections by the Petroleum Finance Corporation.

Table V.3

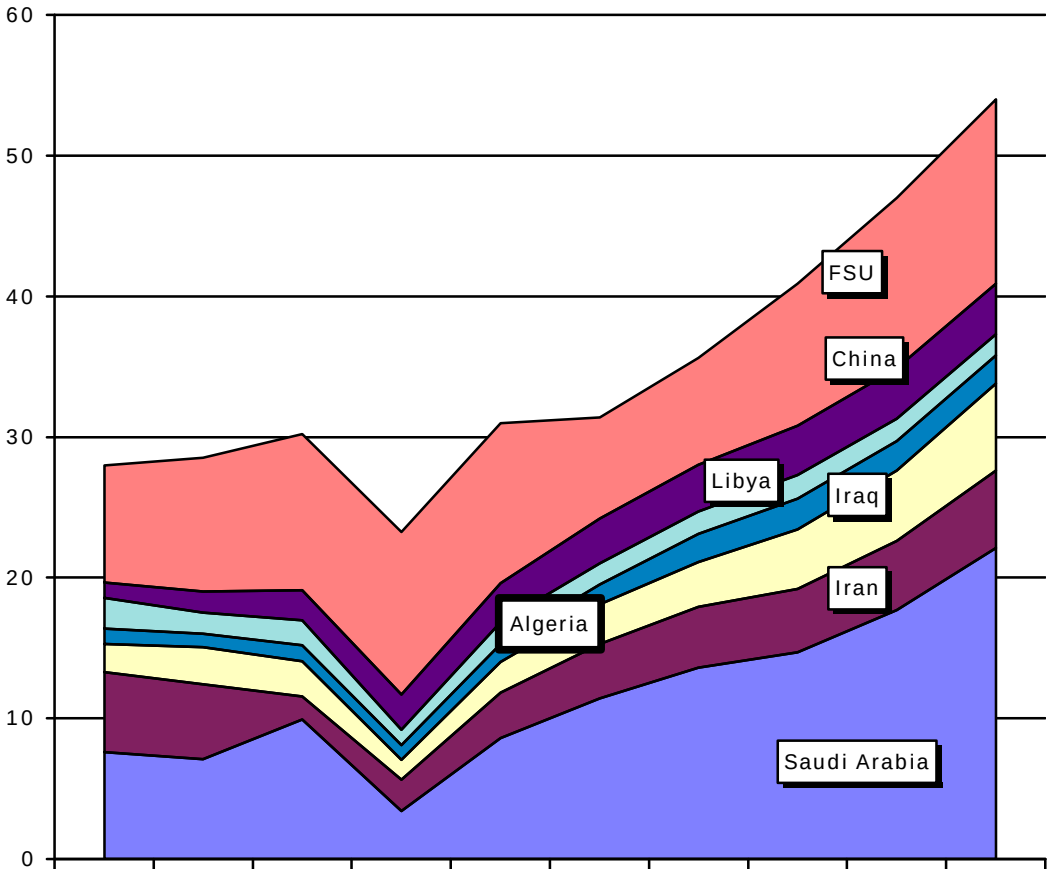
EIA Estimates of the Future Oil Production of Sanctioned Middle Eastern States[1]

	1990	1998	2005	2010	2015	2020
Iran	3.2	3.9	4.3	4.5	4.9	5.5
Iraq	2.2	2.8	3.2	4.2	5.0	6.2
Libya	1.5	1.5	1.6	1.7	1.6	1.5
Total “Rogue”	6.9	8.2	9.1	10.4	11.5	13.2
Total Gulf	18.7	24.0	28.0	31.4	36.9	44.8
Total OPEC	27.2	34.2	40.6	45.1	50.8	58.8

Figure V.35

Cumulative Risk: Estimated Total Demand for Exports from Countries with Sensitive or High Risk Oil Production Capacity Affects 50% of World Supply

(EIA Reference Case Estimate in MMBD)



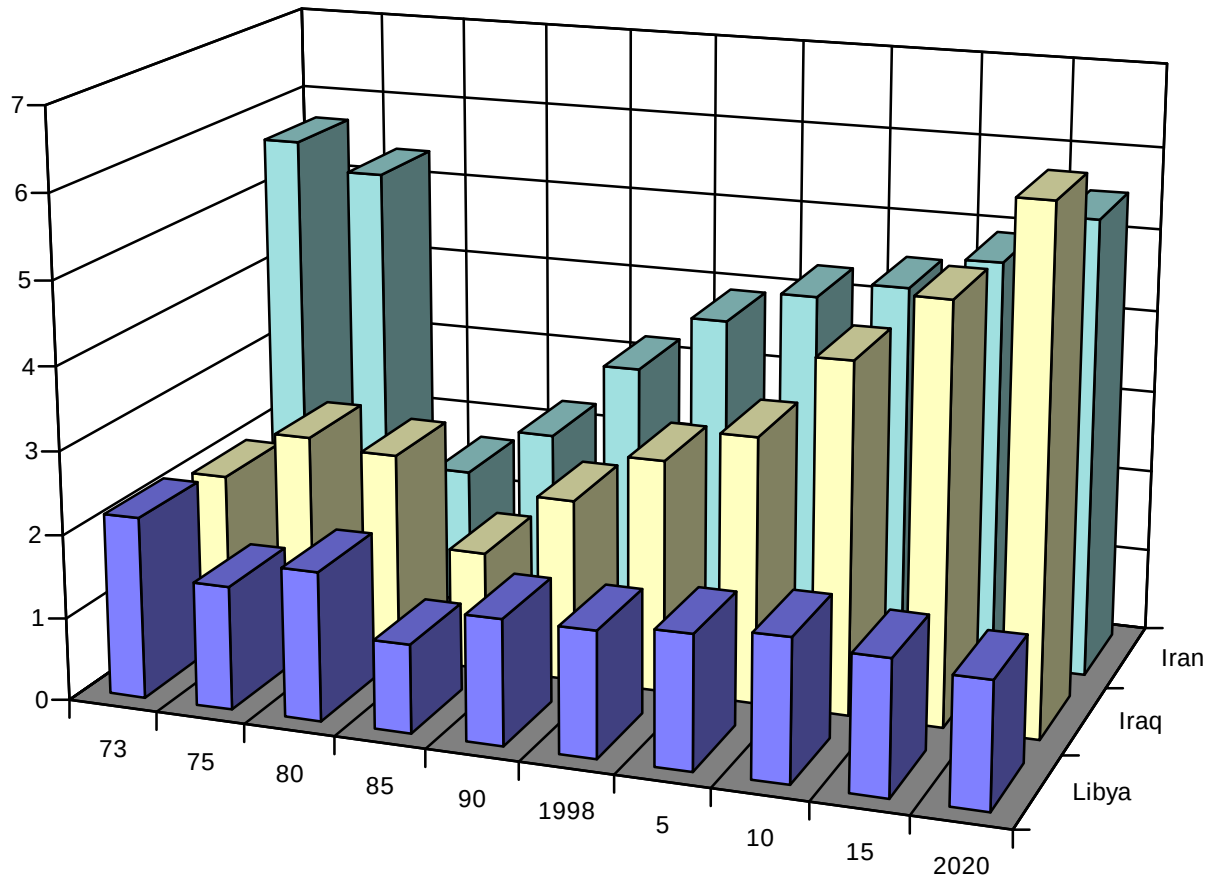
	1973	1975	1980	1985	1990	1998	2005	2010	2015	2020
FSU	8.32	9.532	11.11	11.585	11	7.2	7.6	10.1	12.1	13.1
China	1.09	1.49	2.122	3	3	3.2	3.3	3.5	3.6	3.6
Libya	2.175	1.48	1.787	1.059	1.5	1.5	1.6	1.7	1.6	1.5
Algeria	1.097	0.983	1.106	1.037	1.3	1.4	2	2.2	2.1	2
Iraq	2.018	2.62	2.514	1.433	2.2	2.8	3.2	4.2	5	6.2
Iran	5.681	5.35	1.662	2.25	3.2	3.9	4.3	4.5	4.9	5.5
Saudi Arabia	7.596	7.075	9.9	3.388	8.6	11.4	13.6	14.7	17.7	22.1

Source: Adapted by Anthony H. Cordesman from EIA, International Energy Outlook, 2000, DOE/EIA-0484 (00), April 2000, pp. 229, and EIA, Monthly Energy Review, April, 1997, pp. 130-131. Note that total world production is 695 MMBD in 1990, 73.0 MMBD in 1995, 77.1 MMBD in 1997, 80.4 MMBD in 2000, 87.6 MMBD in 2005, 95.0 MMBD in 2010, and 103.5 MMBD in 2015, and 112.2 MMBD in 2020.

Figure V.36

Today's "Rogues" Had Better Be Tomorrow's Suppliers: 1973-2020
Today's "Rogues" Had Damn Well Better Be Tomorrow's Suppliers: 1998-2020

(EIA Reference Case Estimate in MMBD)



	73	75	80	85	90	1998	5	10	15	2020
Libya	2.175	1.48	1.787	1.059	1.5	1.5	1.6	1.7	1.6	1.5
Iraq	2.018	2.62	2.514	1.433	2.2	2.8	3.2	4.2	5	6.2
Iran	5.681	5.35	1.662	2.25	3.2	3.9	4.3	4.5	4.9	5.5

Source: Adapted by Anthony H. Cordesman from EIA, International Energy Outlook, 2000, DOE/EIA-0484 (00), April 2000, pp. 229, and EIA, Monthly Energy Review, April, 1997, pp. 130-131. Note that total world production is 69.7 MMBD in 1990, 73.0 MMBD in 1995, 81.4 MMBD in 2000, 90,5 MMBD in 2005, 98.1 MMBD in 2010, and 106.9 MMBD in 2015.

VI. ENERGY ISSUES BY COUNTRY

Table VI.4

Middle Eastern Oil Production (Including Lease Condensate), 1990-Present

(Thousand Barrels per Day)

	Algeria	Iran	Iraq	Kuwait[1]	Libya	Qatar	Saudi Arabia	United Arab Emirates
1990 Average	1,175	3,088	2,040	1,175	1,375	406	6,410	2,117
1991 Average	1,230	3,312	305	190	1,483	395	8,115	2,386
1992 Average	1,214	3,429	425	1,058	1,433	423	8,332	2,266
1993 Average	1,162	3,540	512	1,852	1,361	413	8,198	2,159
1994 Average	1,180	3,618	553	2,025	1,378	415	8,120	2,193
1995 Average	1,202	3,643	560	2,057	1,390	442	8,231	2,233
1996 Average	1,242	3,686	579	2,062	1,401	510	8,218	2,278
1997 Average	1,277	3,664	1,187	2,083	1,446	649	8,562	2,316
1998								
January	1,290	3,635	1,261	2,215	1,450	715	8,765	2,435
February	1,290	3,635	1,703	2,210	1,450	735	8,760	2,435
March	1,290	3,635	1,825	2,210	1,450	735	8,460	2,480
April.	1,270	3,835	1,985	2,115	1,400	705	8,585	2,420
May	1,250	3,635	2,245	2,105	1,360	705	8,625	2,330
June	1,240	3,835	1,920	2,105	1,360	705	8,325	2,300
July	1,230	3,585	2,355	2,075	1,360	685	8,275	2,280
August	1,220	3,435	2,555	2,025	1,340	675	8,225	2,300
September	1,220	3,685	2,555	1,972	1,335	665	8,173	2,300
October	1,220	3,485	2,555	1,970	1,335	670	8,220	2,290
November	1,220	3,635	2,505	2,020	1,350	675	8,170	2,290
December	1,220	3,585	2,305	2,010	1,350	680	8,110	2,290
1998 Average	1,246	3,634	2,150	2,085	1,378	696	8,389	2,345
1999								
January	1,230	3,665	2,515	1,995	1,360	695	8,065	2,240
February	1,240	3,925	2,655	2,005	1,360	695	8,165	2,330
March	1,250	3,795	2,430	2,020	1,360	775	8,220	2,235
April	1,210	3,485	2,655	1,785	1,320	705	7,665	2,180
May	1,190	3,435	2,705	1,815	1,300	685	7,665	2,130
June	1,180	3,415	2,355	1,830	1,290	655	7,610	2,110
July	1,180	3,515	2,805	1,830	1,290	685	7,610	2,130
August	1,190	3,535	2,855	1,860	1,290	685	7,710	2,140
September	1,190	3,485	2,855	1,885	1,300	685	7,735	2,145
October	1,190	3,535	2,670	1,925	1,310	685	7,845	2,145
November	1,190	3,485	2,205	1,905	1,320	685	7,865	2,105
December	1,190	3,435	1,405	1,922	1,330	695	7,863	2,155
1999 Average	1,203	3,559	2,509	1,898	1,319	694	7,835	2,170
2000								
January	1,190	3,465	2,215	1,962	1,330	695	7,863	2,245
February	1,190	3,525	2,595	2,015	1,380	705	7,865	2,250
March	1,190	3,735	2,215	2,040	1,390	705	7,865	2,300

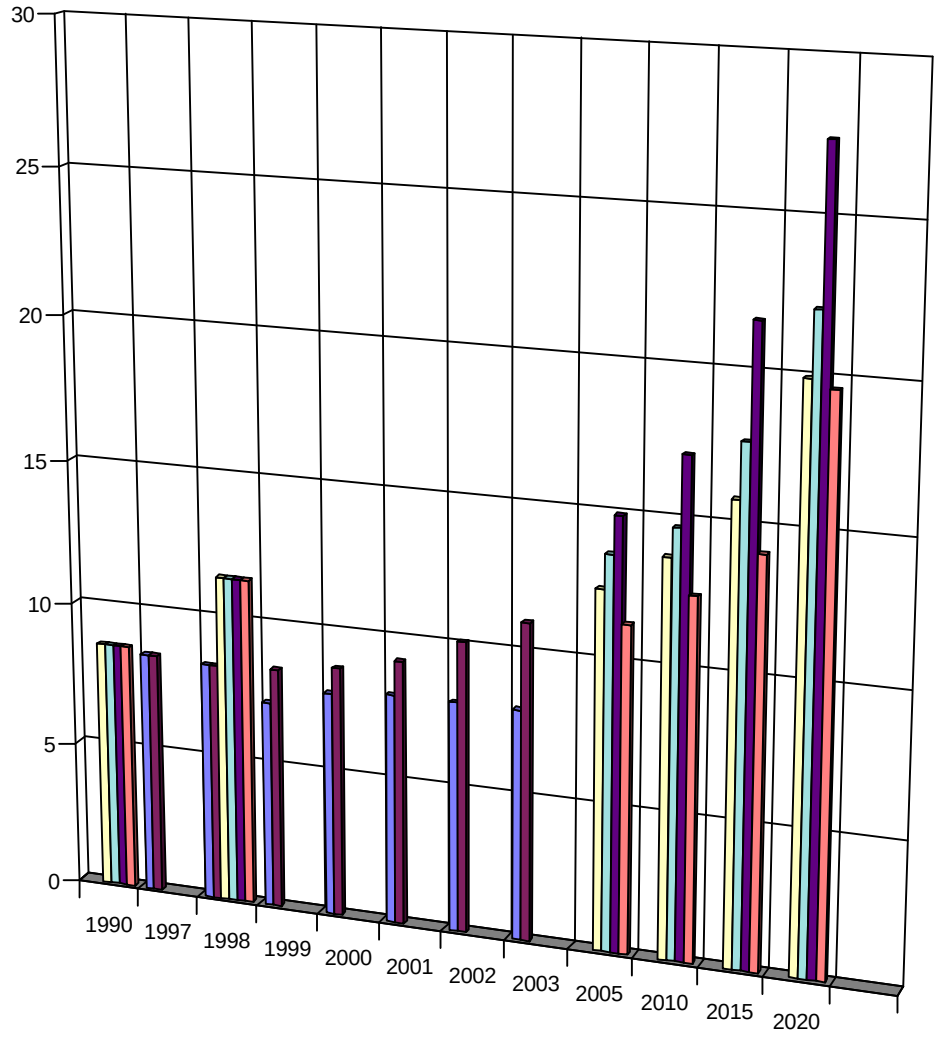
1/ Includes about one-half of the production in the Kuwait-Saudi Arabia Neutral Zone from 1980 through July 1990 and beginning in June 1991. Kuwaiti Neutral Zone output was discontinued following Iraq's invasion of Kuwait on August 2, 1990, but was resumed in June 1991. From August 1990 through May 1991, all production in the Neutral Zone was included in the data for Saudi Arabia. In October 1998, Neutral Zone production by both Kuwait and Saudi Arabia totaled about 540 thousand barrels per day. Notes: OPEC = Organization of Petroleum Exporting Countries. Monthly data are often preliminary and also may not average to the annual totals due to rounding.

Source: EIA On-Line data base. ***Accessed July 5, 2000***.

Figure VI.1

Saudi Oil Production and Production Capacity Under the Current Saudi, High-Price-Low Production, and Market Share Strategies

(In MMBD)

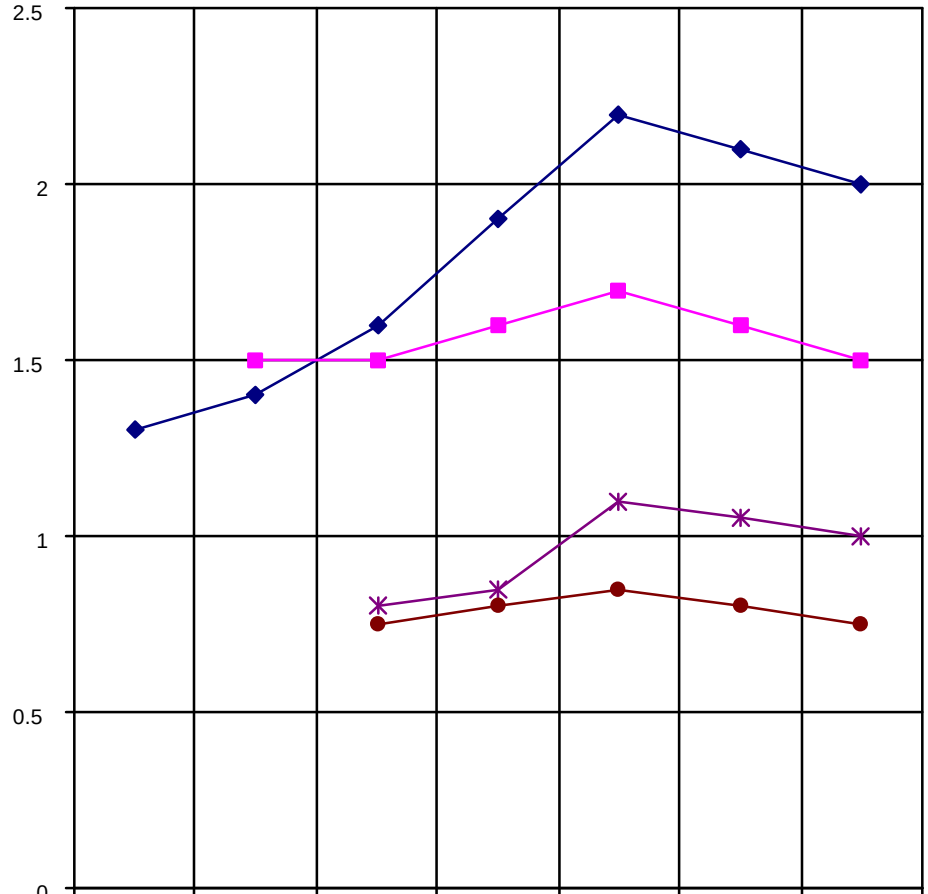


	1990	1997	1998	1999	2000	2001	2002	2003	2005	2010	2015	2020	
High Price-Low Production	-	8.4	8.3	7.2	7.8	8	8	8	-	-	-	-	
Market Share	-	8.4	8.3	8.4	8.7	9.2	10.1	11	-	-	-	-	
EIA High Price Capacity	8.6	-	11.4	-	-	-	-	-	12.4	13.7	15.8	19.9	
EIA Reference Capacity	8.6	-	11.4	-	-	-	-	-	13.6	14.7	17.7	22.1	
EIA Low Price Capacity	8.6	-	11.4	-	-	-	-	-	14.9	17.1	21.6	27.4	
EIA High Non-OPEC Capacity	8.6	-	11.4	-	-	-	-	-	11.3	12.5	14.1	19.6	

Adapted by Anthony H. Cordesman from Petroleum Finance Corporation, "Saudi Oil Policy Options – Time to Choose: Market Share -or Price Defense?," Washington, December, 1998, and DOE/EIA, International Energy Outlook, 2000, April, 2000, DOE/EIA-484(00), Reference, High-Price, Low-Price, High Non-OPEC Supply Cases, pp. 229-232.

Figure VI.2

Estimated North African Oil Production Capacity in a Period of Political Turmoil and Underinvestment (Note: Excludes Matching Gas Case)
(EIA Cases versus Turmoil Case In MMBD)



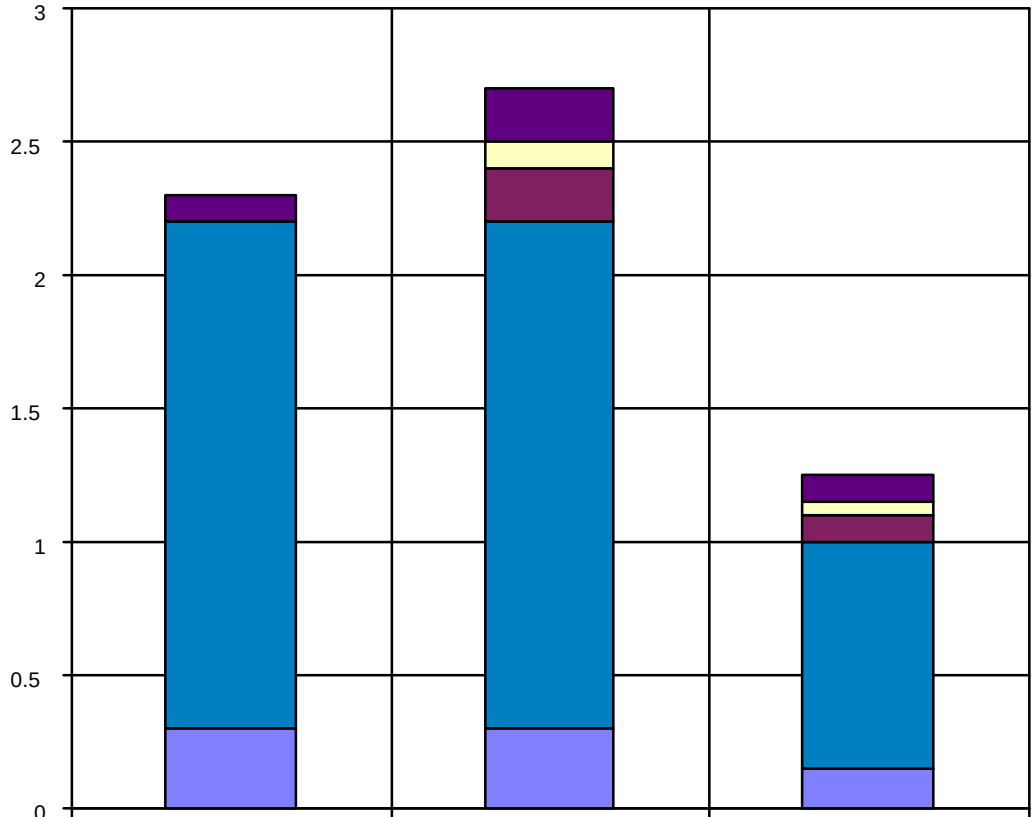
	1990	1996	2000	2005	2010	2015	2020
Algerian - Reference	1.3	1.4	1.6	1.9	2.2	2.1	2
Libyan - Reference		1.5	1.5	1.6	1.7	1.6	1.5
Algerian - Turmoil			0.8	0.85	1.1	1.05	1
Libya -Turmoil			0.75	0.8	0.85	0.8	0.75

Source: Adapted by Anthony H. Cordesman from EIA, International Energy Outlook, 1998, DOE/EIA-0484 (97), April 1998, pp. 175-177, and EIA, Monthly Energy Review, April, 1997, pp. 130-131.

Figure VI.3

Estimated North African Oil Exports in a Period of Prolonged Political Turmoil and Underinvestment (Note: Excludes Matching Gas Case)

(EIA Cases versus Turmoil Case In MMBD)



	1995	2020 Reference	2020 Turmoil
Rest of World	0.1	0.2	0.1
China	0	0	0
Pacific Rim	0	0.1	0.05
Industrial Asia	0	0.2	0.1
Western Europe	1.9	1.9	0.85
North America	0.3	0.3	0.15

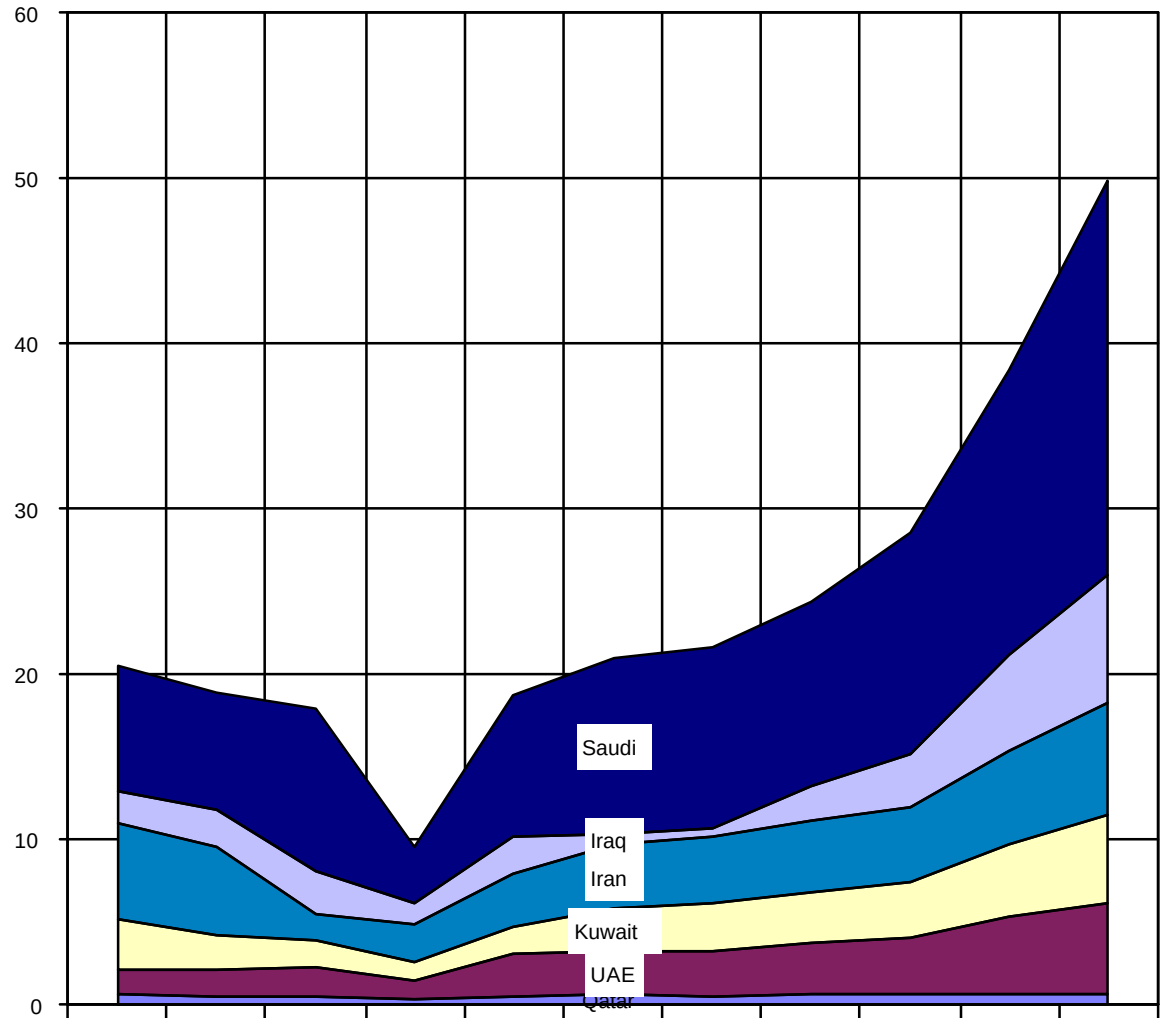
Source: Adapted by Anthony H. Cordesman from EIA, International Energy Outlook, 1998, DOE/EIA-0484 (97), April 1998, pp. 175-177, and EIA, Monthly Energy Review, April, 1997, pp. 130-131.

VII. The Future of Energy in the Middle East

Figure VII.1

The EIA Reference Case Estimate of Gulf Production

(EIA Reference Case in MMBD)



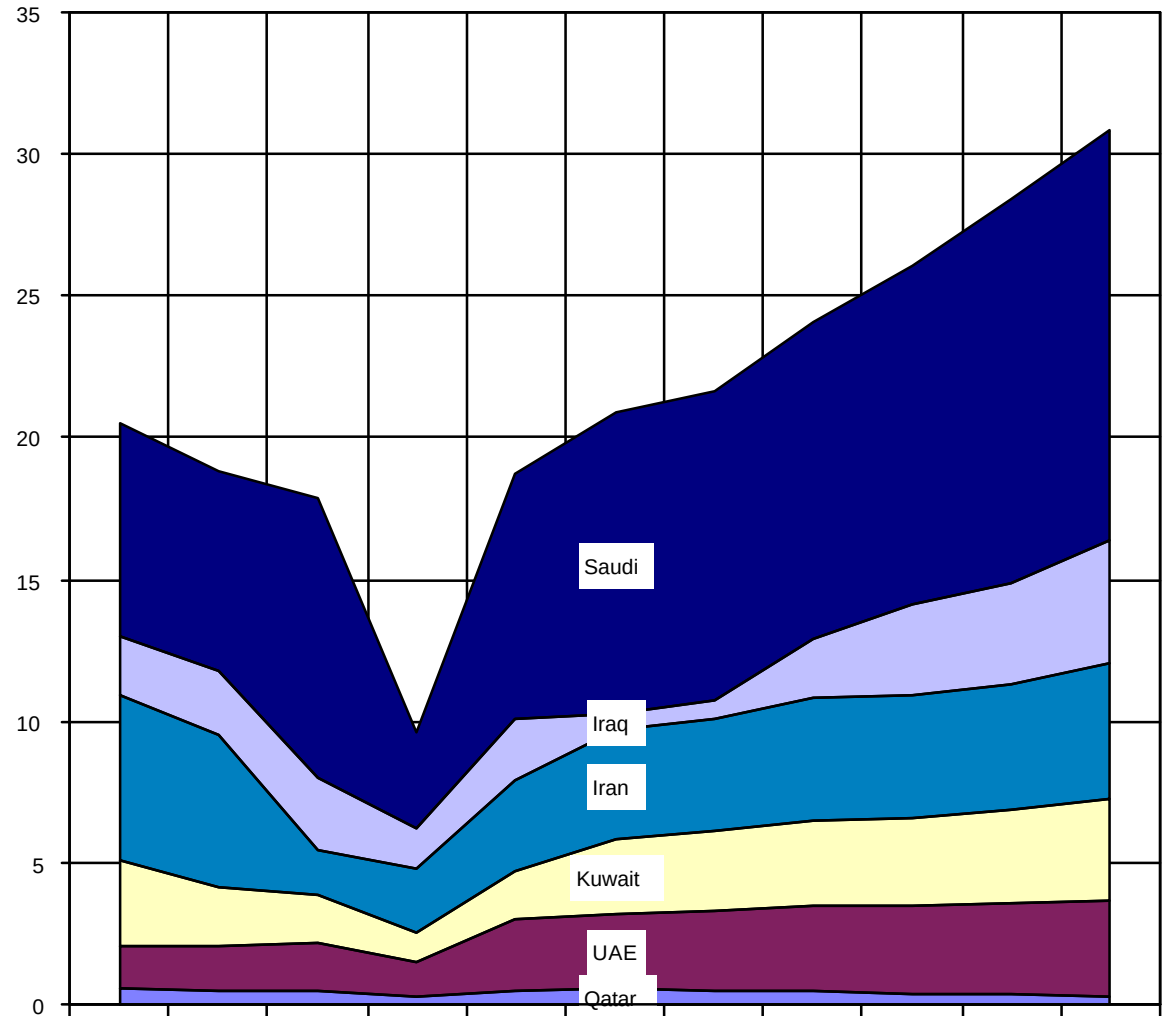
	1973	1975	1980	1985	1990	1996	2000	2005	2010	2015	2020
Saudi	7.596	7.075	9.9	3.388	8.6	10.6	10.9	11.2	13.5	17.2	23.8
Iraq	2.018	2.262	2.514	1.433	2.2	0.6	0.6	2.1	3.2	5.9	7.8
Iran	5.8	5.35	1.662	2.25	3.2	3.9	4	4.3	4.5	5.7	6.8
Kuwait	3.02	2.084	1.656	1.023	1.7	2.6	2.8	3.1	3.3	4.3	5.2
UAE	1.533	1.644	1.709	1.193	2.5	2.6	2.8	3.1	3.5	4.7	5.5
Qatar	0.57	0.438	0.472	0.301	0.5	0.6	0.5	0.6	0.6	0.6	0.7

Source: Adapted by Anthony H. Cordesman from EIA, International Energy Outlook, 1998, DOE/EIA-0484 (97), April 1998, pp. 175, and EIA, Monthly Energy Review, April, 1997, pp. 130-131.

Figure VII.2

Low Estimate of Gulf Production

(EIA Reference Case in MMBD)



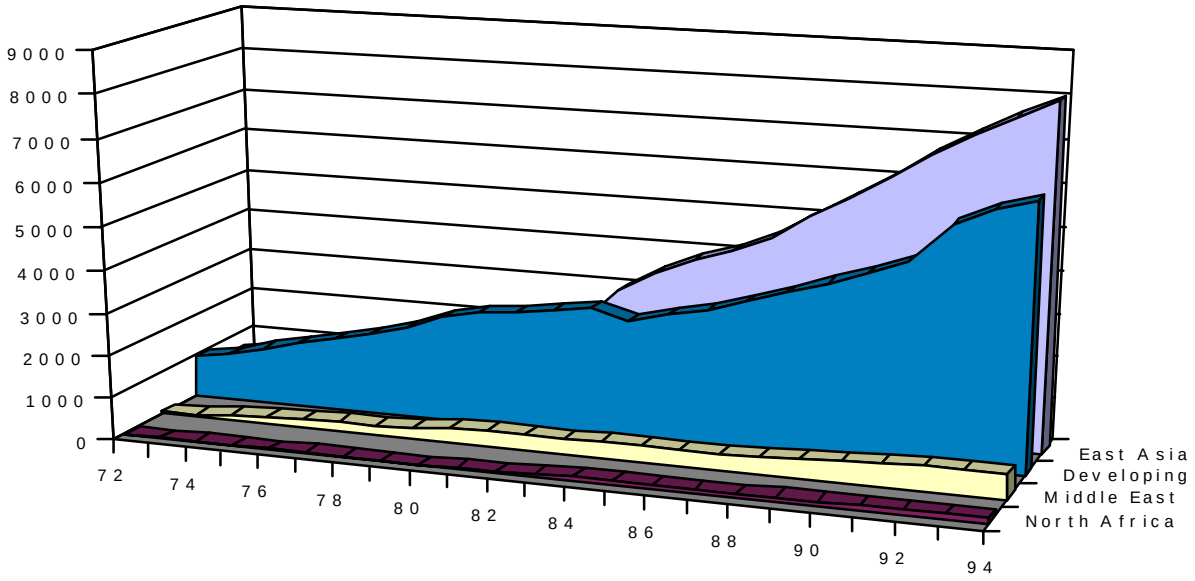
	1973	1975	1980	1985	1990	1996	2000	2005	2010	2015	2020
Saudi	7.596	7.075	9.9	3.388	8.6	10.6	10.9	11.2	12	13.5	14.5
Iraq	2.018	2.262	2.514	1.433	2.2	0.6	0.6	2.1	3.2	3.6	4.4
Iran	5.8	5.35	1.662	2.25	3.2	3.9	4	4.3	4.3	4.4	4.8
Kuwait	3.02	2.084	1.656	1.023	1.7	2.6	2.8	3	3.1	3.3	3.5
UAE	1.533	1.644	1.709	1.193	2.5	2.6	2.8	3	3.1	3.2	3.4
Qatar	0.57	0.438	0.472	0.301	0.5	0.6	0.5	0.5	0.4	0.4	0.3

Source: Adapted by Anthony H. Cordesman from EIA, International Energy Outlook, 1998, DOE/EIA-0484 (97), April 1998, pp. 175, and EIA, Monthly Energy Review, April, 1997, pp. 130-131.

Figure VII.3

The GNP Growth of the Middle East and North Africa Lagged Badly Relative to Other Developing Regions: 1972-1994

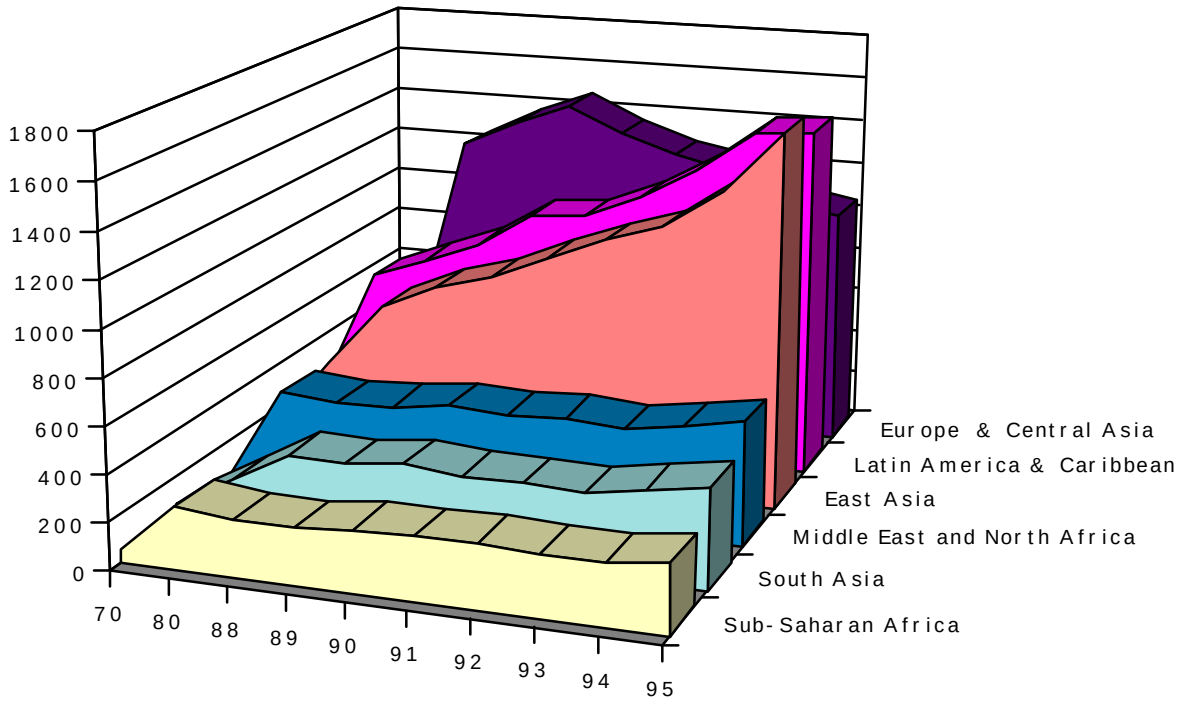
(GNP in $Current Billions)



Adapted by Anthony H. Cordesman from ACDA, World Military Expenditures and Arms Transfers, various editions. Middle East does not include North African states other than Egypt.

Figure VII.4

The Middle Eastern Oil Boom After 1973 Did Not Cause the GDP Growth of MENA Region to Outpace Other Developing Areas Even During the 1970s and 1980s
(GDP in $Current Billions)

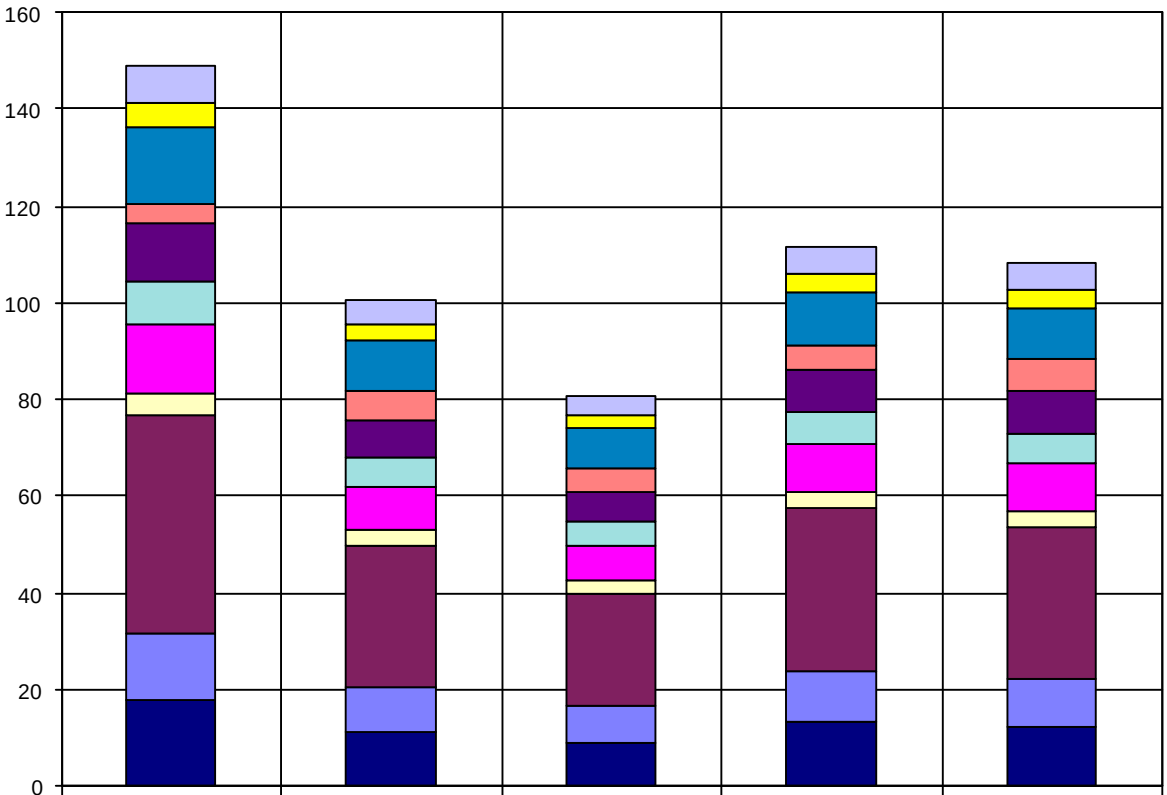


Adapted by Anthony H. Cordesman from World Bank, World Debt Tables, 1995.

Figure VII.5

EIA Estimate of OPEC Earnings in 1998 by Major Country Under Different Price Assumptions in "Oil Crash" Did Not Occur

(in $US 1990 Constant Billions)

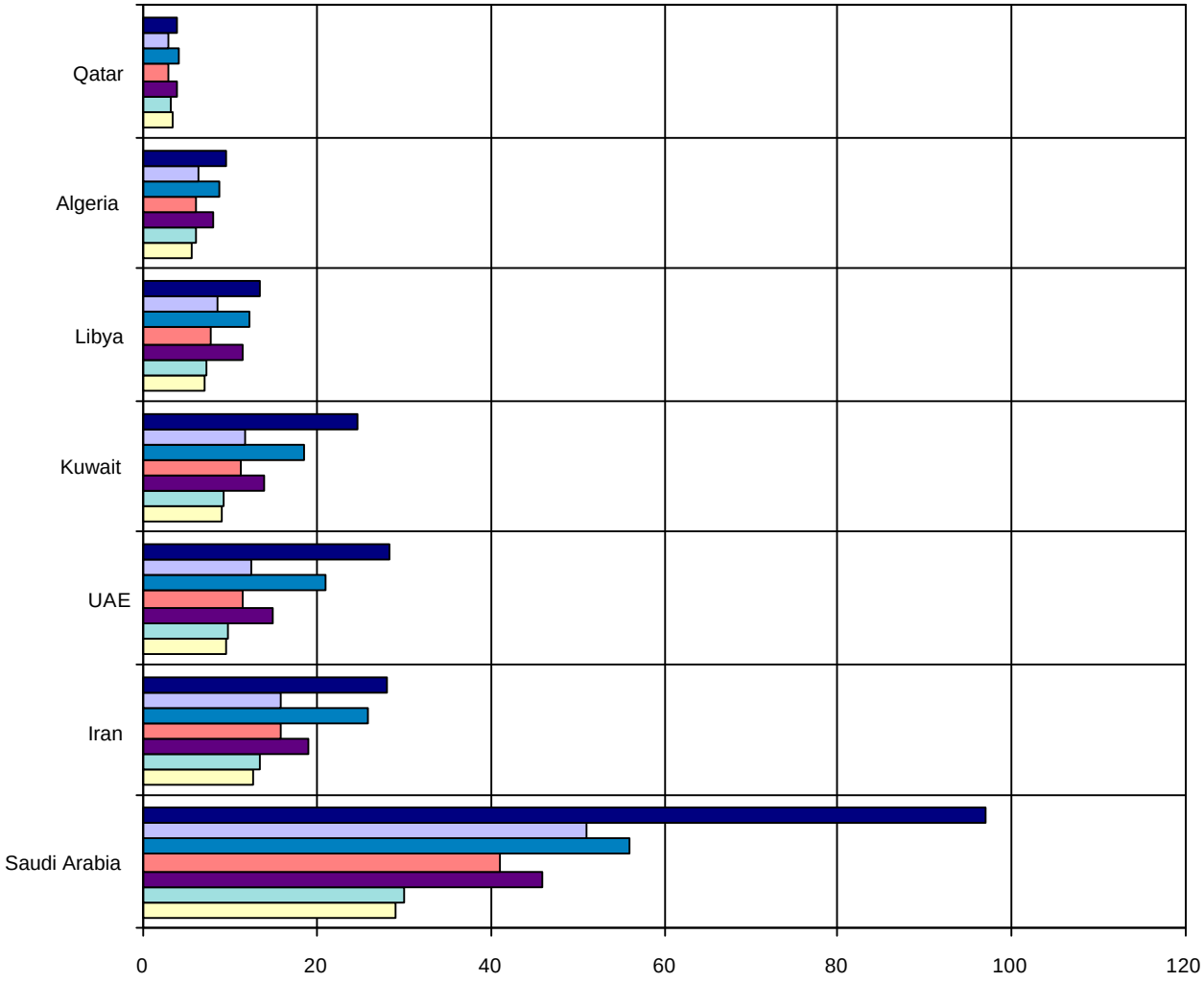


	1997 Current	1998 Current	1998 Constant	1998 Constant if No Price Drop in 1997 & Production Constant	1998 Constant if No Price Drop in 1997 but Production Varies
Algeria	7.5	4.9	3.9	5.5	5.3
Indonesia	5.1	3.5	2.8	3.8	3.7
Iran	15.7	10.2	8.1	11.1	10.9
Iraq	4.2	6.1	4.9	4.6	6.7
Kuwait	11.8	7.9	6.4	9	8.5
Libya	9	5.8	4.6	6.5	6.2
Nigeria	14.5	9.2	7.4	10.2	9.9
Qatar	4	3	2.4	3.3	3.2
Saudi Arabia	45.5	29.4	23.6	33.6	31.6
UAE	13.7	9.3	7.5	10.4	10
Venuzuela	17.7	11.1	8.9	13.2	12
Total	148.7	100.6	80.5	111.1	108.1

Source: Adapted by Anthony H. Cordesman from data provided by the EIA as of September 4, 1998.

Figure VII.6

Petroleum Finance Institute Estimate of Middle Eastern and North African Oil Revenues by Country: The Range of Future Oil Revenues in 1998-2020
(in US $Constant Billions)



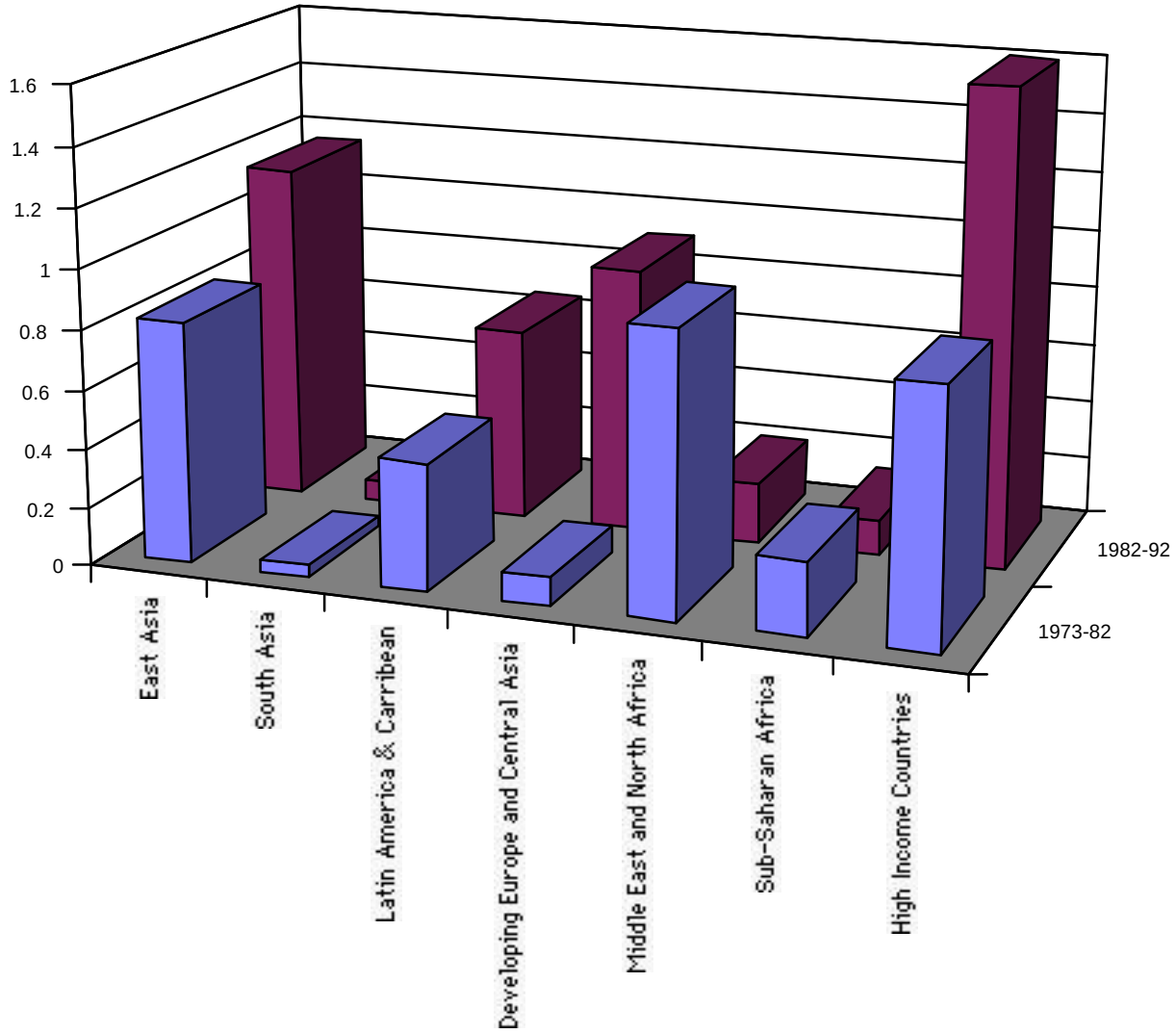
	Saudi Arabia	Iran	UAE	Kuwait	Libya	Algeria	Qatar
2020 High	97	28	28.4	24.8	13.5	9.5	3.8
2020 Low	51	16	12.4	11.8	8.5	6.3	2.9
2010 High	56	26	21	18.5	12.2	8.7	4.2
2010 Low	41	15.8	11.4	11.2	7.7	6.1	3
2000 High	46	19	15	14	11.5	8	4
2000 Low	30	13.4	9.8	9.3	7.3	6	3.1
1998	29.2	12.8	9.5	9.1	7.1	5.7	3.4

Total oil exports = 2,734 thousand barrels per day.
Source: Adapted by Anthony H. Cordesman from projections by the Petroleum Finance Corporation.

Figure VII.7

The Positive Trend in Foreign Direct Investment in the Middle East Reversed After the Oil Boom Years

(Foreign Direct Investment Flows as a Percent of GDP)

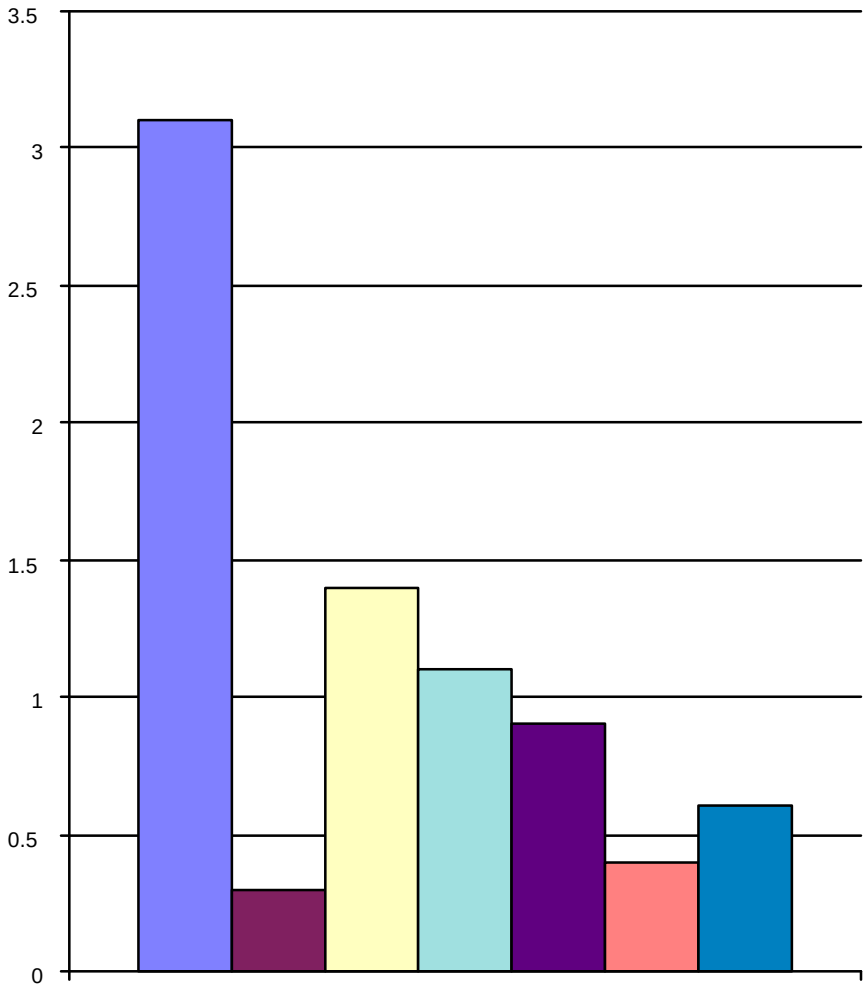


	East Asia	South Asia	Latin America & Carribean	Developing Europe and Central Asia	Middle East and North Africa	Sub-Saharan Africa	High Income Countries
1973-82	0.82	0.04	0.43	0.1	0.95	0.25	0.85
1982-92	1.15	0.07	0.65	0.9	0.2	0.125	1.6

Source: Adapted by Anthony H. Cordesman from World Bank, Global Economic Prospects and the Developing Countries, 1996, p. 22

Figure VII.8

Weak Foreign Investment Flows Continued During the 1990s:
Foreign Direct Investment Inflows as a Share of GDP: 1993-1995
(Change in Average Percent of Growth or Decline)



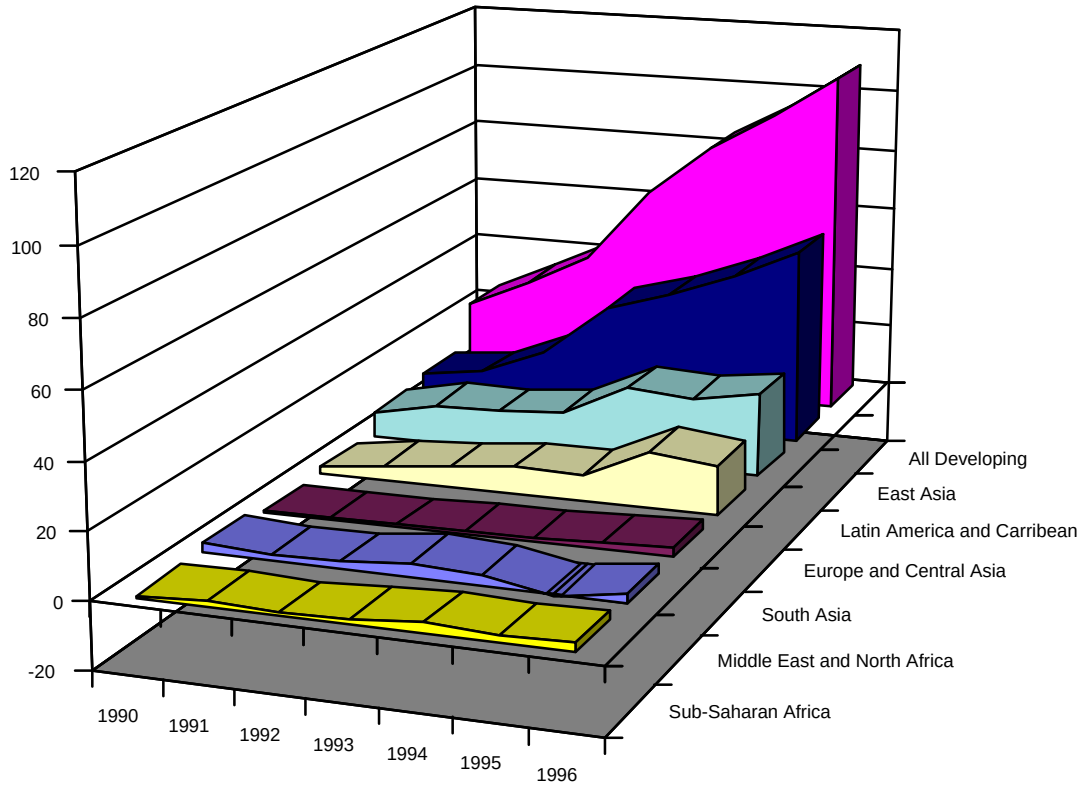
East Asia	3.1
South Asia	0.3
Europe and Central Asia	1.4
Latin America and Carribean	1.1
Sub-Saharan Africa	0.9
Middle East and North Africa	0.4
High Income Countries	0.6

Source: Adapted by Anthony H. Cordesman from World Bank, Global Economic Prospects and the Developing Countries, 1996, p. 3

Figure VII.9

The Trend in Total Foreign Direct Investment in the MENA "Flat Lined" During 1990-1996

($US billions)



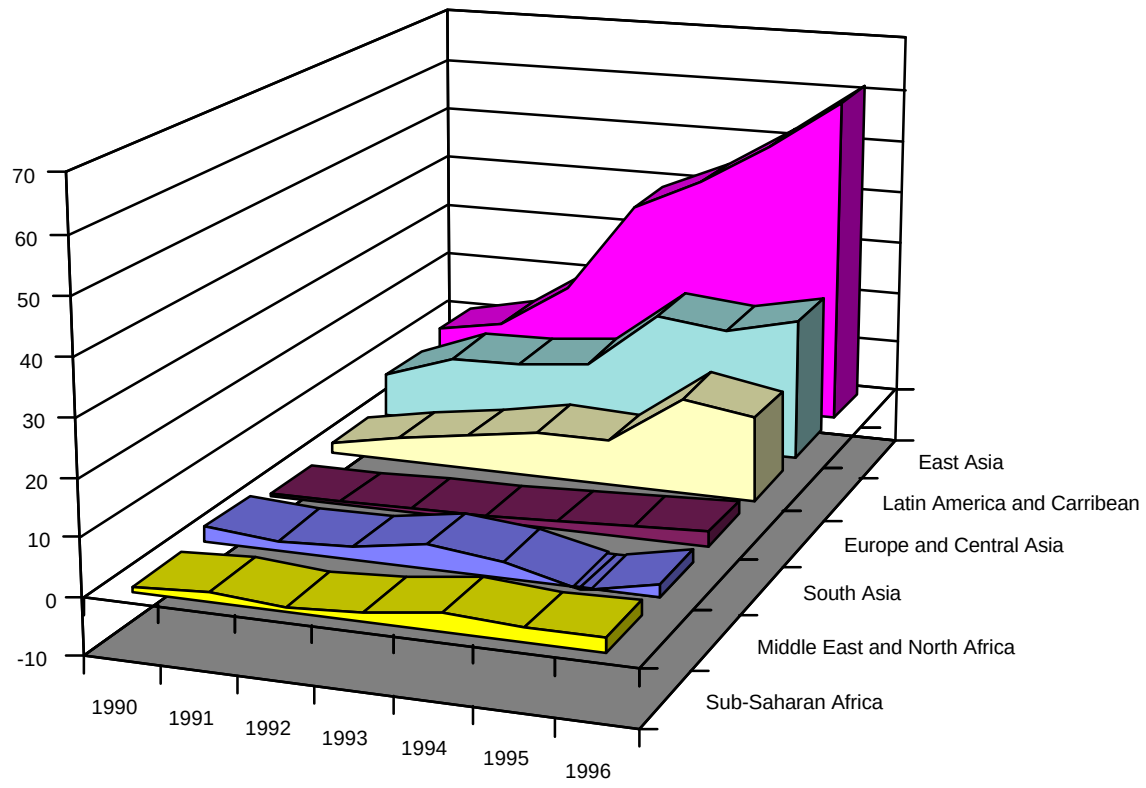
	1990	1991	1992	1993	1994	1995	1996
Sub-Saharan Africa	0.9	1.6	0.8	1.6	3.1	2.2	2.6
Middle East and North Africa	2.8	1.8	2.2	4.2	3	-0.3	2.2
South Asia	0.5	0.5	0.6	0.8	1.2	1.8	2.6
Europe and Central Asia	2.1	4.4	6.3	8.4	8.1	17.2	15
Latin America and Carribean	8.1	12.5	12.7	14.1	24.2	22.9	25.9
East Asia	10.2	12.7	20.9	38.1	44.1	51.8	61.1
All Developing	24.5	33.5	43.6	67.2	83.7	95.5	109.5

Source: Adapted by Anthony H. Cordesman from World Bank, World Debt Tables, 1996, p. 17, and Global Development Performance, 1997, p. 29.

Figure VII.10

MENA Foreign Direct Investment Remained Very Low as Share of Total Developing World: 1990-1996

($US billions)



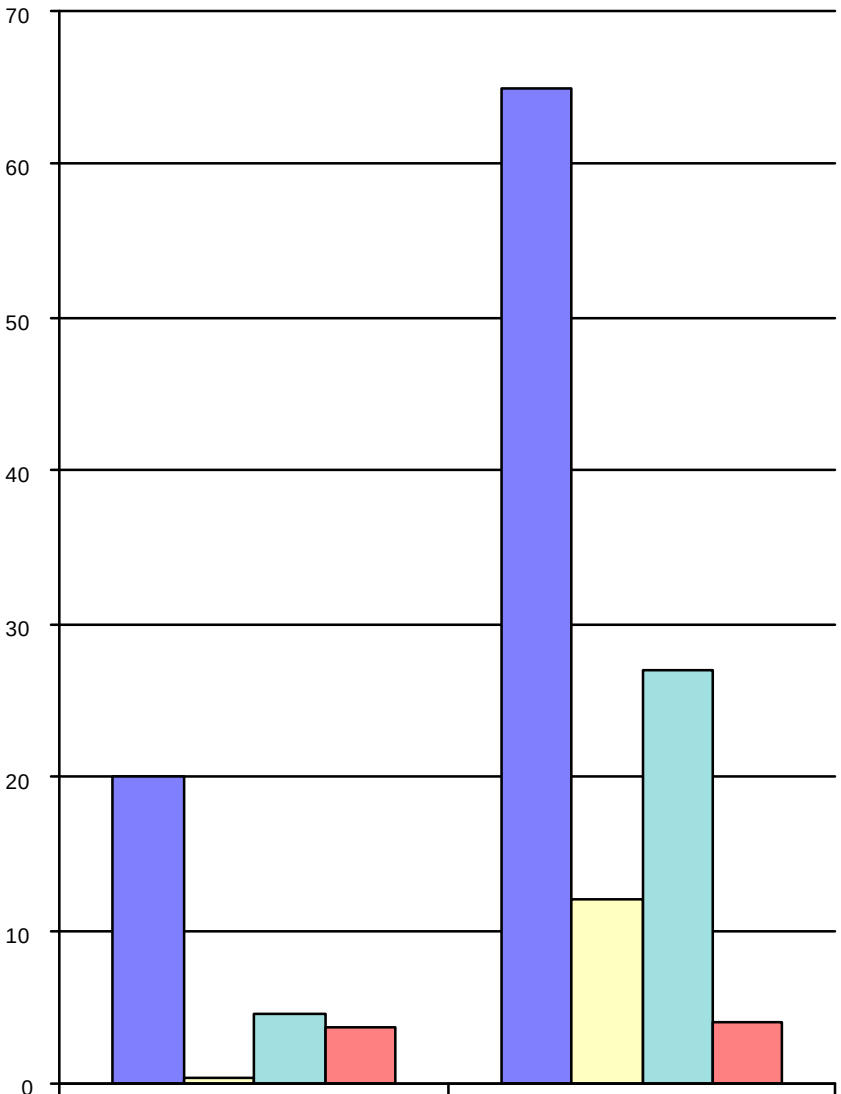
	1990	1991	1992	1993	1994	1995	1996
Sub-Saharan Africa	0.9	1.6	0.8	1.6	3.1	2.2	2.6
Middle East and North Africa	2.8	1.8	2.2	4.2	3	-0.3	2.2
South Asia	0.5	0.5	0.6	0.8	1.2	1.8	2.6
Europe and Central Asia	2.1	4.4	6.3	8.4	8.1	17.2	15
Latin America and Carribean	8.1	12.5	12.7	14.1	24.2	22.9	25.9
East Asia	10.2	12.7	20.9	38.1	44.1	51.8	61.1

Source: Adapted by Anthony H. Cordesman from World Bank, World Debt Tables, 1996, p. 17, and Global Development Performance, 1997, p. 29.

Figure VII.11

Comparative Total Foreign Investment: 1990 versus 1995

(Percent of Growth or Decline)



	1990	1995
Southeast and South Asia	20	65
Europe and Central Asia	0.4	12
Latin America and Carribean	4.6	27
Middle East and North Africa	3.6	4

Source: Adapted by Anthony H. Cordesman from World Bank.

Army and Revolutionary Guards

- Russian, and Polish T-72 Exports. Reports indicate Iran has procured about 120 T-72Ss from Russia, and 100 T-72M1s from Poland since 1990. Inventory of about 220 T-72s of various types in mid-1996.
- Claims to be producing the Iranian-made Zolfaqar MBT, an M-48/M-60-like tank.
- Manufacturing Iranian Haseb rockets (variants of Chinese 107 mm rocket)
- Manufacturing Iranian Shahin 1 and 2, Oghab, Nazeat 5 and 10 (may be additional versions), and Fajr battlefield rockets

Air/Air Defense

- Keeping up to 115 combat aircraft that Iraq sent to Iran during Gulf War. Seem to include 24 Su-4s and four MiG-29s.
- Has 30 MiG-29s with refueling in inventory, may be receiving 15-20 more from Russia
- Has 30 Su-24s in inventory (probably Su-24D version), may be receiving 6 to 9 more from Russia
- May be negotiating purchase of AS-10, AS-11, AS-12, AS-14/16s from Russia
- Has Su-25s (formerly Iraqi), although has not deployed.
- May be trying to purchase more Su-25s, as well as MiG-31s, Su-27s and Tu-22Ms
- Iran claims to have fitted F-14s with I-Hawk missiles adapted to the air-to-air role
- Claims to produce advanced electronic warfare systems.

Land-based Air Defense

- May be negotiating purchase of S-300 SAM/ATMs s from Russia
- Reports has acquired four HQ-23/2B (CSA-1) launchers and 45-48 missiles, plus 25 SA-6, and 10-15 SA-5 launchers.
- Has acquired Chinese FM-80 launchers and a few RBS-70s
- More SA-7s and HN-5s man-portable missiles; may have acquired 100-200 Strelas.
- Reports is seeking to modernize Rapier and 10-15 Tigercat fire units
- May be modifying and/or producing ZSU-23-4 radar-guided anti-aircraft guns.
- Claims to produce advanced electronic warfare systems.

Naval

- Naval Guards force is now roughly 20,000 men.
- Major land-based anti-ship missile sites on both sides of Strait of Hormuz.
- Guards bases on Abu Musa, Tubs, and other major islands near Strait, possible sites for anti-ship missiles.
- Claims will soon start producing 6 multi-purpose destroyers.
- Has taken delivery on three Russian Type 877EKM Kilo-class submarines, possibly with 1,000 modern magnetic, acoustic, and pressure sensitive mines.
- Reports has North Korean midget submarines have never been confirmed
- Has obtained 10 Hudong-class Chinese missile patrol boats.
- U.S. Mark 65 and Russian AND 500, AMAG-1, KRAB anti-ship mines
- Reports that Iran is negotiating to buy Chinese EM-52 rocket-propelled mine

- Iran claims to be developing non-magnetic, acoustic, free-floating and remote controlled mines. It may have also acquired non-magnetic mines, influence mines and mines with sophisticated timing devices.
- Wake-homing and wire-guided Russian torpedoes
- Seersucker (HY-2) sites with 50-60 missiles - Iran working to extend range to 400 km.
- Has 60-100 Chinese CS-801(Ying Jai-1 SY-2) and CS-802 (YF-6) SSMs.
- Developing FL-10 anti-ship cruise missile that is copy of Chinese FL-2 or FL-7.
- Boghammer fast interceptor craft

Missiles

- Obtained up to 250-300 Scud Bs with 8-15 launchers
- Up to 150 Chinese CSS-8 surface-to-surface missiles with 25-30 launchers.
- Reports that China is giving Iran technology to produce long-range solid fuel missile
- Has bought North Korean Scud Cs with 5-14 launchers. South Korea reports Iran has bought total of 100 Scud Bs and 100 Scud Cs from North Korea.
- Developing the Shihab 3, 3B, and 4 long-range missiles, all of which could strike any Gulf target or target in Arabia with weapons of mass destruction.
- Claims will launch its first experimental satellite by 2000 with Russian aid.
- Reports of tunnels for hardened deployment of Scuds and SAMs.

CBW

- Chemical weapons (sulfur mustard gas, hydrogen cyanide, phosgene and/or chlorine; possibly Sarin and Tabun)
- Biological weapons (possibly Anthrax, hoof and mouth disease, and other biotoxins)
- Nuclear weapons development (Russian and Chinese reactors)

Table VII.1

The Size and Duration of Middle Eastern Oil Interruptions Since 1954

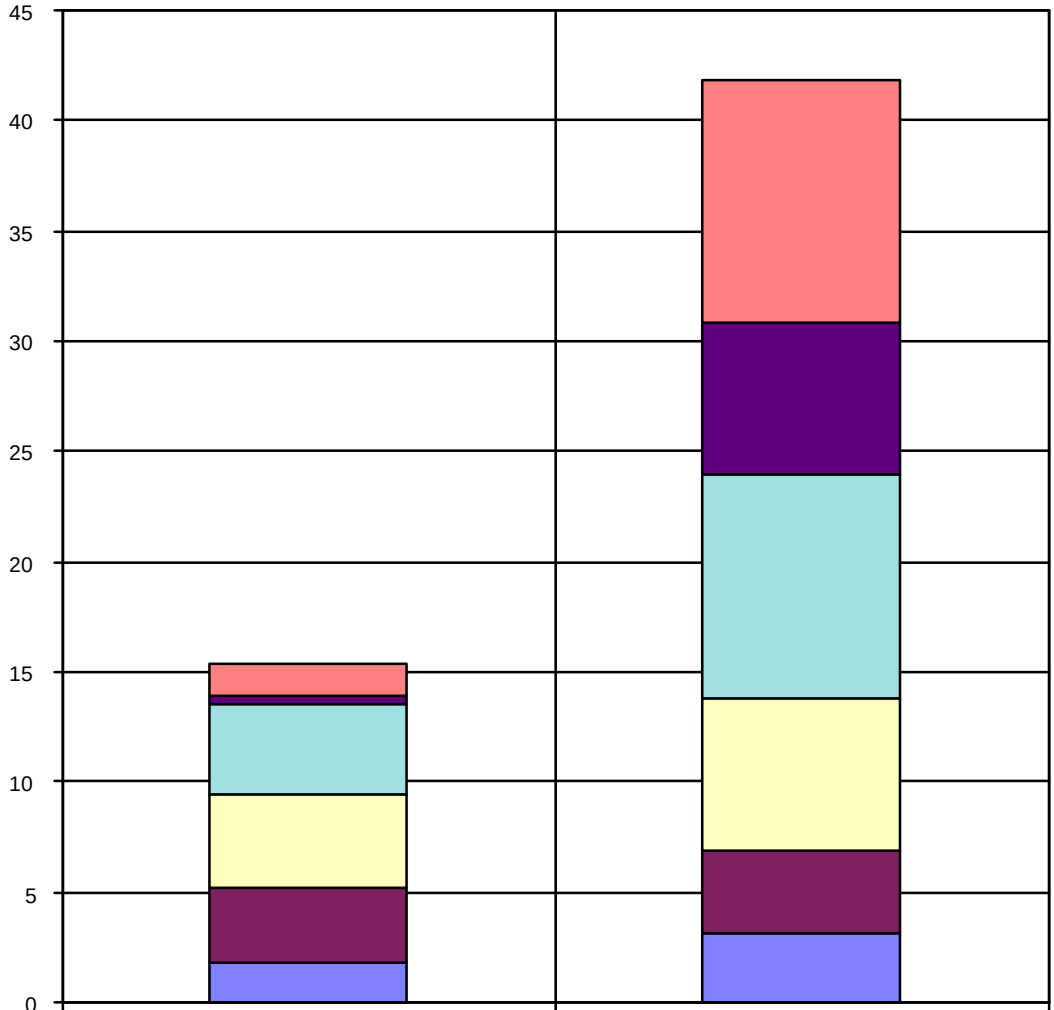
Nature of Disruption	Date of Actual Disruption Start	End	Duration in Months	Average Gross Shortfall in MMBD
Iranian oil fields nationalized	3/51	10/54	44	0.7
Suez War between France, England, Israel & Egypt	11/56	3/57	4	2.0
Syrian transit fee dispute	12/66	3/67	3	0.7
Six Day Arab-Israeli Conflict	6/67	8/67	2	2.0
Libyan price controversy, damage to Tapline	5/70	1/71	9	1.3
French-Algerian nationalization struggle	4/71	8/71	5	0.6
Unrest in Lebanon, damage to transit facilities	3/73	5/73	2	0.5
October War between Arabs and Israel, Arab Oil Embargo	10/73	3/74	6	2.6
Civil war in Lebanon, disruption of Iraqi exports	4/76	5/76	2	0.3
Damage to Saudi oilfield	5/77	5/77	1	0.7
Iranian Revolution	11/78	4/79	6	3.5
Outbreak of Iran-Iraq War	10/80	12/80	3	3.3
Iraqi Invasion of Kuwait/Desert Storm	8/90	10/90	3	4.6

Source: Adapted by Anthony H. Cordesman from data provided in the EIA Factsheets on Energy Interruptions

Figure VII.12

The Worst Case for an Energy Interruption? Gulf Export Flows: 1995-2020

(EIA Reference Case in MMBD)



	1995	2020
Rest of World	1.5	11
China	0.4	6.9
Pacific Rim	4.1	10.1
Industrial Asia	4.2	6.9
Western Europe	3.4	3.8
North America	1.8	3.1

Source: Adapted by Anthony H. Cordesman from EIA, International Energy Outlook, 1998, DOE/EIA-0484 (97), April 1998, pp. 175, and EIA, Monthly Energy Review, April, 1997, pp. 130-131.

Figure VII.13

Estimated North African Oil Production Capacity in a Period of Prolonged Political Turmoil and Underinvestment
(Note: Excludes Matching Gas Case)
(EIA Cases versus Turmoil Case In MMBD)

	1990	1996	2000	2005	2010	2015	2020
Algerian - Reference	1.3	1.4	1.6	1.9	2.2	2.1	2
Libyan - Reference		1.5	1.5	1.6	1.7	1.6	1.5
Algerian - Turmoil			0.8	0.85	1.1	1.05	1
Libya -Turmoil			0.75	0.8	0.85	0.8	0.75

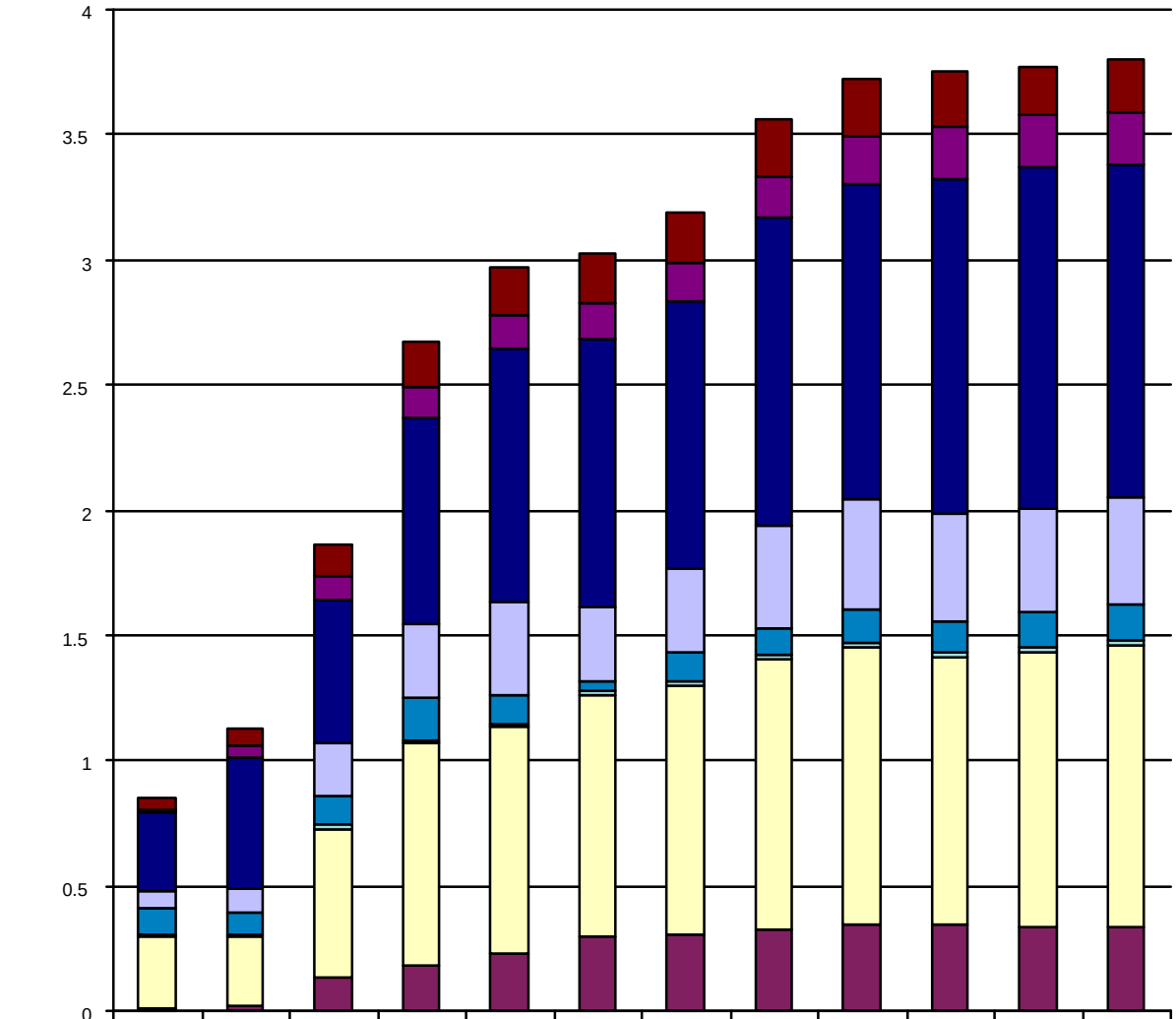
Source: Adapted by Anthony H. Cordesman from EIA, International Energy Outlook, 1998, DOE/EIA-0484 (97), April 1998, pp. 175-177, and EIA, Monthly Energy Review, April, 1997, pp. 130-131.

VIII. ENERGY TIME BOMBS

Figure VIII.1

EIA Estimate of Increasing Middle Eastern Domestic Consumption of Oil: 1970-1997

(Domestic Demand for Oil in Millions of Barrels Per Day)



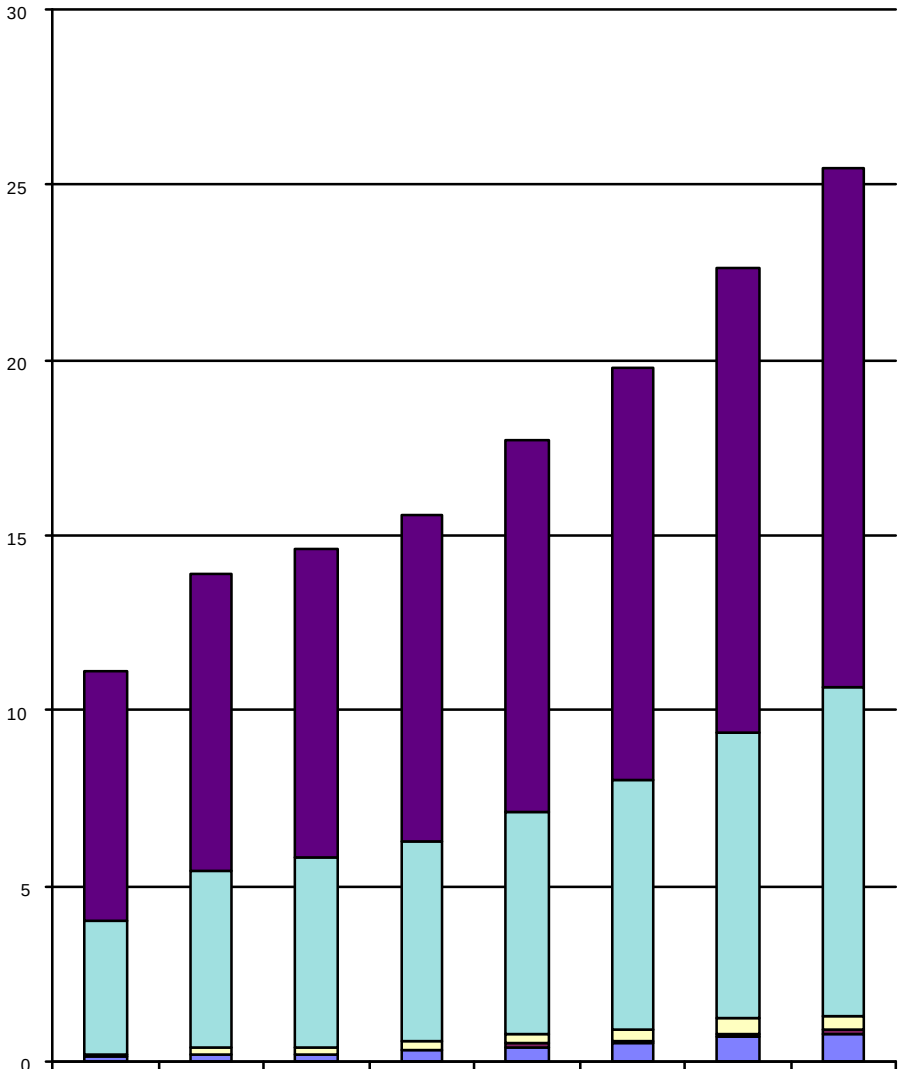
	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997
Algeria	0.05	0.07	0.12	0.18	0.19	0.2	0.2	0.23	0.23	0.22	0.19	0.21
Libya	0.01	0.05	0.1	0.12	0.14	0.15	0.15	0.16	0.19	0.21	0.21	0.21
Iran	0.31	0.52	0.57	0.82	1.01	1.07	1.07	1.23	1.26	1.33	1.37	1.33
Iraq	0.07	0.1	0.21	0.3	0.37	0.29	0.34	0.41	0.44	0.43	0.41	0.43
Kuwait	0.1	0.08	0.12	0.17	0.11	0.04	0.11	0.11	0.13	0.13	0.14	0.14
Qatar	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Saudi	0.29	0.28	0.6	0.89	0.91	0.96	0.99	1.08	1.11	1.07	1.1	1.13
UAE	0.01	0.02	0.13	0.18	0.23	0.3	0.31	0.32	0.34	0.34	0.33	0.33
Total ME OPEC	0.77	1.01	1.64	2.37	2.64	2.67	2.84	3.17	3.31	3.33	3.37	3.39

Adapted by Anthony H. Cordesman from Cambridge Energy Associates, World Oil Trends, 1998, Cambridge,, Mass., 1998, pp. 24-25.

Figure VIII.2

EIA Estimate of Domestic Demand for Oil and Gas and Other Energy Supplies in the Middle East: 1995-2020

(Quadrillions of BTUs)



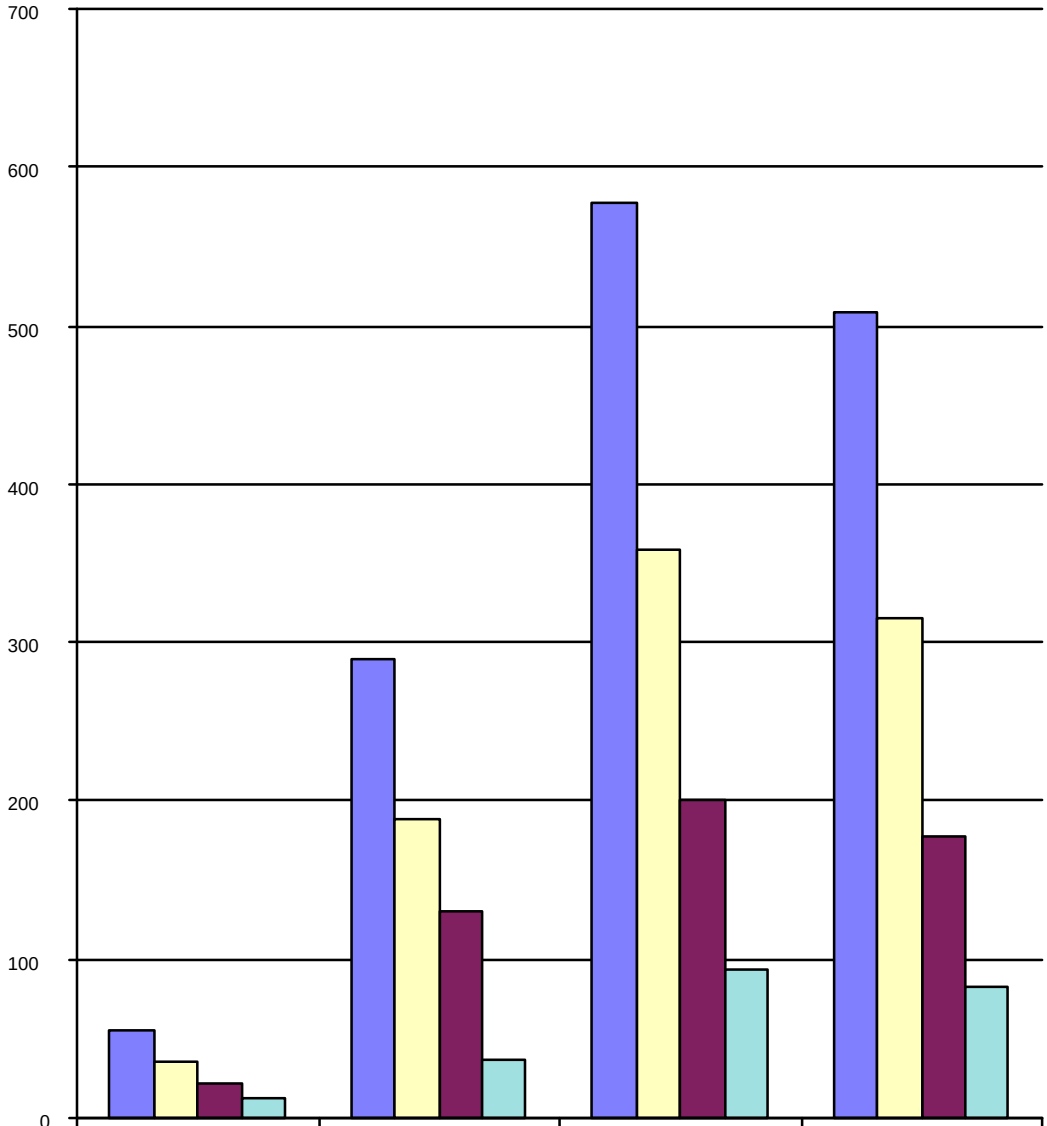
	1990	1995	1996	2000	2005	2010	2015	2020
Oil	7.1	8.5	8.8	9.3	10.6	11.8	13.2	14.8
Natural Gas	3.8	5	5.4	5.7	6.3	7.1	8.2	9.4
Coal	0.1	0.2	0.2	0.3	0.3	0.3	0.4	0.4
Nuclear	0	0	0	0	0.1	0.1	0.1	0.1
Hydroelectric and Renewables	0.1	0.2	0.2	0.3	0.4	0.5	0.7	0.8

Adapted by Anthony H. Cordesman from DOE/EIA, International Energy Outlook, 1998, DOE/EIA-0484(98), April 1998.

Figure VIII.3

IEA/OECD Estimate of Rise in Middle Eastern Domestic Energy Demand

(IEA Estimate in MTOE)



	1971	1993	2010 CC	2010 ES
Primary Energy	55	289	577	508
Final Consumption	35	189	358	316
Oil	21	130	200	178
Gas	12	37	93	83

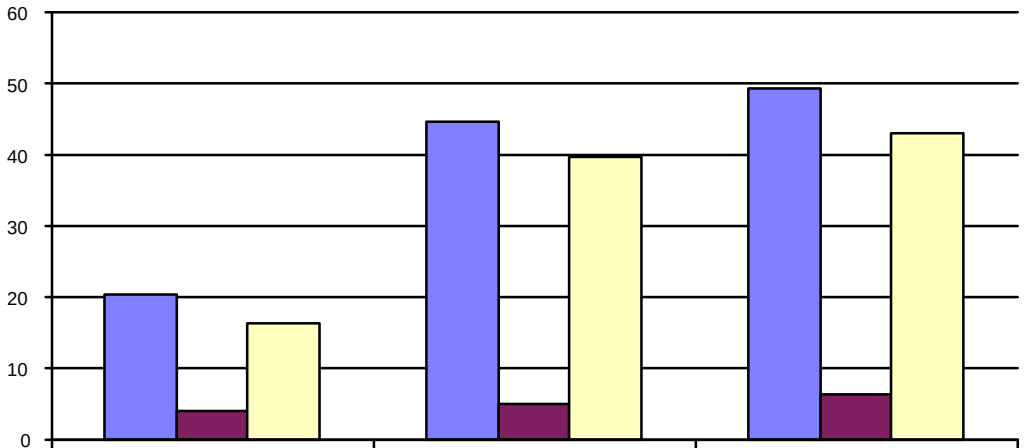
CC = Capacity Constrained or maximum production ES = Energy Savings, or reduced energy use.

Source: Adapted by Anthony H. Cordesman from IEA, World Energy Outlook, 1996, pp. 153-158.

Figure VIII.4

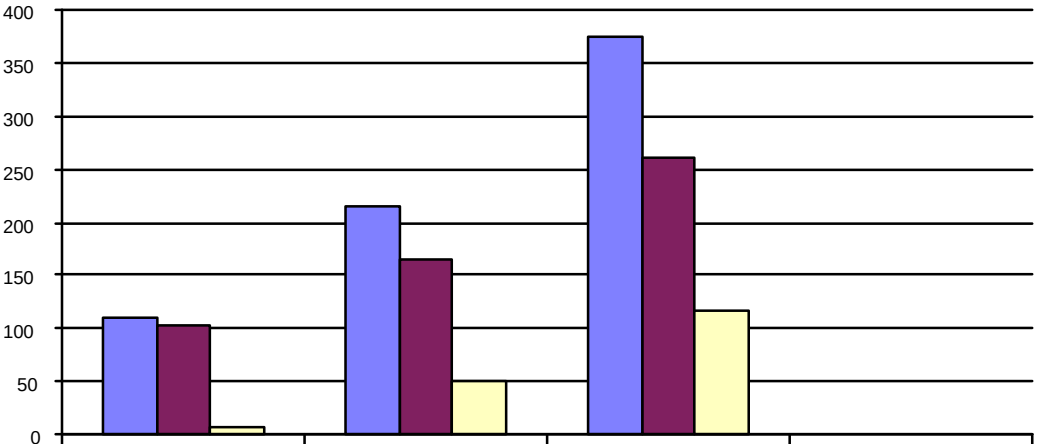
IEA Estimate of Net Middle Eastern Oil and Gas Domestic Consumption Versus Exports: 1995-2020

Middle Eastern Oil Balance in MMBD



	1995	2010	2020
Supply	20.4	44.7	49.2
Domestic Demand	4.1	4.9	6.3
Exports	16.3	39.7	42.9

Middle Eastern Gas Balance in Mtoe



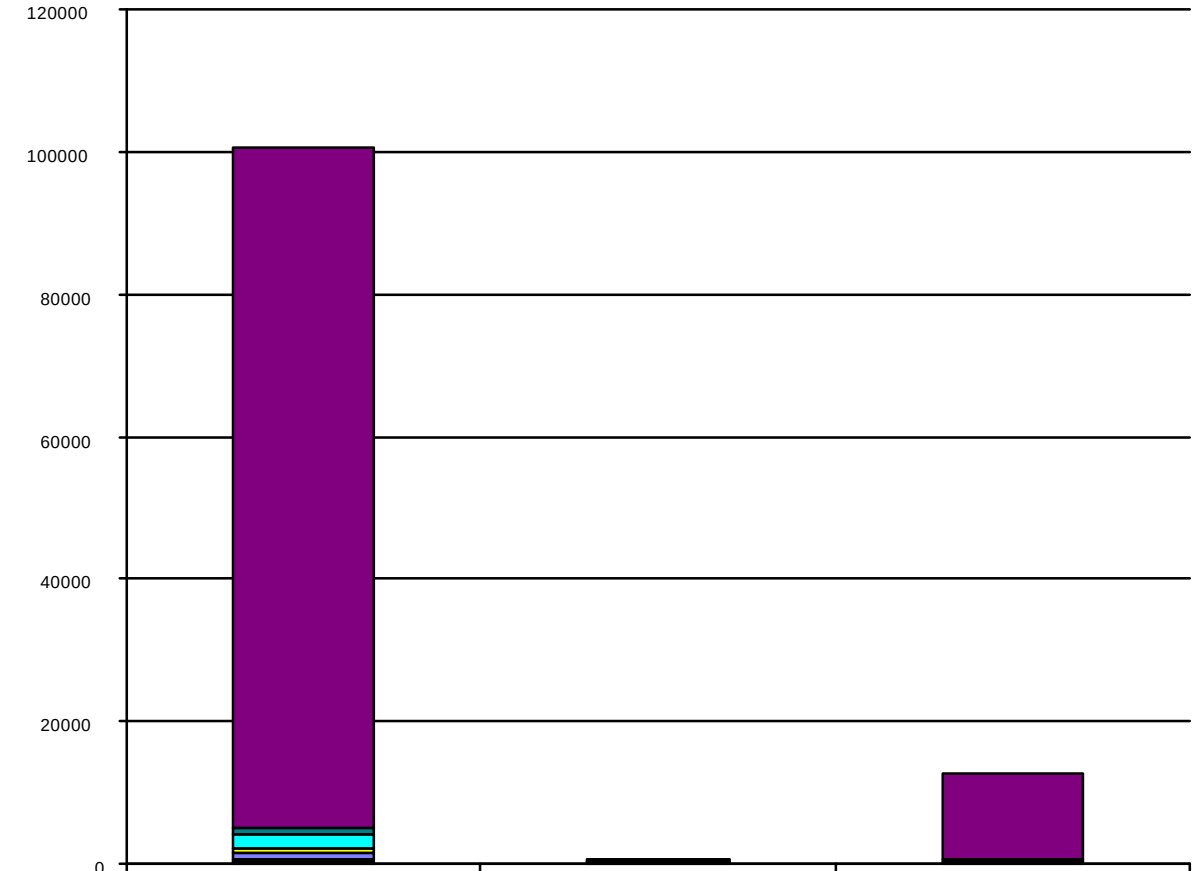
	1995	2010	2020	Annual Growth Rate
Supply	110	214	376	5.10%
Domestic Demand	104	164	261	3.70%
Exports	6	50	116	12.90%

Total ME OPEC	0.77	1.01	1.64	2.37	2.64	2.67	2.84	3.17	3.31	3.33	3.37	3.39

Adapted by Anthony H. Cordesman from IEA, World Energy Outlook, 1998, Paris, IEA/OECD, 1998, pp. 403-406.

Figure VIII.5

Alternatives to Domestic Demand for Oil and Gas: Uranium Phosphates in Middle Eastern Countries



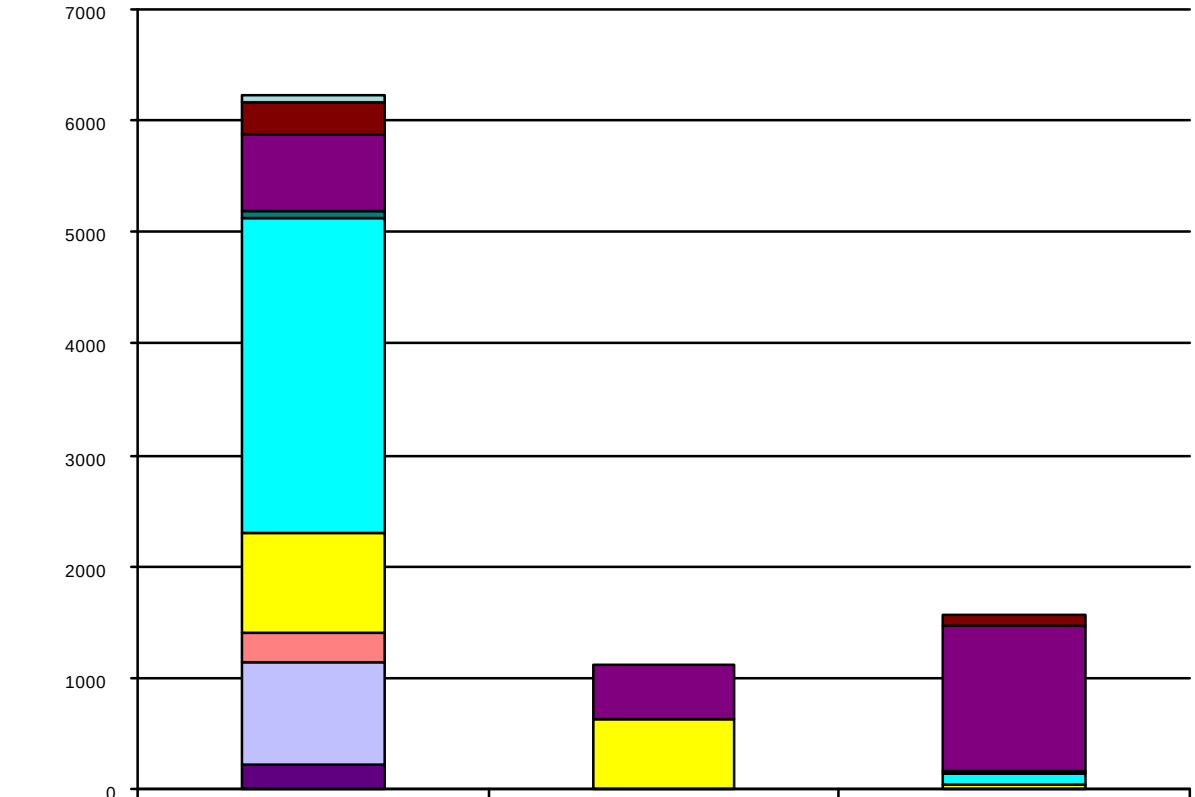
	Proved Reserves of Phosphates in Million Tons	Uranium Concentration in Grams/Ton	Uranium Resources in Thousand Tons
Algeria	25	125	3
Morocco	95612	130	12400
Tunisia	795	75	60
Egypt	1887	95	179
Israel			
Syria	624	100	63
Jordan	965	90	87
Iran			
Iraq	432	70	30
Saudi	310	75	60

Adapted by Anthony H. Cordesman from Dr. M. Mukhtar Al-Lababidi, Energy Resources in the Arab Countries, Kuwait, November 19-21, 1998.

Figure VIII.6

Alternatives to Domestic Demand for Oil and Gas: Hydropower Generation in Middle Eastern Countries

(Capacity in Mwe)



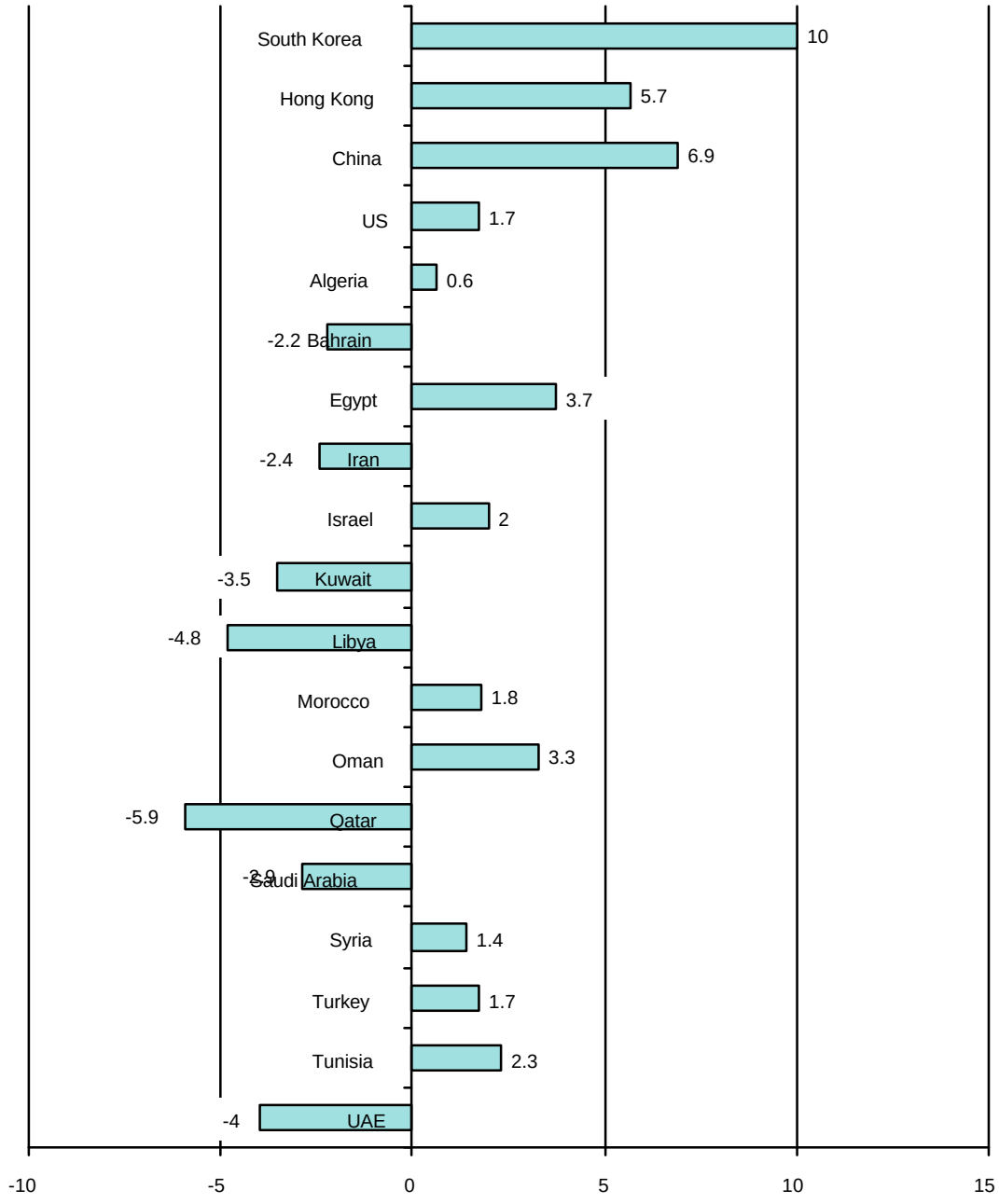
	In Operation	Under Construction	Planned
Maritania	61		
Algeria	274		100
Morocco	693	488	1305
Tunisia	64	10	10
Egypt	2825		100
Israel			
Syria	905	630	50
Jordan			
Lebanon	267		
Iran			
Iraq	910		
Saudi			
Sudan	225		

Adapted by Anthony H. Cordesman from Dr. M. Mukhtar Al-Lababidi, Energy Resources in the Arab Countries, Kuwait, November 19-21, 1998.

Figure VIII.7

The Impact of Demographics, Oil Prices and Low Economic Growth on Real Per Capita Income During 1970-1995

(Percentage of Average Annual Growth in GNP Per Capita)

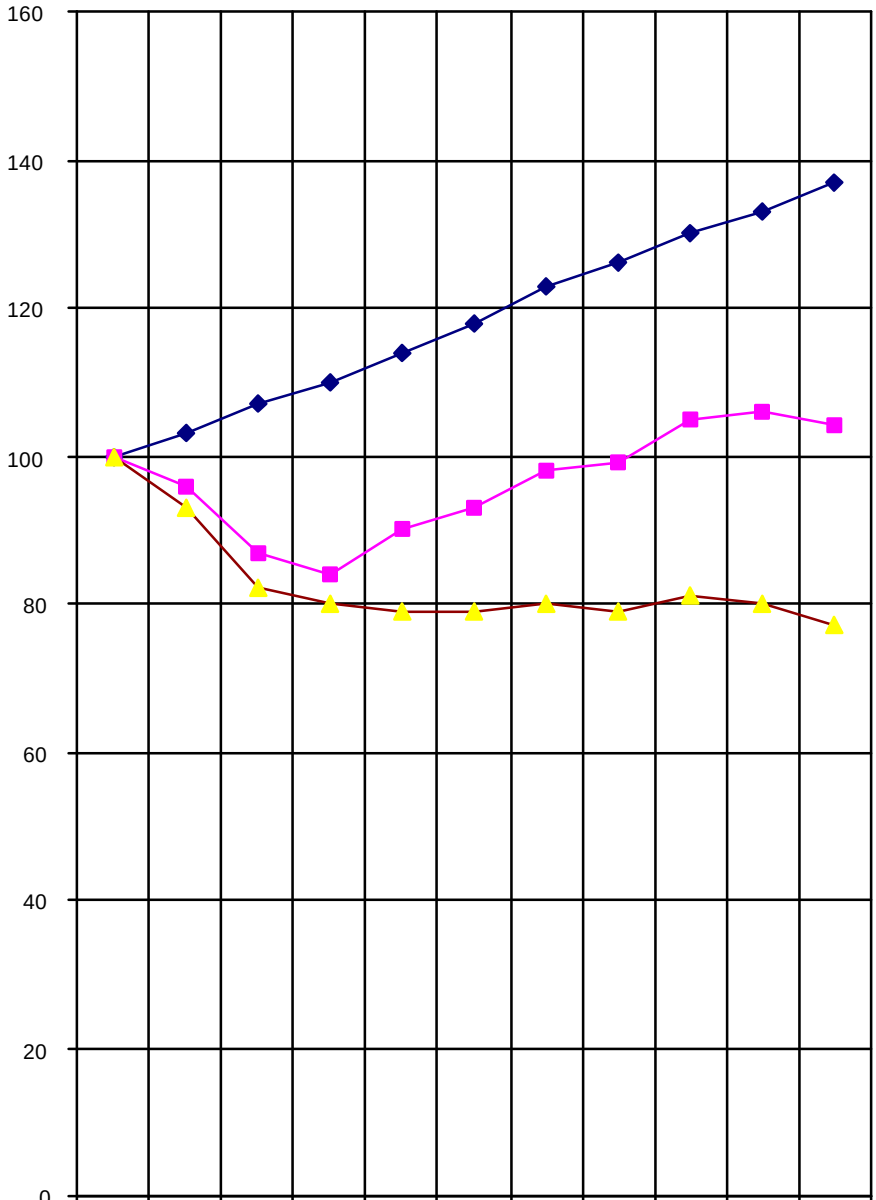


Adapted by Anthony H. Cordesman from World Bank, World Development Indicators, 1997, Section 1.3.

Figure VIII.8

Middle Eastern Population Growth, Low Oil Prices, and Low Overall Exports Combined to Limit Personal Wealth:

(Population, and Per Capita Income Relative to 1984 from 1984 to 19941984=100, and all following years are percentages of 1984 as base year. All expenditure totals are measured in constant 1984 US dollars.)

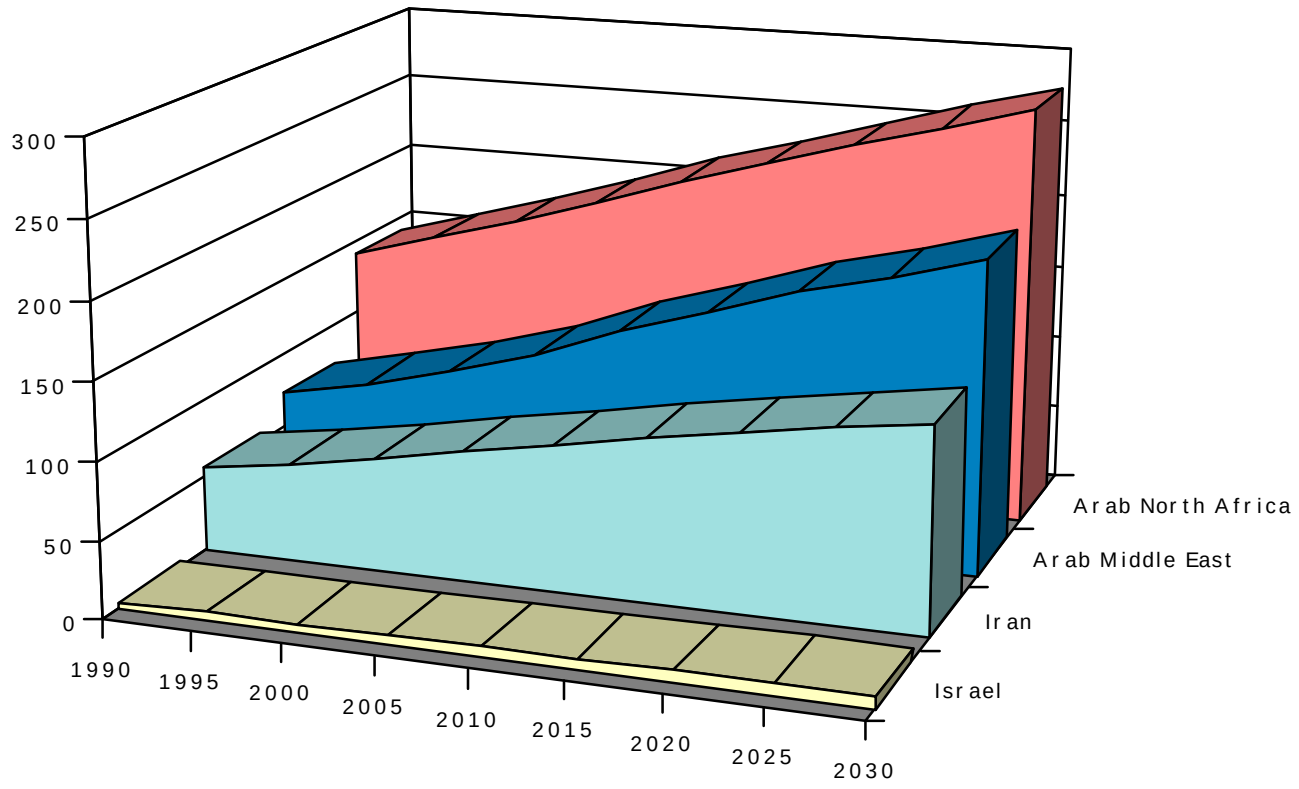


	84	85	86	87	88	89	90	91	92	93	94
Population	100	103	107	110	114	118	123	126	130	133	137
Gross National Product	100	96	87	84	90	93	98	99	105	106	104
Per Capita Income	100	93	82	80	79	79	80	79	81	80	77

Adapted by Anthony H. Cordesman form ACDA, World Military Expenditures and Arms Transfers, various editions. Middle East does not include North African states other than Egypt.

Figure VIII.9

The Population Time Bomb: Demographics of the Middle East: 1990-2030:
(Johns Hopkins/World Bank Estimate Made in 1995 in Millions)

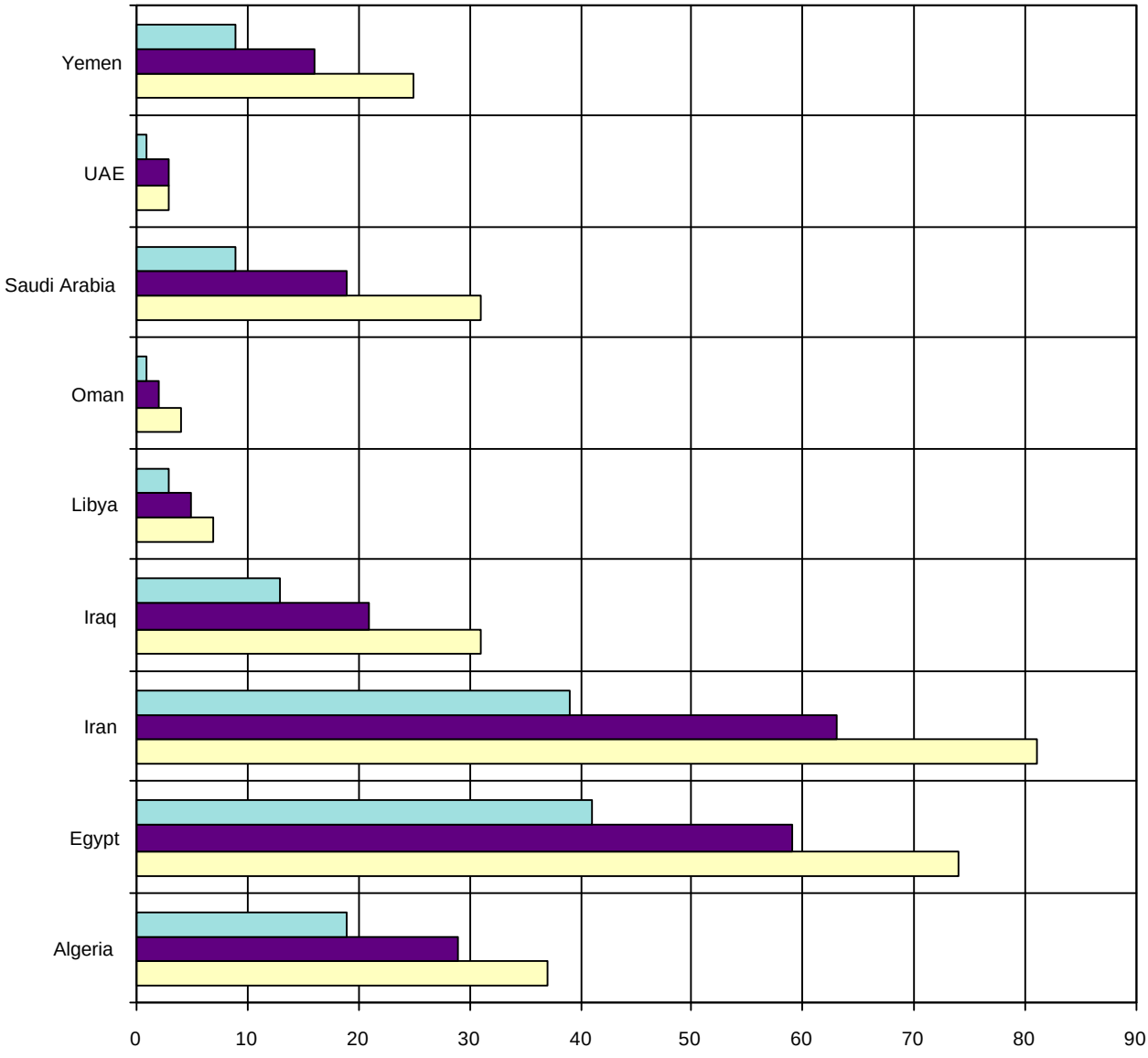


Adapted by Anthony H. Cordesman from World Bank data base for World Population Projections, 1996.

Figure VIII.10

Increase in Total Population in Selected Countries the Middle East

(in millions)



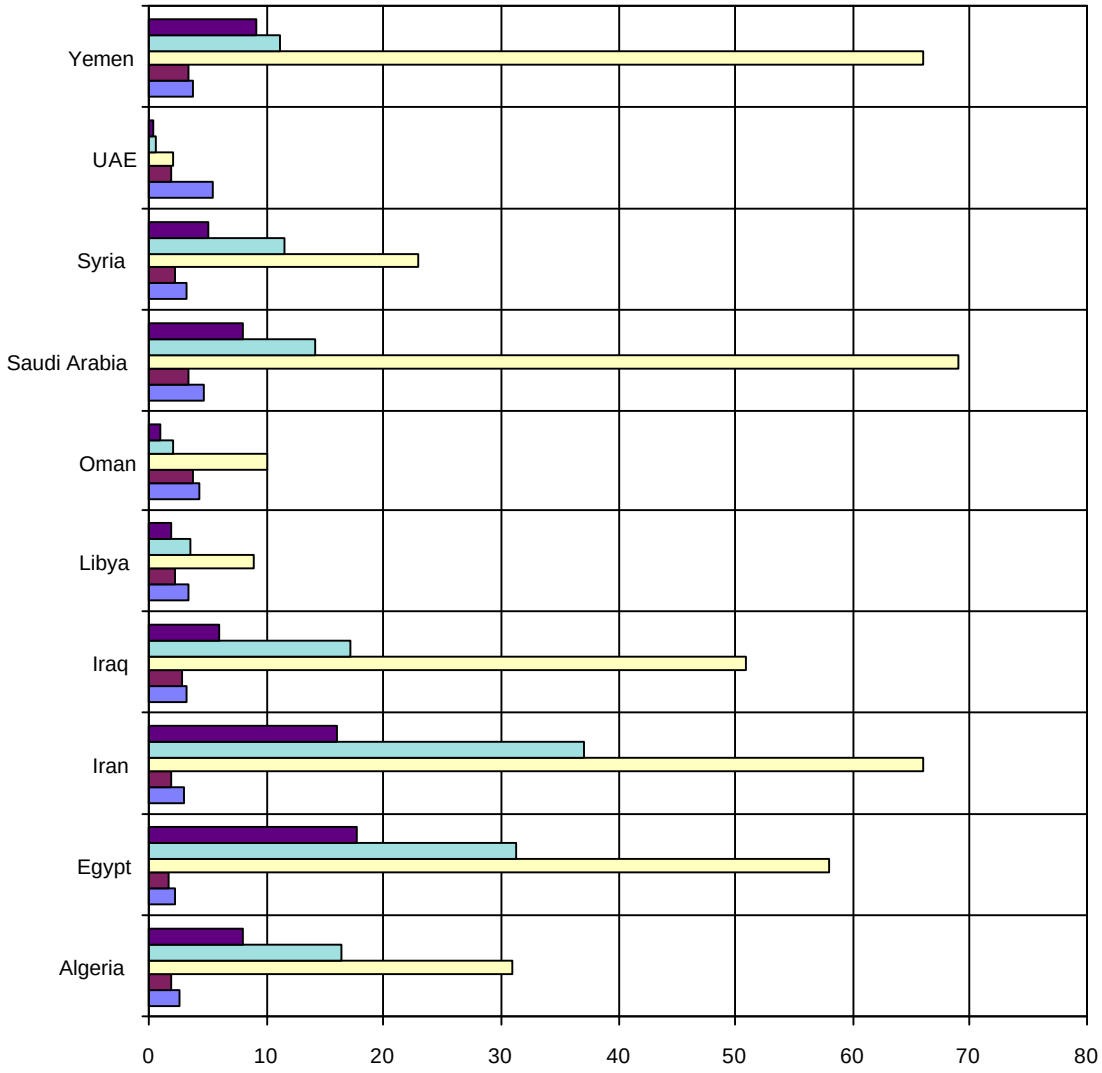
	Algeria	Egypt	Iran	Iraq	Libya	Oman	Saudi Arabia	UAE	Yemen
1980	19	41	39	13	3	1	9	1	9
1996	29	59	63	21	5	2	19	3	16
2010	37	74	81	31	7	4	31	3	25

Source: Adapted by Anthony H. Cordesman from World Bank, World Development Indicators, 1998, pp. 42-44.

Figure VIII.12

Population Growth in Selected Countries the Middle East after 2000

(in millions)



	Algeria	Egypt	Iran	Iraq	Libya	Oman	Saudi Arabia	Syria	UAE	Yemen
Mortality Improvements	8.1	17.7	16.1	5.9	1.9	1	8	5	0.3	9.2
Momentum Growth	16.4	31.3	37.1	17.2	3.6	2	14.2	11.6	0.6	11.1
Growth After 2000	31	58	66	51	9	10	69	23	2	66
% of Growth: 1996-2010	1.9	1.6	1.9	2.8	2.3	3.8	3.3	2.3	1.9	3.3
% of Growth: 1980-1996	2.7	2.3	2.9	3.1	3.3	4.2	4.6	3.2	5.5	3.8

Source: Adapted by Anthony H. Cordesman from World Bank, World Development Indicators, 1998, pp. 42-44.

Succession Issues in the Middle East

Bahrain

New ruler is Hamad bin Isa bin Salman Al Khalifa, born January 28, 1949 – 50 years old

- Studied at public school in England and at Mons Officer Cadet School at Aldershot and Sandhurst. Returned in 1968, and set up Bahrain Defense force with independence in 1971, and became first minister of defense.
- Headed many civil commissions and held second post in Ruling Family Council.
- Seen as hard-liner in dealing with Shi'ites and in crackdown on protests that began in 1974.
- Golf, falconry, horse and camel races.
- Married first cousin, three sons.
- Names his son Salman, (born October 21, 1969) as Crown Prince in his first decree. (Salman had been serving as Deputy Minister of Defense).
- Former Amir Isa bin Salman al Khalifa died on March 6, 1999, and had ruled independent state since November 2, 1970 – nearly 29 years. Came to title of Amir in November 1961, and held it for 37 years. Had long had heart problems. – Second longest ruling ruler in Arab world after King Hassan of Morroco (King Hussien dead.) Hassan came to power in 1961, but several month earlier.
- Prime Minister is Khalifa bin Salman al Khalifa since January 19, 1970. Tensions with new Amir and Crown Prince. Not liked. Much of blame for crackdown and economic problems.
- Constitution since December 6, 1973.
- Unicameral National assembly dissolved on August 26, 1975.
- Advisory Council established on December 16, 1992.
- Bahrain Freedom Movement based in London. See more than 40 killed since December 1994.
- High Civil appeals court.
- Shi'ites are around 65-75% of 600,000 citizens – 63% of population are natives.
- Site of headquarters of US 5th Fleet.

EGYPT

President Mohammed Hosni Mubarak, since October 14, 1981 – 18 years. Was 70 years old in 1999. Born May 4, 1928.

- Elected after nomination by National Assembly (confirmed by referendum every six years. Last October 4, 1993. Next October 1999.
- Prime Minister Kamal Ahmed el-Ganzouri since January 4, 1996. Got 69% of the vote.
- Constitution of September 11, 1971.
- Bicameral mix of People's Assembly (454 seats, 444 elected by popular vote and 10 appointed) which serve five years.
- Advisory Council of 264 seta, 176 elected and 88 appointed.
- Last election in 1995, next in 2000.
- President's National Democratic Party has 72% of seats.

IRAN

Supreme Leader is Ayatollah Ali Hoseini Khamenei since June 4, 1989.

- 10 years in power.
- 59 years old in 1999.

President is Ali Mohammad Khatami Ardakani since May 27, 1997 – next election is May 2001.

- 55 years old.

- Majlis-e-Shura-ye-Eslami (Consultative assembly) is 270 seat unicameral assembly. Last election in May 23, 1997. Elected every four years. Next election is May 2000.
- Traditionalists are Militant Cleric's Association, Rafsanjani is Servants of Construction.
- New popular elections for first time in 20 years (since fall of Shah) on February 25, 1999. Some 200,000 seats on city and village oversight boards. (Mayors appointed). More than 280,000 candidates, and pro-Khatami moderates won most seats.
- Had 15 seats on Tehran council. See 1,400 candidates. Moderates won most.

IRAQ

President Saddam Husyan since July 16, 1979 – 20 years. Prime Minister since May 29, 1994.

- Birthday April 27, 1937, 61 years old.
- Vice Presidents are Taha Muhyi al-Din Maruf (April 21 1974) and Taha Yasin Ramadan (May 1994).
- Deputy Prime Minister Muhammad Hamza al Zubaydi since May 1994.
- Council of Ministers.
- Revolutionary Command Council head by Saddam with Izzat Ibrahim al-Duri as Vice President.
- President and Vice President elected by majority vote of Revolutionary Command Council – Saddam got 99% in October 17, 1995, next election 2002.
- Legislative Branch is unicameral assembly with 250 seats, 30 appointed by president to represent three Kurdish provinces. Has 220 members elected for 4 years by popular vote. Last election in March 24, 1996. Next in 2000.

JORDAN

King Hussein bin Talal Al Hashimi ruled from May 2, 1953 to 1999 – nearly 46 years.

King Abdullah is strong military figure.

- 37 years old in 1999.
- Descendent of the Prophet.
- Close ties to Sheikh Zayd bin Shakir, former Prime Minister and military commander, and Transjordanian tribes.
- Reorganized army right after coming to power on February 23, 1998. Possibly officers associated with Hassan. Gave one officer major new role in dealing with Bedouin tribes. Dismissed two officers working for Chief of Staff, Field Marshall Abdul Hafeth Murei Kaabaneh.
- Purged many Ministers. Swore in Prime Minister Abdul-Raouf Rawabden and 22 other cabinet members on March 4. Eight ministers were retained. 15 were new.
- Abdul-Raouf Rawabden is a former Pharmacist, and served as Ministers for Communications, and Chairman of Jordan's Phosphate mines. Secretary General of Awakening Party that supports peace and pro-Western policies.
- Abu Odeh, a Palestinian, is the new chief of the Royal Court.
- Crown Prince is now King Hussein's younger son Hamza, age 19, youngest son of Hussein and Queen Noor. Seems to be compromise that made Abdullah king, but gave throne eventually to line of Queen Noor. Born March 29, 1980. Prize at Harrow.
- Bicameral National Assembly with a 40 member senate appointed by the King and 80 seat House of Representatives elected for 4 year terms. Created in 1974. Suspended several times. Elections resumed in 1989, after 22 years. Last election on November 4, 1997. Next November 2001.
- Crown Prince Hassan had spent 34 years as heir.
- Constitution says King is King's eldest son unless the King Designates a brother. Abdullah has a young son, Hussein, but he is now only 5.

KUWAIT

Amir is Jaber al-Ahmad al-Jabir Al Sabah.

- 70 years old in 1999

- Rule since December 31, 1997, approaching 22 years.
- The Amir appoints the Prime Minister, Deputy Prime Minister
- Prime Minister and Crown Prince is Prince Saad al-Abdallah al-Salim Al Sabah since February 8, 1978.
- The crown prince is a member of the ruling Mubarak branch of the al Sabah family.
- Second Deputy Prime Minister is Salim al-Sabah.
- Unicameral National Assembly with 50 seats elected very four years. Last election on October 7, 1996, and next in October 2000.
- Cabinet members are also ex-officio members of the National Assembly.
- Constitution in November 11, 1961.

MORROCO

King Hassan II ruled from March 3, 1961 to July 23, 1999 – nearly 29 years.

- 69 years old when died in 1999.
- Bron April 9, 1929.

His eldest son, Crown Prince Sidi Mohammed, age 36, became king.

- Sidi Mohammed is not married and the future succession is now unclear.
- Law degree from a French unversity.
- Military background. Father had promoted from colonel to four star general in 1994.
- Educated in French and Arabic, speaks some Spanish and English.
- Prime Minister is Abderrahmane Youssoufi since March 14, 1998.
- Council of Ministers appointed by King.
- Bicameral Parliament with Chamber of Counselors (270 seats and members elected directly by local councils, professional organizations, and labor syndicates renewed every three years) and Chamber of Representatives (325 seats, elected by popular vote for 5 year terms, last election in November 14, 1997. Next in November 2002.

OMAN

Sultan and Prime Minister Qabus bin Said al Said

- 58 years old. November 18, 1940.
- Rule since depose father on July 23, 1970, in midst of Dhofar rebellion
- 19 years.
- Bicameral Majlis, 41 seats appointed, 82 seta lower chamber elected by limited sufferage.
- Basic Law of November 6, 1996.

OATAR

Amir Hamad bin Khalifa Al Thani – also Minister of Defense and CINC armed forces.

- since June 27, 1995 when depose father Khalifa bin Hamad Al Thani
- Crown Prince is third son of Amir, Jassim bin Hamad bin Khalifa bin Hamad al Thani
- Prime Minister is Amir's brother, Abdallah bin Khalifa al Thani
- Deputy Prime Minister is third brother of Amir, Muhamman bin Khalifa Al Thani
- Constitution enacted April 19, 1972 -- provisional
- Council of Ministers appointed by the Amir
- Unicameral Advisory Council with 35 seats appointed by Amir.

- New Urban Council with popular vote. Held March 8, 1999. 23,000 of 150,000 vote. All over 18 voted. 148 candidates for 29 seats, six women ran, all defeated.

SAUDI ARABIA

King Fahd bin Abd al-Aziz al Saudi since June 13, 1982

- 75 years old; Ruled 17 years
- Crown Prince and Deputy Prime Minister is Abdullah bin Abd al-Aziz al Saud (since June 1982.
- New Crown Prince will be Prince Sultan, now Minister of Defense.
- Basic Law issued in 1993
- Consultative Council with 90 members and Chairman appointed by the king for four year term.
- Supreme Council of Justice.
- The death of King Abd al-Aziz occurred in 1953.
- The only major conflict between the senior members of the royal family that has threatened to lead to open struggles over the succession occurred in 1958-1962. Abd al-Aziz was succeeded by his eldest son, Saud, who reigned for 11 years. King Saud proved unable to manage the nation's finances, however, and created serious problems in the kingdom's foreign affairs.
- In 1958, this led to a meeting of a powerful and secretive body of senior princes known as the *ahl al-aqd wa al-hal*, or "those who tie and untie," which forced King Saud to delegate direct conduct of Saudi government affairs to Prince Faisal and make him Prime Minister. [2] King Saud fought back against this arrangement, however, and regained control of the government in 1960-62. This led to a struggle with Faisal and other members of the royal family, a struggle which Saud lost decisively in October, 1962.
- Faisal regained power as prime minister, and began to implement a broad reform program that stressed economic development. Faisal was proclaimed King by senior royal family members and religious leaders in 1964. He continued to serve as Prime Minister, however, and this practice has been followed by subsequent kings. King Faisal proved to be an extremely competent ruler, and dealt effectively with problems arising from the Six-Day (Arab-Israeli) War of June 1967, the 1973 Arab-Israeli war, the subsequent Arab oil boycott, the sudden massive increase in Saudi oil wealth, and the resulting rise in Saudi political influence.
- After King Faisal was assassinated by a mentally ill nephew in 1975, the royal family dealt with the succession smoothly, quickly appointing Faisal's half-brother Khalid as King and prime minister. The appointment of the next Crown Prince, however, was somewhat more contentious. Prince Fahd, Khalid's half-brother, was in line for appointment as Crown Prince, but his "Western" lifestyle as a young adult prompted opposition from the traditionalists in the family. The result was a series of deliberations within the royal family which produced a compromise between the Western-oriented family members, who favored Prince Fahd, and the traditionalists. Fahd was appointed as Crown Prince and First Deputy Prime Minister, with the understanding that the next in line for this position would be Prince Abdullah, one of Prince Fahd's half-brothers and a traditionalist.[3]
- The ruling elite within the royal family is divided between the Sudairi family and other sons of King Abd al-Aziz's (Ibn Saud's) 22 wives.
- The Sudairi leaders of the royal family include the King; Minister of Defense Prince Sultan; Prince Naif, the Minister of Interior; Prince Salman, the governor of Riyadh; and Abd al-Rahman, the Deputy Minister of Defense. There are a total of seven sons by Abd al-Aziz's Sudairi wife, Hassa bint Sudairi, and they have often been called the "Sudairi Seven," or the Al Fahd, after the family's eldest brother Fahd Their power is balanced by that of the sons of the other wives of Abd al-Aziz.
- The most important is Crown Prince and Deputy Prime Minister Abdullah, who has commanded the Saudi National Guard since November, 1962. Abdullah has no brothers, which means he lacks the kind of broad power base shared by the Sudairis, but he also does not create the fear that his rule might lead to a new "dynasty" within the royal family, Abdullah does have six sons, including prince Mitab. Abdullah is also the son of a Bedouin mother which gives him ties to a number of leading tribes.
- Other centers of power within the royal family include Prince Badr bin Abd al-Aziz, the Deputy Chief of the National Guard; Prince Turki, the head of the General Intelligence Directorate; Prince Saud al-Faisal, the Foreign Minister and son of King Faisal; and a number of other senior princes.
- The relations among these princes, and any friction between them, make up the most important aspect of the political life of Saudi Arabia.

- The issue of succession has also become far more pertinent because of the ill health of King Fahd, who is well over 70 years-old. On November 30, 1995, Fahd was rushed to a hospital emergency room suffering from what most experts believe was a stroke. One month later, he temporarily turned control of the government over to Crown Prince Abdullah, who proceeded to attend the summit of GCC leaders in Oman in place of the King.
- Prince Abdullah ruled in his absence until King Fahd formally reassumed his position as head of the government on February 21, 1996. Since that time, Prince Abdullah has played a major role in ruling because King Fahd has sometimes been incapable of exercising power and has often been weakened or incapacitated by his physical condition. Nevertheless, King Fahd's resumption of his position prompted intense speculation as to who would ultimately be Fahd's successor.
- The most likely outcome was that Prince Abdullah would act as a quasi- regent until King Fahd was willing to formally relinquish power or died. Another possibility was that King Fahd would formally give up ruling because of his health, and retire to a foreign country where he could obtain continuing medical treatment. However, there were also rumors of challenges to Abdullah's succession.
- The most popular of these rumors involved the possibility that Prince Sultan (age 68), a Sudairi and the Minister of Defense, might seek the throne.
- Other scenarios speculated that Prince Saud al-Faisal might be promoted to Crown Prince in place of an aging Abdullah. This might be accomplished through an alliance with Prince Salman, the governor of Riyadh and one of King Fahd's younger brothers.
- Another scenario indicates that King Fahd might make Prince Salman the Crown Prince, with the succession bypassing both Prince Abdullah and Prince Sultan.
- A third scenario indicated that Sultan would become the next king, followed by Prince Mohammed bin Fahd, the son of King Fahd.
- It is impossible to dismiss such speculation, and Prince Sultan certainly remains one of the most influential centers of power in the Kingdom, but Prince Abdullah is a formidable figure. It has become increasingly clear that Abdullah's succession to the throne is all but assured. He has signed joint communiqués with King Fahd, since the King's return to power, including the Eid Al-Fitr statement in February, 1997.
- He seems to be in good health and an increasingly strong leader within Saudi Arabia. He continues to command the National Guard, and maintains support from the large Bedouin tribes of the Najd, from which the Guard is drawn. Abdullah is also a member of the Bani Shammar, a powerful tribe which drove the Saud family into exile in the 19th century, but which King Abd al-Aziz then brought into the royal family through marriage.
- Abdullah is a strong Arab nationalist who has criticized the West's close association with Israel in the past -- criticism which has gained him support among traditionalist and conservative Saudis. Abdullah maintains close personal ties to Syria's President Hafez Assad. His attendance at the June, 1996 mini-summit in Damascus, where he met with Assad and Mubarak, is both a demonstration of his leading role within the royal family and his ability to deal with other senior Arab leaders.
- At the same time, there are good reasons to challenge reports that Abdullah would weaken Saudi Arabia's ties to the West. The consensus among most experts is that Abdullah fully recognizes both Saudi Arabia's vulnerability and its need for close ties to the US. He has long relied on the US and other Western states to train and equip the National Guard, and is credited with playing a major role in Saudi Arabia's decision to allow the US to base forces in Saudi Arabia after the Iraqi invasion of Kuwait. If anything, Abdullah might be able to do a better job of balancing the conflicting needs of military ties to the West, Saudi military development, the Saudi economy, and the need to deal with Islamic extremism than either King Fahd or Prince Sultan.
- A number of experts believe that Prince Abdullah would bring more stability to the Kingdom. He is widely viewed as a more traditional leader and one who gives more weight to religion and Arab causes than other leading princes. He is seen as having a high degree of integrity and as attempting to curb the excesses and extravagances of the royal family. Besides cutting allowances provided to the vast number of royal princes, he has banned influential relatives from scooping up lucrative government contracts without competitive bidding. He is thought to oppose the kind of massive showpiece purchases and projects that waste government funds and the kind of fees and corruption that affect many government purchases and contracts. US military experts, including those in USCENTCOM, hope that he will be much more cautious about Saudi Arabia's military purchases, will limit its tendency to over-spend on flashy showpiece projects, and will emphasize training, sustainability, and military effectiveness.
- Prince Abdullah's ties to traditional elites and "conservatism" do not seem to prevent him from understanding Saudi Arabia's needs for economic reform and from having good relations with many of the younger and more progressive princes. As a result, Abdullah's succession seems more likely to change the personal style of the monarchy than lead to major changes in Saudi Arabia's relations with the West and the United States.

- In any event, there is little concrete evidence that current rivalries will lead to any conflict between the top members of the royal family. Royal rumor-mongering is virtually a national sport in Saudi Arabia, and virtually every educated wealthy Saudi can provide extraordinarily detailed reports on the intentions of every senior prince and their rivalries and political interactions. The problem with such reports is that they usually differ in their seemingly authoritative details or reflect the most fashionable rumor of the day. Even relatively influential princes outside the senior leadership are often proven authoritatively wrong, and observers outside the Kingdom often drift into conspiracy theories that turn every development into a potential crisis.
- What is far more uncertain is what will happen once there is a basic generational change within the Saudi royal family, and the choice of the King and senior ministers must be made from the large number of junior princes that will compete for power once the sons of King Abd al Aziz are gone.
- There is no consensus over how many such "princes" there now are, and how many have the status to compete for power. It is almost certain, however, that there are over 5,000 males who can claim ties to the Saudi royal family and well over 80 princes who have significant status as ranking members of the "next generation" and thus have some claim to power.
- More is involved than control of the government. Some 2,000 princes play an active role in the economy. Many have a normal role in business, but some demand special privileges and/or use their influence corruptly or violate Saudi law. This mix of royal political and economic power has caused a substantial amount of jealousy and political friction within Saudi society. Saudi Arabia's economy and political stability has suffered from a failure to demarcate clearly the powers and rights of members of the royal family. The corrupt minority has sometimes abused its political power to dominate major military and civil deals and developments.
- These problems have increased with the size of the royal family, with the decline in Saudi Arabia's relative oil wealth, and with the growing complexity of the Saudi economy.
- While a royal role in business is a traditional aspect of Saudi society, and outright abuse has been relatively limited, there have been enough problems to cause growing resentment in all levels of Saudi society outside the royal family. Further, not all of the princes involved are outside the power structure within the royal family. Many of the sons of Saudi Arabia's most senior figures have been deeply involved.
- These problems extend to the military command level, where the divisions between members of the royal family sometimes prevent the full operation of objective criteria in the selection of commanders or effective unity of command.
- Further, the high birth rate within the royal family means the number of "princes" now doubles every 22-26 years and that there are about 70% more "royal" males under the age of 18 than there are above it. This trend also extends to the Wahhab and other leading families. At some point in the near to mid-term, Saudi Arabia simply will not be able to afford subsidizing either its expanding royal family or the descendants of other leading families.

SYRIA

- Basher Asad, the son of a former military dictator, now rules a nation that is economically weak and whose military forces are outdated.
- His father, President Hafiz al-Asad had ruled since4 February 22, 1971. Seized power in November 1970 coup. Asad rule 19 years. He died in 2000. He was sworn in to fifth seven-year term on March 11, 1999. Referendum gave 99.98% of vote.
- Bashar Al Asad was only trained as a possible succesor after death of older son Basel in car accident in January 1994.
- Bashar was born in 1965 – 34 years old. Trained as Opthamologist. Suddenly given military career from 1994 onwards. Major in Presidential Guard in 1995, made Lt. Col and CINC Republican Guards in July 1997. Colonel in January 1999.

UAE

President Zayid bin Sultan Al Nuhayyan since December 2, 1971 – the day UAE achieved independence.

- 72 years old in 1999.
- Ruled 28 years holding seven emirates together.
- Vice President and Prime Minister is Maktum bin Rashid al Maktum ruler of Dubai – since Nov 90
- Elect every five years, next election in 2001.
- Crown Prince is Khalifa bin Zayed al Nahayyan, eldest son of favorite wife.
- Assumed day-today government of Abu Dhabi in 1995.
- Works closely with Chief of Staff, Sheik Mohammad bin Zaid al-Nahayyan and Ben Fatima (oldest sons of Fatimi).

- Chief of Staff, Sheik Mohammad bin Zaid al-Nahayyan, of Abu Dhabi is key to military build-up. Highly Uncertain figure.
- Unicameral 40 seat Majlis appointed for two years by rulers.
- Constitution since December 2, 1971 and made final in 1996.
- The chief of state is Sheik Zayed bin Sultan Al Nahyyan, the ruler of Abu Dhabi. Sheik Zayed bin Sultan Al Nahyan has been president of the UAE, since the UAE was founded on December 2, 1971. His current 5-year term ends in December 2000.
- The Vice President is Sheik Maktum bin Rashid al-Maktum, the ruler of Dubai. He has served as Prime Minister since October 8, 1990, while Sheik Zayed has been deputy Prime Minister since November 20, 1990.
- The UAE's principal government officials are members of the Supreme Council, which is composed of the seven ruling Sheiks. The Supreme Council is the highest constitutional authority in the UAE, and is the UAE's highest legislative and executive body. It selects a President and Vice President from its membership; the President in turn appoints the Prime Minister and Cabinet. The Council is supposed to meet four times a year, but it convenes more rarely at an official level, because the leaders meet frequently in more traditional settings.
- The Supreme Council includes the President and ruler of Abu Dhabi -- Sheik Zayed bin Sultan Al Nahyyan; the Vice President, Prime Minister, and ruler of Dubai -- Sheik Maktum bin Rashid Al Maktum; the ruler of Sharjah -- Sheik Sultan bin Muhammad al-Qasimi; the ruler of Ajman -- Sheik Humaid bin Rashid al-Nuaimi; the ruler of Umm al-Qaiwain -- Sheik Rashid bin Ahmad al-Mualla; the ruler of Ras al-Khaimah -- Sheik Saqr bin Muhammad al-Qasimi; and the ruler of Fujairah -- Sheik Hamad bin Muhammad al-Sharqi. The Supreme Council establishes general policies and sanctions federal legislation.
- At least five members must agree on any important issue, and the rulers of Abu Dhabi and Dubai have veto power over its decisions. The Cabinet of the Supreme Council manages the Federation on a day-to-day basis. All decisions by the Supreme Council and at the federal level are generally made by consensus of the sheiks of all seven emirates and of leading families.
- Military command is divided between Abu Dhabi and Dubai. President Zayed bin Sultan Al Nahyyan, the ruler of Abu Dhabi, is commander-in-chief of the armed forces. Mohamed bin Rashid al-Maktum -- the crown prince of Dubai -- is the Federal Minister of Defense. Lt. General Mohamed bin Zayed Al Nahyyan of Abu Dhabi is Chief of Staff. Sheik Khalifa bin Zayed Al Nahyyan -- the crown prince of Abu Dhabi -- is Deputy Commander.

Table VI.1

Key Problems Affecting the Iranian Economy

- A lack of diversification and dependence on oil, gas, and petroleum products for 85% of its exports. A shift of $1 in world oil prices means a rise or cut of over $1 billion in Iran's petroleum exports.
- Massive population growth which places a steadily increasing burden on its infrastructure, educational system, and overall economy, and which leads to widespread structural unemployment.
- Failed agricultural reform and dependence on imports for nearly 40% of its food.
- The creation of large, inefficient, and corrupt religious foundations which control at least 30% of the economy without real public accountability, and which act as a major barrier to economic modernization.
- A massive foreign debt which is the legacy of the absurd economic policies of former President Rafsanjani, who borrowed massively without adequate plans. While Iran has reduced much of this debt burden, it has done so at the cost of severe limits on foreign imports since 1992, compounding the damage done by the revolution and the Iran-Iraq War.
- The creation of large, inefficient Ministries as virtual fiefdoms, with massive over-employment and little productivity. The oil ministry and National Iranian Oil Company (NIOC) are the most efficient of these government offices, but still show only limited planning capability and ability to invest efficiently.
- The existence of a state planning office, currently operating under a five-year plan ending in 2000, which has confused intentions relating to trade and foreign investment and little real power to command Iran's ministries and Bunyods.
- A complex series of different exchange rates that do little more than interfere with economic development and trade, and stimulate the growth of a parallel or "black economy."
- A series of market distorting subsidies, including negligible charges for oil and gas, that stimulate domestic consumption of oil and gas that might be used for exports. Iran now uses 1.1 MMBD to 1.5 MMBD of its total oil production for domestic consumption.
- A series of nepotistic and corrupt relations between Iranian officials, the clergy, and the heads of the trading class (Bazaari) which create a host of minor trade barriers, minor monopolies, and wastes of government and private funds.
- A failure to come fully and honestly to grips with the problem of inflation (now at 26-30%, the problem of defining interest rates in an Islamic economy, enforcing the rule of law in commercial transactions, that compounds Iran's other economic problems.
- A tendency to talk about privatization and the private sector, and encouraging foreign investment, while hopelessly complicating every process involving the state, failing to take true substantive action, and becoming trapped in half measures.

Table VI.3

Current Trends in the Iranian Economy

(In millions of current U.S. dollars)

Fiscal Year	1994/95	1995/96	1996/97	1997/98	1998/99
Exports	19,434	18,375	22,496	18,506	14,000
Imports	12,617	12,678	14,973	14,995	15,000
Current Account	4,956	3,478	5,259	1,236	-3,000
GDP Growth (%)	1.8	4.2	5.0	3.2	0
Inflation (%)	35.2	49.4	23.0	18.0	20.0
Debt Servicing Schedule	5,500	5,660	5,660	4,522	4,500
Assets in OECD Banks	6,400	8,500	10,700	6,700	?

Table VIII.1

Saudi Arabia's Annual Budgets

Fiscal Year	Revenues		Expenditures		Deficit	
	B Riyals	B $U.S.	B Riyals	B $U.S.	B Riyals	B $U.S.
Actual						
1990	118	31.5	143	38.1	-25	-6.7
1991*	118	31.5	143	38.1	-25	-6.7
1992	151	40.3	181	48.3	-30	-8.0
1993	169	45.1	197	52.5	-27.8	-7.4
1994	120	32.0	160	42.7	-40	-10.7
1995	135	36.0	150	40.0	-15	-4.0
1996	177	47.2	194	41.7	-17	-4.53
1996 (Original)	131.5	35.07	150	40	-18.5	-4.9
1997	204	54.4	210	56	-6.0	-1.6
1998 –Estimate 12/97	178	47.5	196	53.3	-18	-4.8
1998 –Actual 12/98	143	38.1	189	50.4	-46	-12.3
1999	121	32.26	165	44	-44	-11.73
Estimated in Spring 1999						
2000	165	44.0	217	57.9	-52	-13.9

3.75 Saudi Riyals = $1

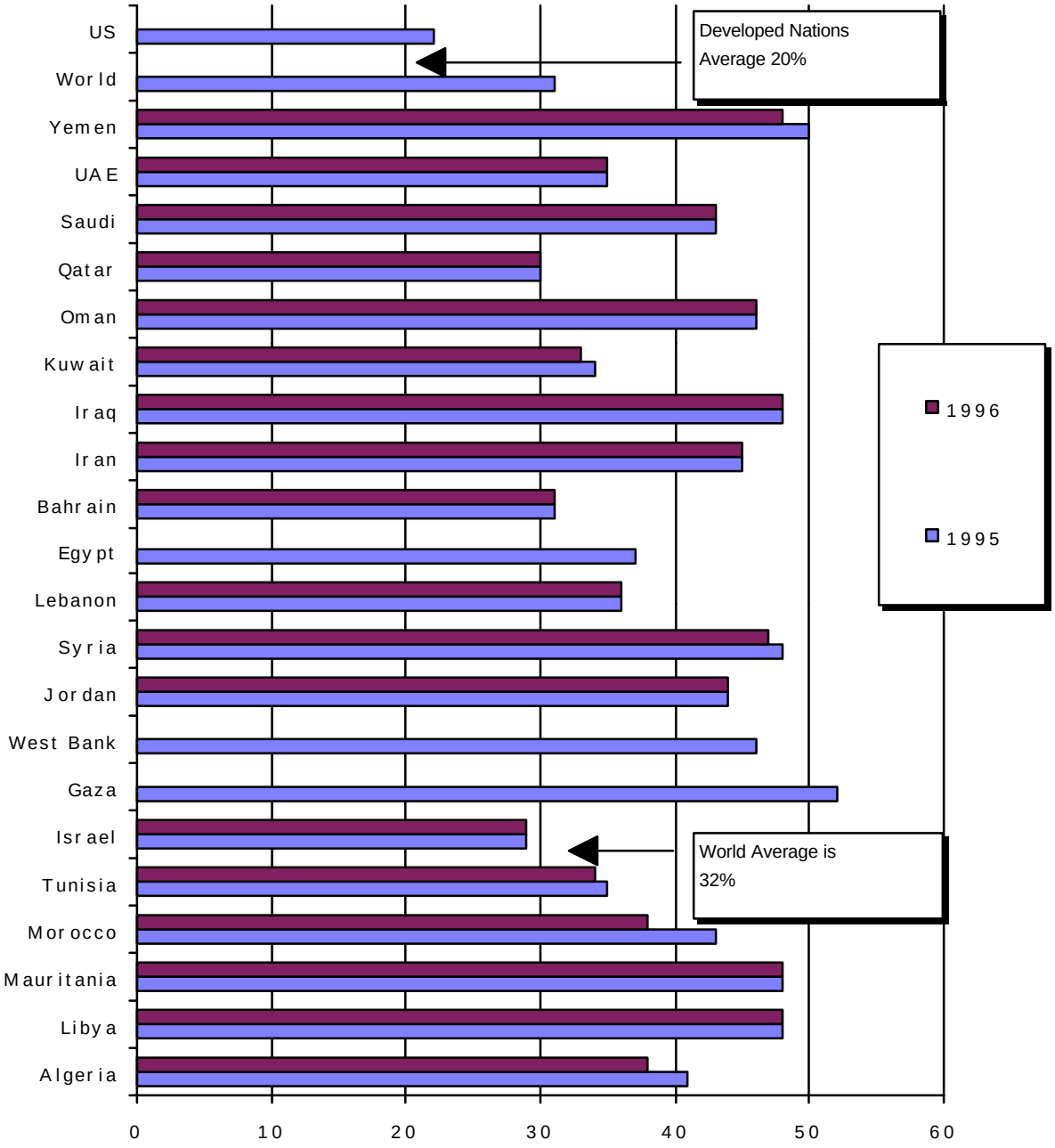
* Major off-budget expenditures to finance Gulf War

Source: Data for 1990-1995 are adapted from data provided in the monthly newsletter of the Information Office, Royal Embassy of Saudi Arabia, Volume 12, Number 2, February, 1995, p. 3. Data for 1996-1998 have been adapted from IMF Article IV report 1994, Saudi Arabia, Volume 14, Number 2, February, 1997, p. 3; Middle East Economic Digest, "Special Report: Saudi Arabia", March 10, 1995, pp. 25-48 and Middle East Economic Digest, January 12, 1996, pp. 15-16. Corrected data for 1998 are from Reuters, December 28, 1998, 1728. Data for 1999 was provided in the monthly newsletter of the Information Office, Royal Embassy of Saudi Arabia, Volume 16, Number 1, January 1999, p.1.

Figure VIII.13

Comparative CIA Estimate of the "Youth Rate"

(Percentage of the Population Aged 14 Years or Less)

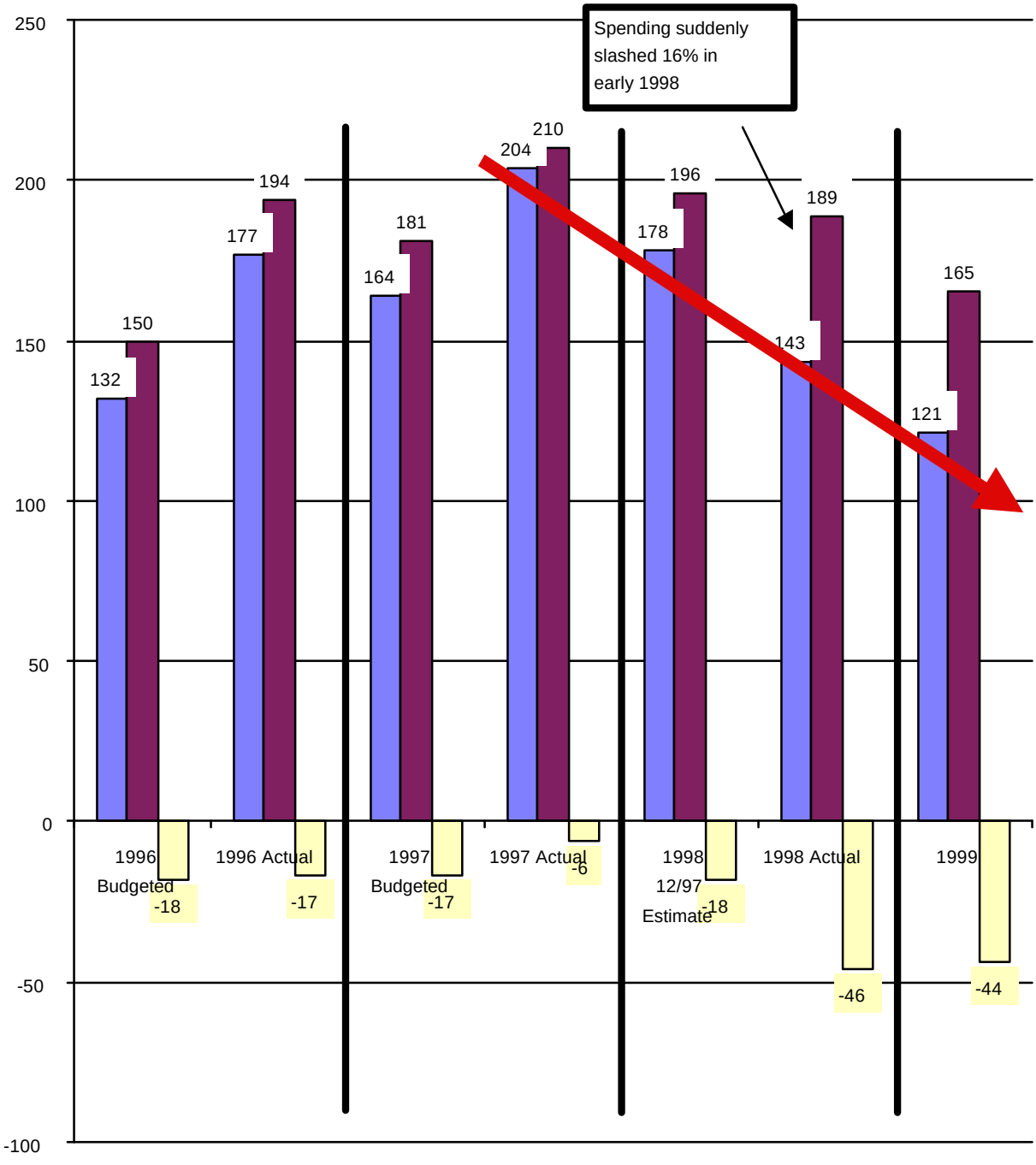


Adapted by Anthony H. Cordesman from CIA on-line Internet data base for the World Factbook.

Figure VIII.14

Pressures on the Saudi Budget: The Problem of Predicting the Future of a One Commodity, State-Driven Economy

(in billions of Saudi Rials)

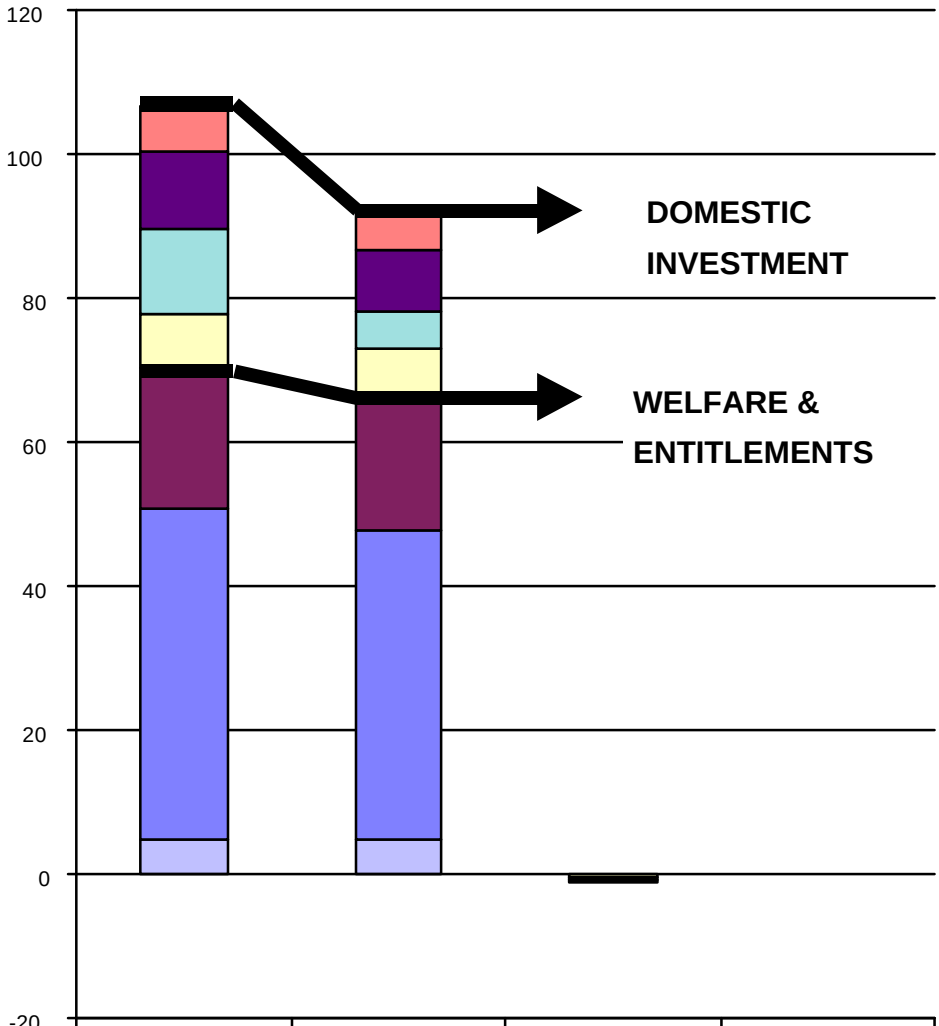


Source: Adapted by Anthony H. Cordesman from US-Saudi Business Brief, Winter, 1998, p. 1, and Reuters, December 28, 1998, 1728.

Figure VIII.15

Pressures on the Saudi Budget: The Entitlements Problem

(in billions of Saudi Rials)



	1998	1999	% Change	
Spec. Deve Funds	6.4	5	-22%	
Indust., Elec. & Infra	10.7	8.5	-20%	
Trans & Commo	11.8	5.2	-55.90%	
Munin Services & Water	7.6	6.6	-12.70%	
Health & Community Dev.	19.7	18.7	-5%	
Education	45.6	42.9	-6%	
Aid to Social Activities	5	4.8	-4.90%	

Source: Adapted by Anthony H. Cordesman from US-Saudi Business Brief, Winter, 1998, p. 1, and Reuters, December 28, 1998, 1728.

Table VIII.2

Projected Trends in the Kuwaiti Budget

(in millions of Kuwaiti Dinars)

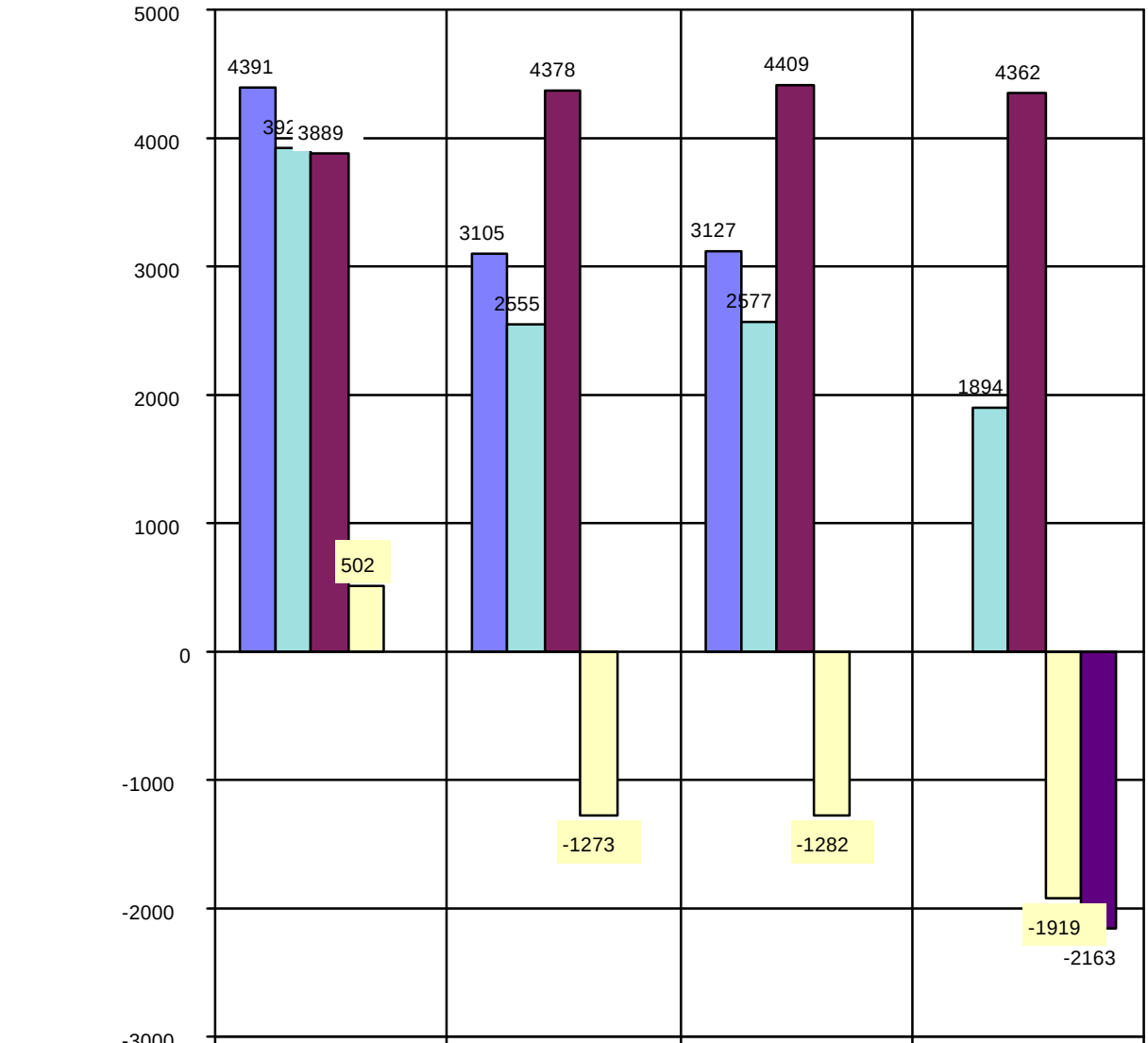
	96/97 Actual	97/98 Budget	98/99 Budget	99/00 Budget
Revenues	**4,391**	**3,105**	**2,444**	**2,224**
Oil	3,926	2,555	1,894	1,761
Non-Oil	455	550	550	463
Expenditures	**3,889**	**4,378**	**4,362**	**4,250**
Wages and Salaries	1,180	1,287	-	-
Goods & Services	253	278	-	-
Vehicles & Equipment	19	46	-	
Development Projects & Land	405	528	-	-
Misc. Expenditures and Transfer (Including Defense)	2,031	2,239	-	-
Surplus/Deficit	**502**	**-1,273**	**-2,163**	**-2,248**

Source: Kuwaiti National Bank/MEED/Reuters, October 27, 1998, 0421, MEES July 19, 1999.

Figure VIII.15

Pressures on the Kuwaiti Budget

(in millions of Kuwaiti Dinars)



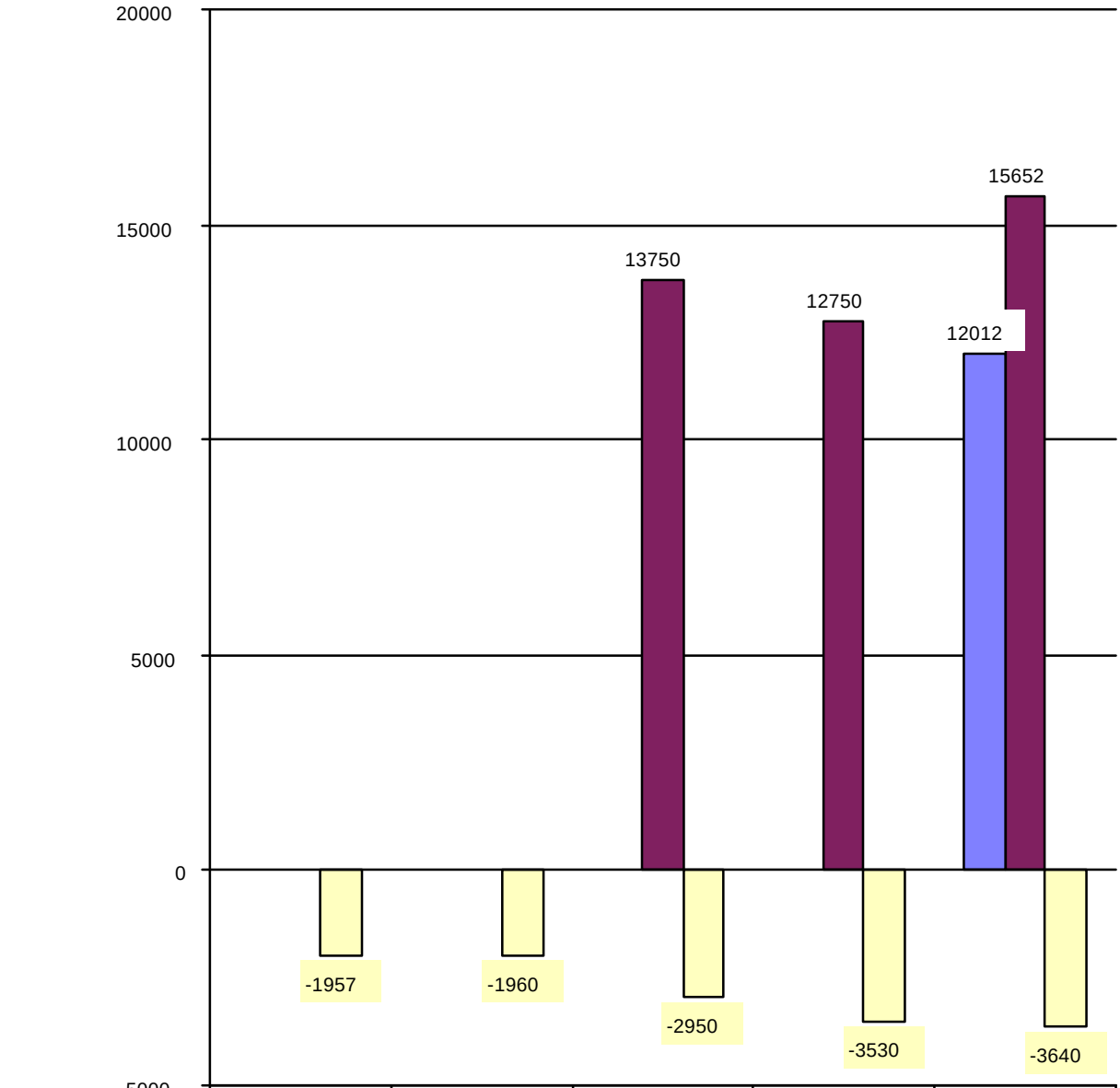
	96/97 Actual	97/98 Budget	98/99 Initial	98/99 10/98
Total Revenues	4391	3105	3127	-
Oil Revenues	3926	2555	2577	1894
Expenditures	3889	4378	4409	4362
Deficit	502	-1273	-1282	-1919
Gross Deficit	-	-	-	-2163

Source: Adapted by Anthony H. Cordesman from data provided by the Kuwait National Bank.

Figure VIII.17

Pressures on the Qatari Budget

(in millions of Qatari Rials)

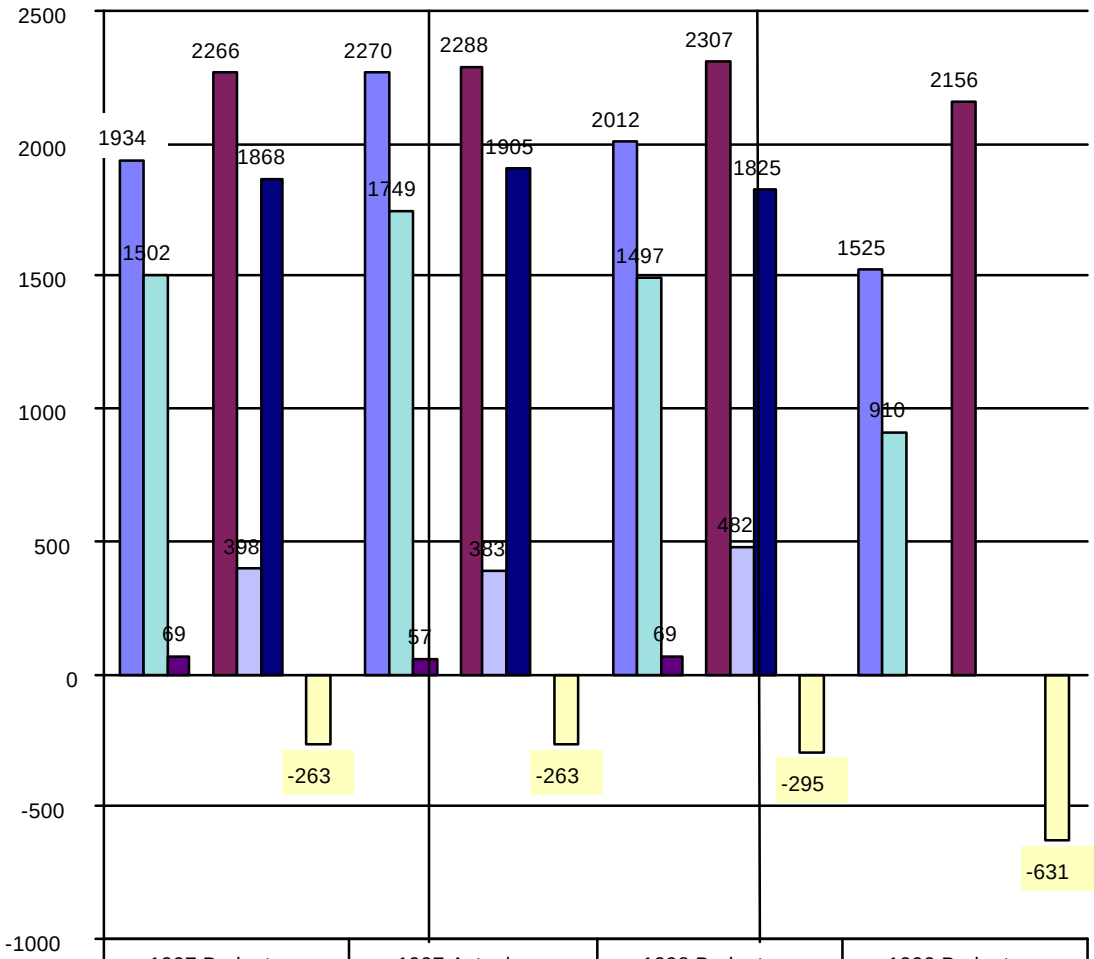


	94/95 Actual	95/96 Actual	96/97 Actual	97/98 Budget	98/99 draft
Total Revenues					12012
Expenditures			13750	12750	15652
Deficit	-1957	-1960	-2950	-3530	-3640

Source: Adapted by Anthony H. Cordesman from data provided by the Kuwait National Bank.

Figure VIII.18

Pressures on the Omani Budget
(in millions of Omani Rials)



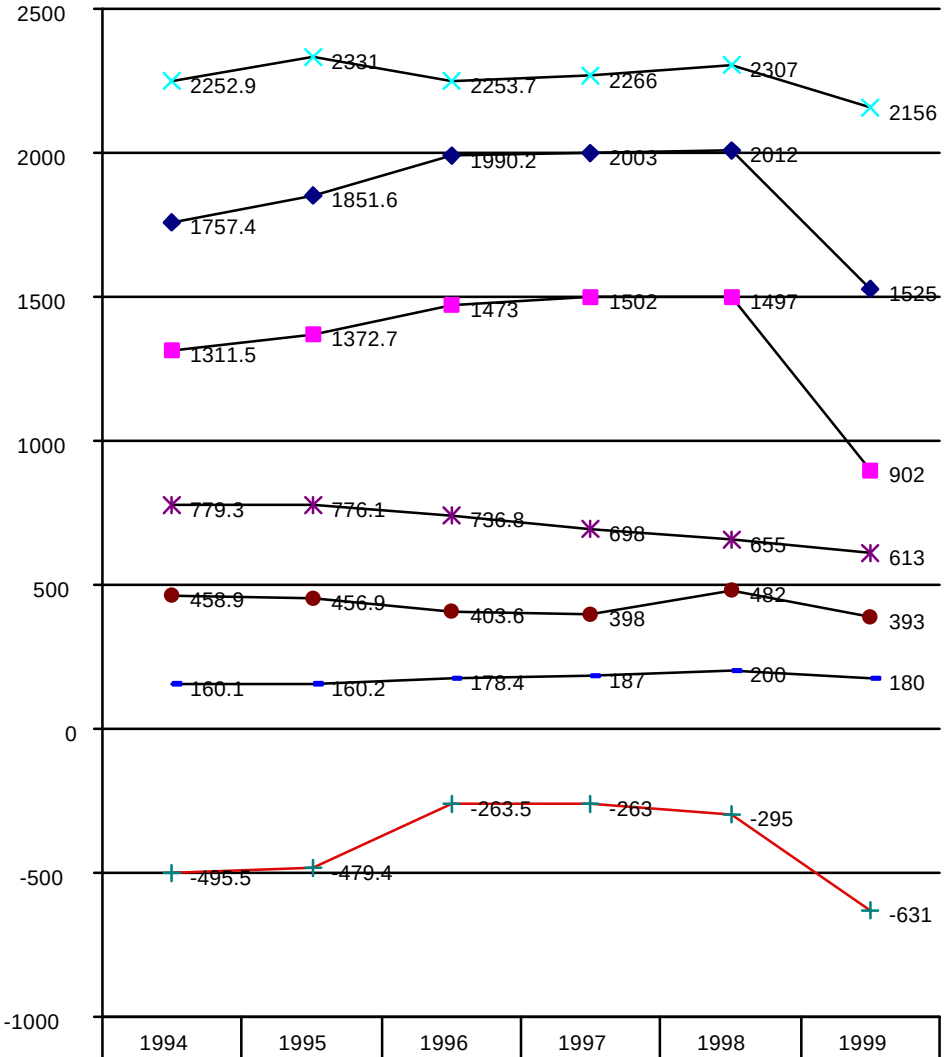
	1997 Budget	1997 Actual	1998 Budget	1999 Budget
Total Revenues	1934	2270	2012	1525
Oil Revenues	1502	1749	1497	910
Gas Revenues	69	57	69	
.				
Budget	2266	2288	2307	2156
Investment	398	383	482	
Current/Other	1868	1905	1825	
.				
Deficit	-263	-263	-295	-631

Source: Adapted by Anthony H. Cordesman from data provided by the Central Bank of Oman and Middle East Economic Digest, November 20, 1998, p. 26, and January 15, 1999, pp. 2-3.

Figure VIII.19

Key Trends in the Omani Budget

(in millions of Omani Rials)



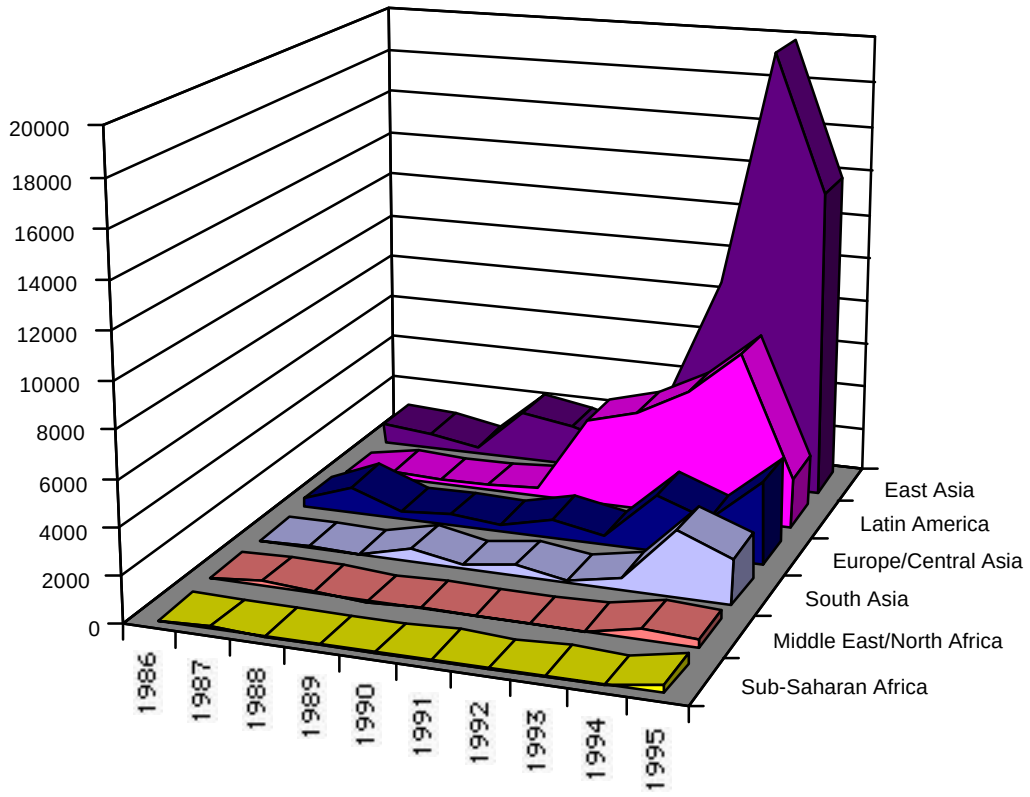
	1994	1995	1996	1997	1998	1999
Total Revenues	1757.4	1851.6	1990.2	2003	2012	1525
Oil Revenues	1311.5	1372.7	1473	1502	1497	902
Total Expenditure	2252.9	2331	2253.7	2266	2307	2156
Defense Expenditures	779.3	776.1	736.8	698	655	613
Investment Expenditure	458.9	456.9	403.6	398	482	393
Energy Investment	160.1	160.2	178.4	187	200	180
Current Deficit	-495.5	-479.4	-263.5	-263	-295	-631

Source: Adapted by Anthony H. Cordesman from data provided by the Omani Times and Middle East Economic Survey, January 18, 1999, pp. B-2.

Figure VIII.20

The MENA Area Lags in Private International Financing of Infrastructure

($US billions, including loans, bonds, and equity from international capital markets)

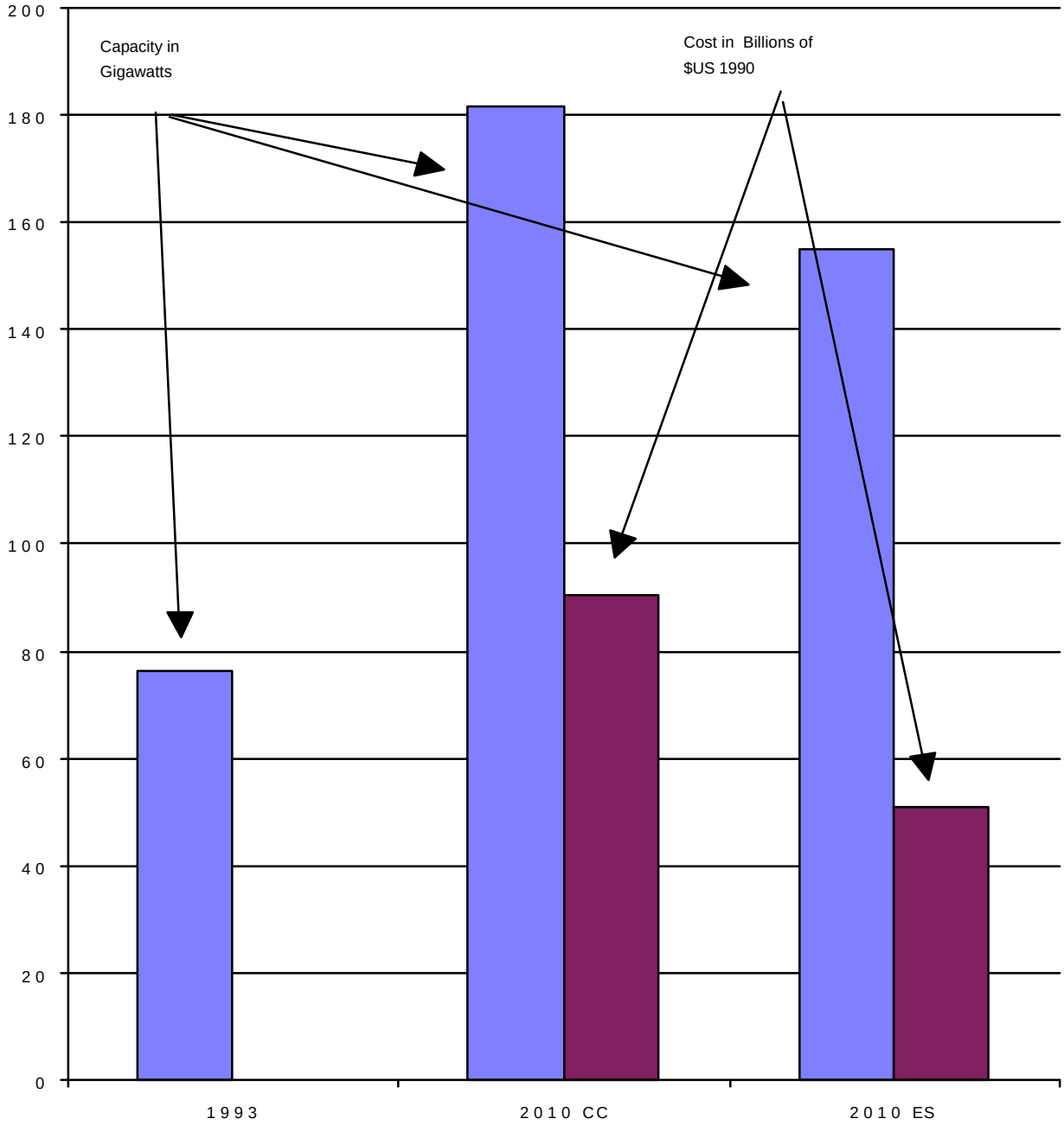


	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Sub-Saharan Africa	0	7	0	0	0	6	0	42	0	396
Middle East/North Africa	47	206	50	0	0	0	4	41	474	370
South Asia	0	93	0	583	117	415	120	489	2850	1914
Europe/Central Asia	369	1162	316	466	334	862	448	2496	1662	3657
Latin America	0	382	284	243	392	3841	4431	5630	7543	2248
East Asia	935	693	269	2219	1798	1188	3831	9329	19786	13712

Source: Adapted by Anthony H. Cordesman from World Bank, Global Development Finance, 1997, p. 22.

Figure VIII.21

The Middle East Has Massive New Infrastructure Investment Needs: Electric Power as a Test Case



CC = Capacity Constrained or maximum production ES = Energy Savings, or reduced energy use.

Source: Adapted by Anthony H. Cordesman from IEA, World Energy Outlook, 1996, pp. 189-191.

[1] Energy Information Agency, International Energy Outlook, 2000, DOE/EIA-0484(00), March 2000, p.229.
[2] Robert Cullen, "Uneasy Lies the Head That Wears a Crown", Nuclear Energy, Third Quarter 1995, p. 24.
[3] The Estimate, January 5, 1996, p. 11.