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The Changing Geopolitics of Energy - Part IV

Regional Developments in the Gulf and Energy Issues Affecting Iran, Iraq, and Libya

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Strategic Energy Initiative
Center for Strategic and International Studies

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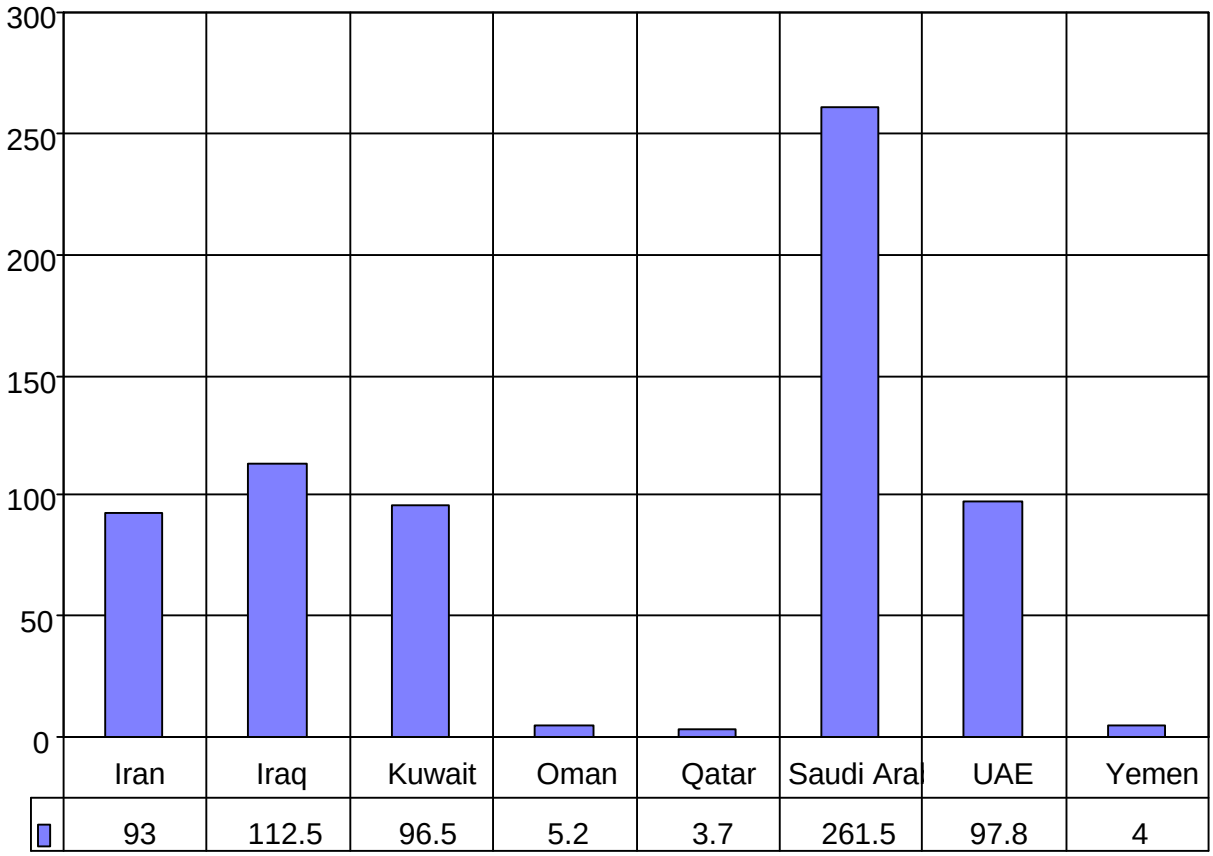
The Impact of Gulf Oil Reserves in Meeting Present and Future Demand

Proven Gulf Oil Reserves by Country

(in Billions of Barrels)

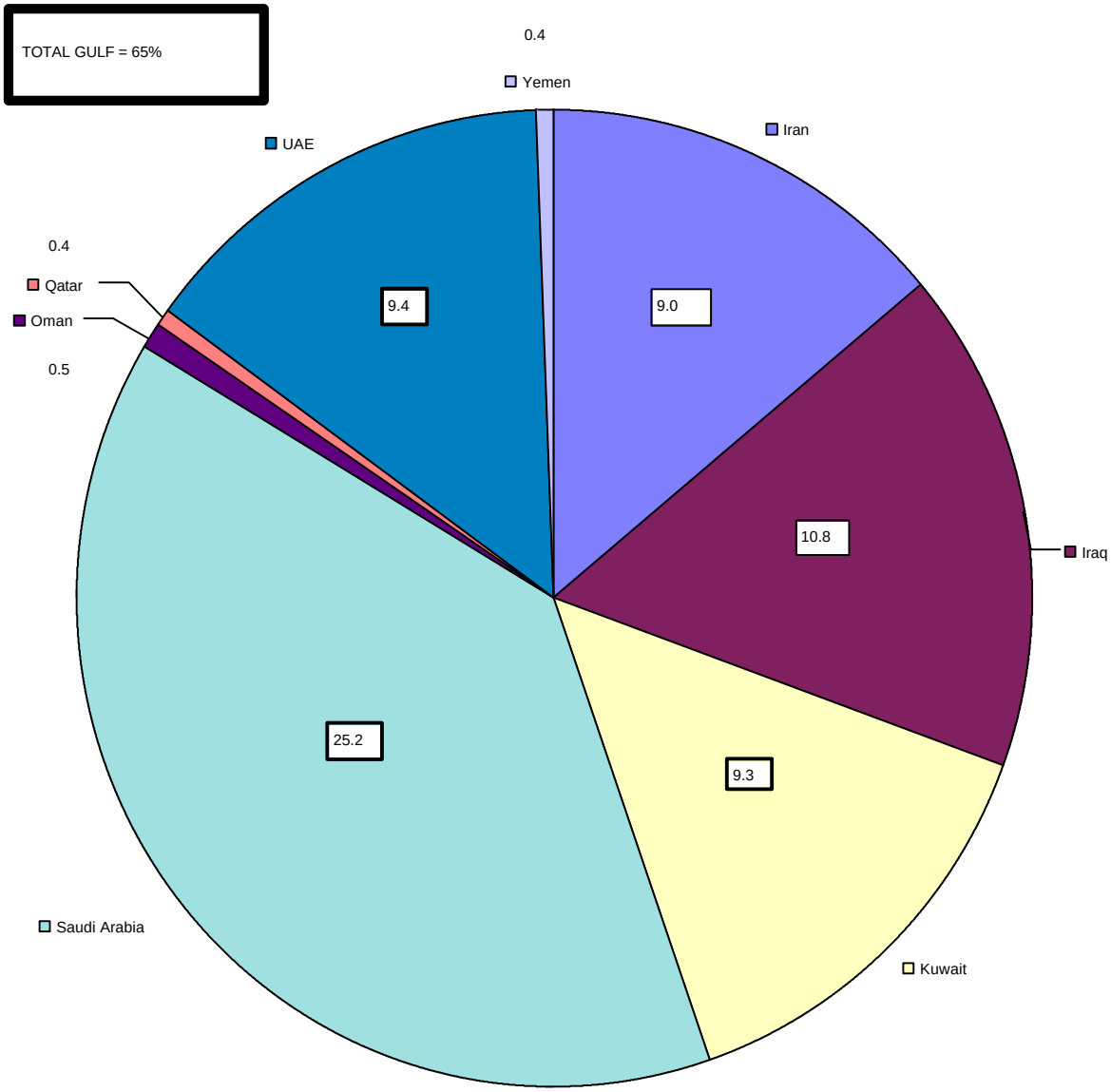


Country	End-1996	End-1997	Percent of World Proven Reserves	Reserve to Production Ratio In Years at Current Rates
Iran	93.0	93.0	9.0	69.0
Iraq	112.0	112.5	10.8	100+
Kuwait	96.5	96.5	9.3	100+
Oman	5.1.	5.2	0.5	15.8
Qatar	3.7	3.7	0.4	15.1
Saudi Arabia	261.5	261.5	25.2	79.5
UAE	97.8	97.8	9.4	100+
Yemen	4.0	4.0	0.4	28.9
Total	673.6	674.2	65.0	-

Source: BP Statistical Review of World Energy, 1997 and Middle Easy Economic Digest, July 24, 1998, p. 12.

Gulf Country Share of Total Proven World Oil Reserves

(in Percent of Gulf Total)



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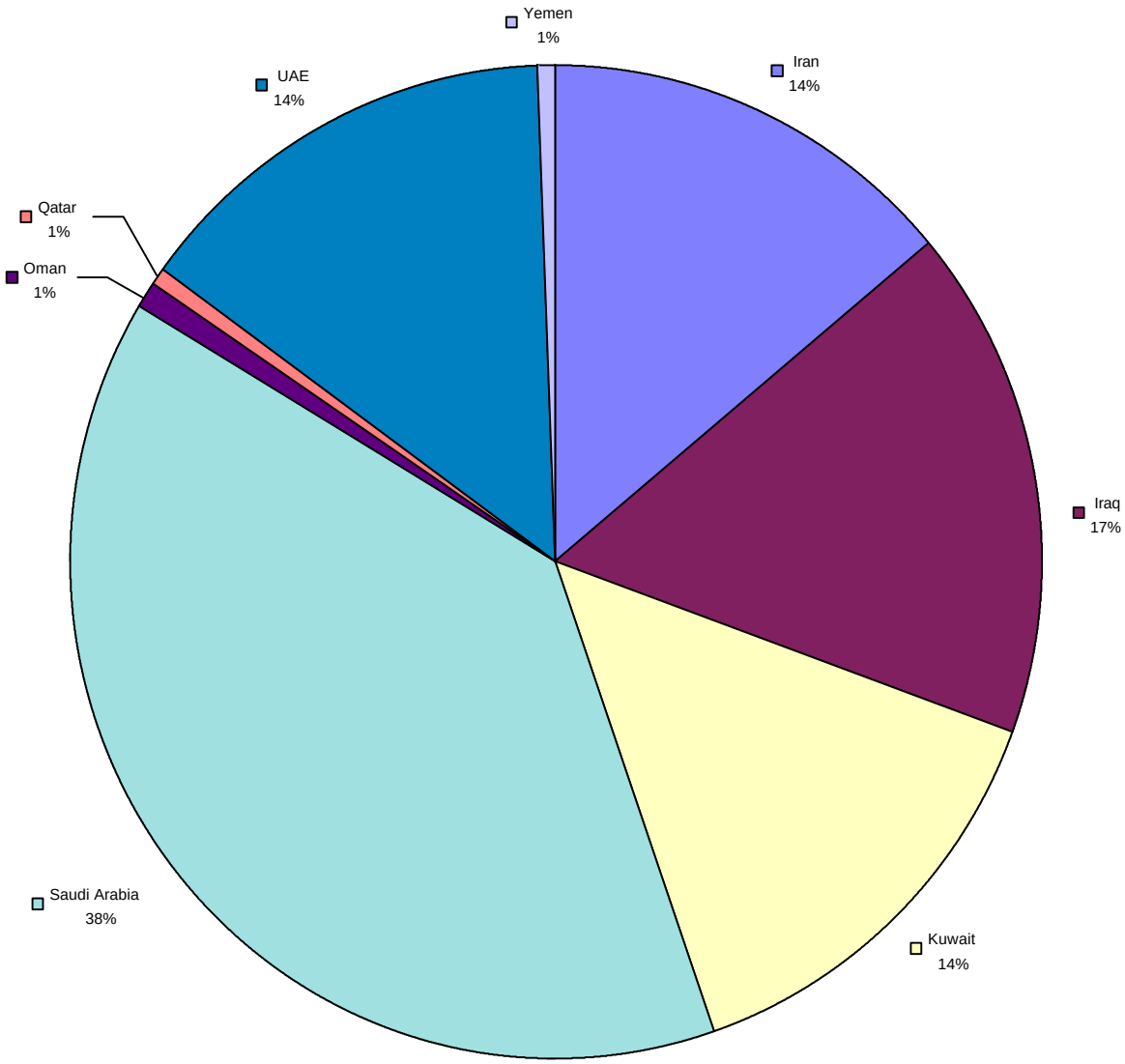


Source: BP Statistical Review of World Energy, 1997 and Middle Easy Economic Digest, July 24, 1998, p. 12.

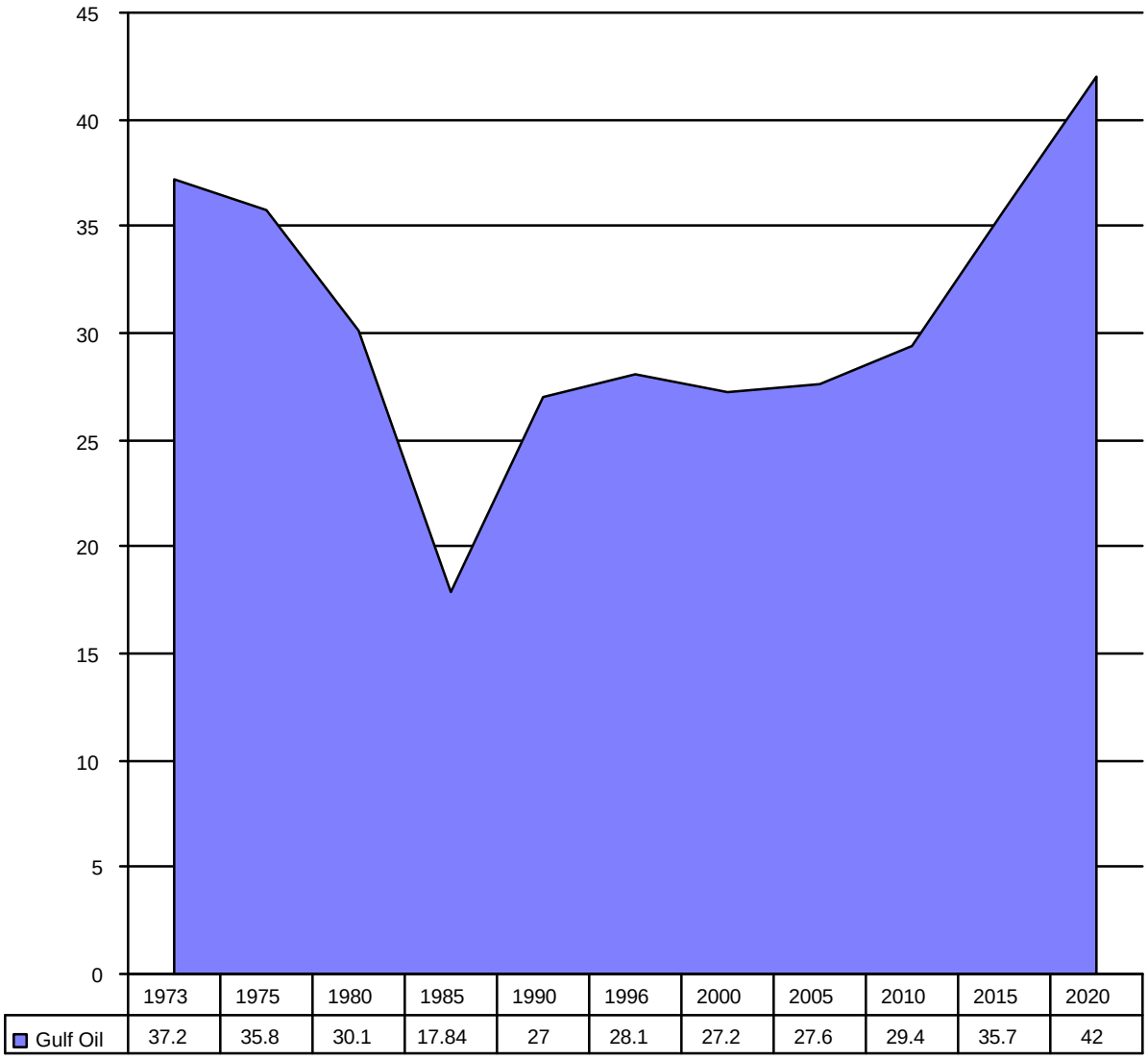
The Impact of Gulf Oil Production in Meeting Present and Future Demand

Key Gulf Issues

- **Saudi Arabia is the fulcrum of oil supply in terms of new capacity, surplus capacity, and impact on energy emergencies.**
- **Iranian, Iraqi, and Libyan production must come fully on-line to avoid over-dependence on Saudi Arabia and possible price rises.**
- **All Gulf exporters must make massive investments in new production capacity and related infrastructure to keep prices moderate. Ensure secure supply.**
- **Major uncertainties exist regarding Iranian oil and gas reserves.**
- **Regional exports could interact with Central Asian exports because of pipeline issues.**
- **New pipelines, LNG exports, Ports, and Tankers will change the strategic map.**
- **Oman, Qatar, Iran and Dubai will emerge as new "gas powers."**
- **Cumulative vulnerability of the region makes it a key strategic and geopolitical problem whose importance will increase steadily with time.**
- **At the same time, the Gulf will become primarily an Asian exporter, changing the trade and potentially strategic relations between regions.**

Gulf Production as an Estimated Percent of World Supply

(EIA Reference Case in Percent)

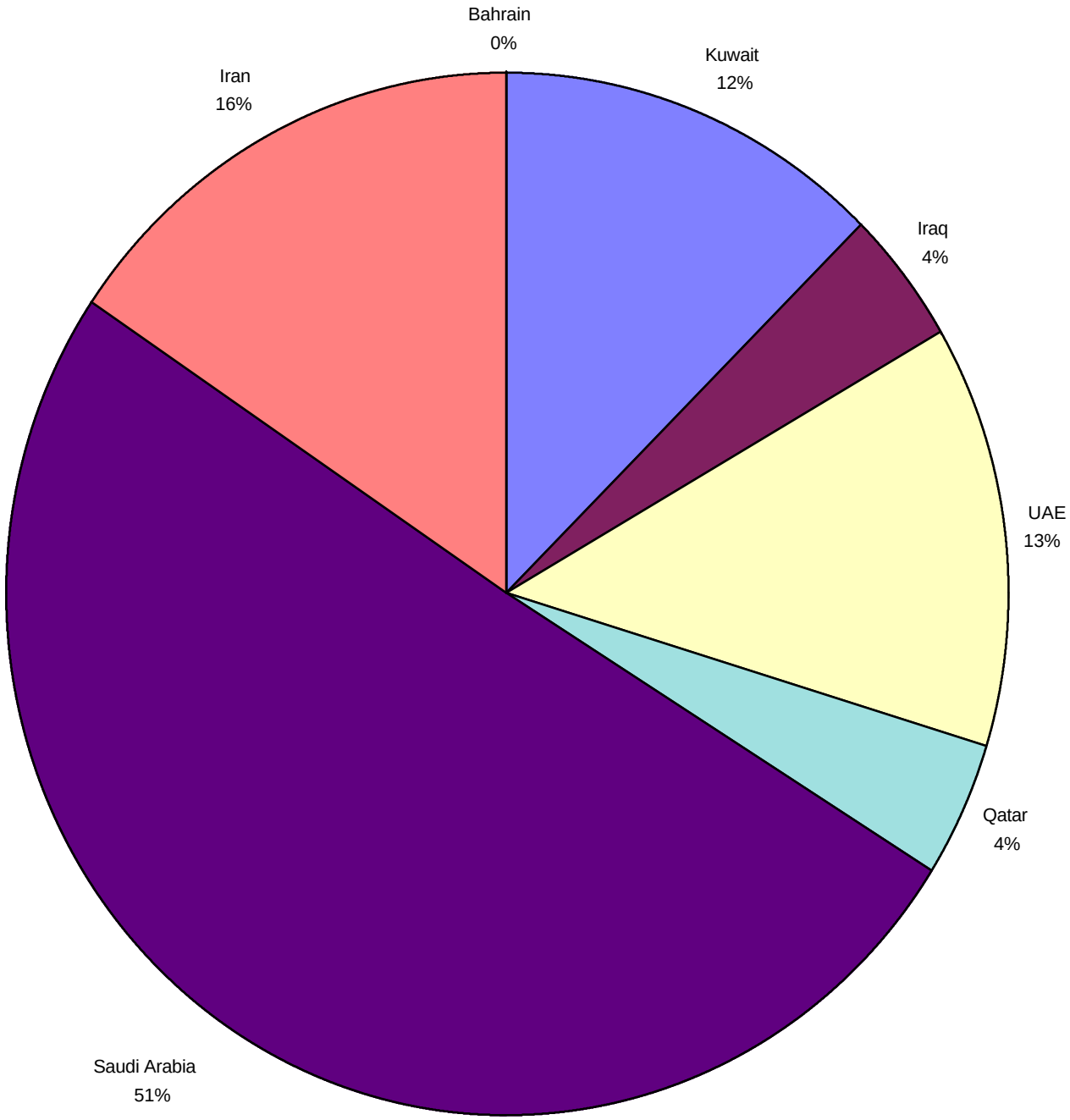


	1973	1975	1980	1985	1990	1996	2000	2005	2010	2015	2020
Gulf Oil	37.2	35.8	30.1	17.84	27	28.1	27.2	27.6	29.4	35.7	42

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. 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.

Gulf Production in the First Nine Months of 1997

(Production in MMBD)



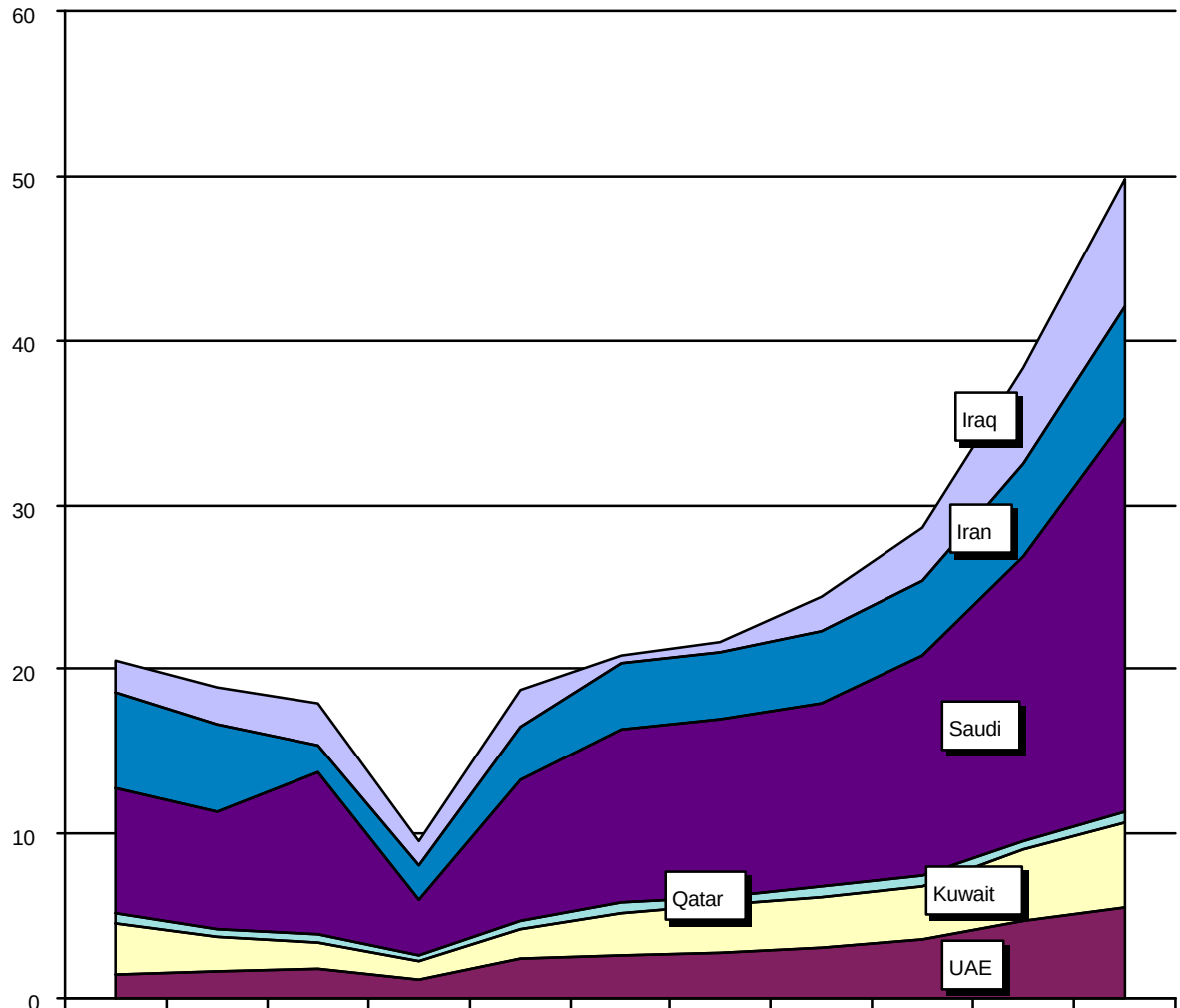
TOTAL AVERAGE PRODUCTION = 16.1 MMBD

Bahrain	Kuwait	Iraq	UAE	Qatar	Saudi Arabia	Iran
0.02	2	0.68	2.1	0.66	8.1	2.5

Source: Adapted by Anthony H. Cordesman from EIA, Persian Gulf Export Fact Sheet, Internet edition, February, 1998.

The Cumulative Need for Increased Gulf Production: Estimated Gulf Oil Production Capacity

(EIA Reference Gas in MMBD)

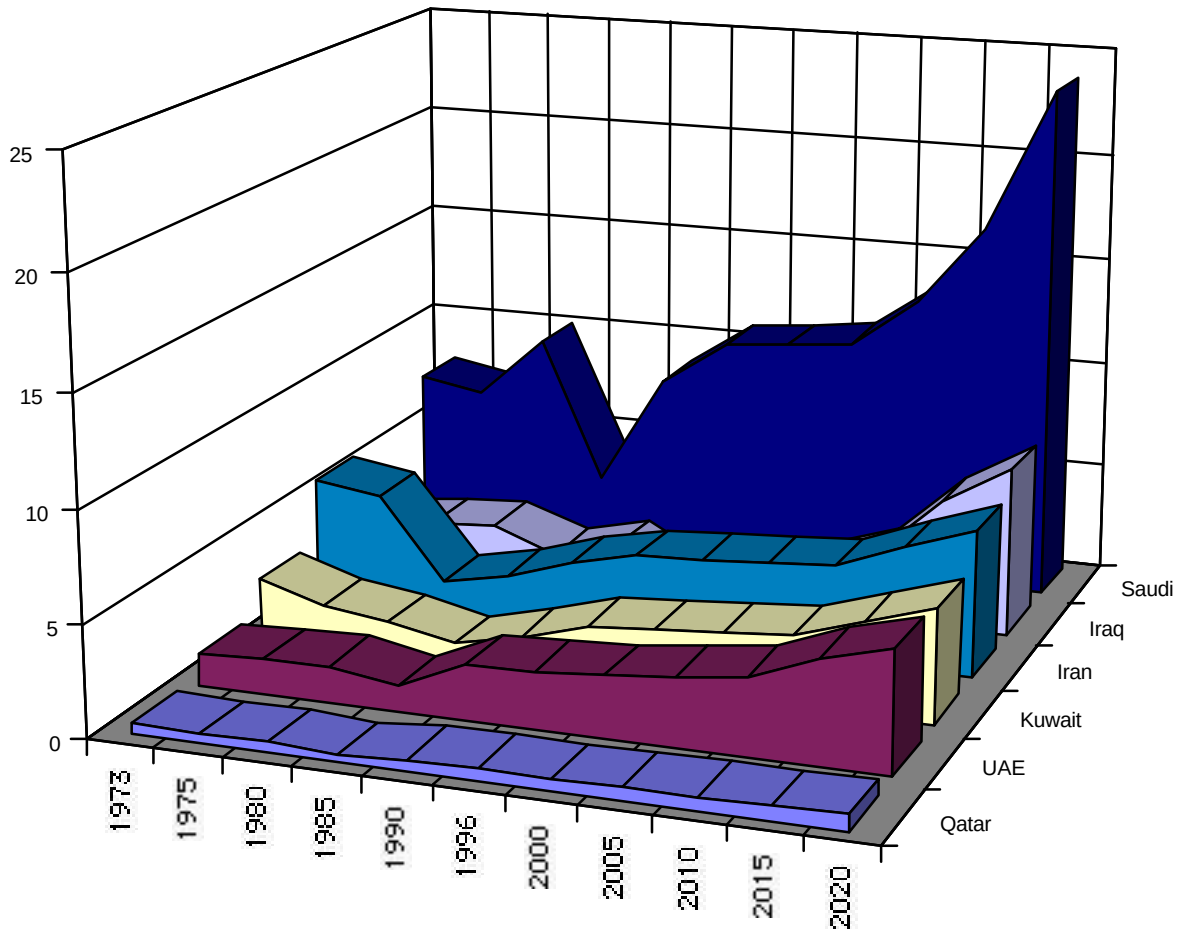


	1973	1975	1980	1985	1990	1996	2000	2005	2010	2015	2020
Iraq	2.018	2.262	2.514	1.433	2.2	0.6	0.6	2.1	3.2	5.9	7.8
Iran	5.8	5.35	1.662	2.25	3.2	3.9	4	4.3	4.5	5.7	6.8
Saudi	7.596	7.075	9.9	3.388	8.6	10.6	10.9	11.2	13.5	17.2	23.8
Qatar	0.57	0.438	0.472	0.301	0.5	0.6	0.5	0.6	0.6	0.6	0.7
Kuwait	3.02	2.084	1.656	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

Source: Adapted by Anthony H. Cordesman from EIA, International Energy Outlook, 1998, DOE/EIA-0484 (97), April 1998, pp. 157-160, and EIA, Monthly Energy Review, April, 1997, pp. 130-131.

Saudi Production Will Dominate World Export Supply and the Stability of Energy Exports: Estimated Gulf Oil Production Capacity

(EIA Reference Case in MMBD)



	1973	1975	1980	1985	1990	1996	2000	2005	2010	2015	2020
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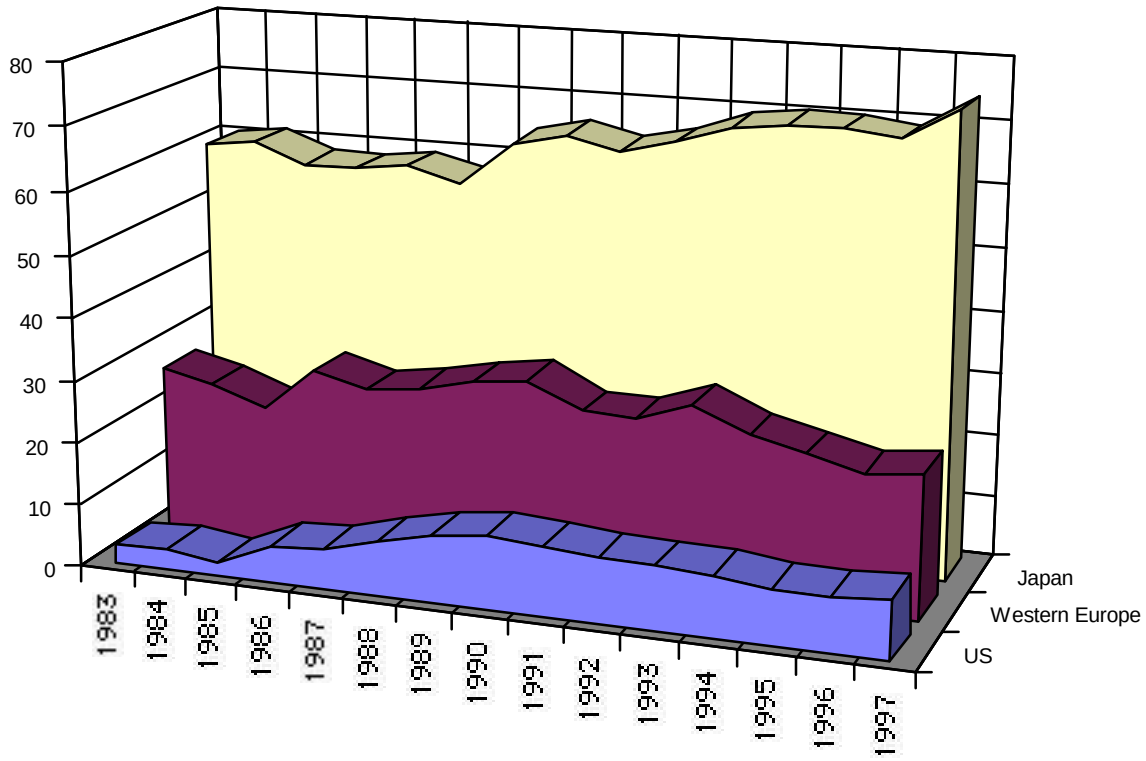
Source: Adapted by Anthony H. Cordesman from EIA, International Energy Outlook, 1998, DOE/EIA-0484 (97), April 1998, pp. 175, and EIA, Monthly Energy Review, April, 1997, pp. 130-131.

Patterns in Gulf Oil Exports as a Percent of Total Demand for Oil Imports and Domestic Oil by Principal Country and Area of Destination

(EIA Estimates in Percent)

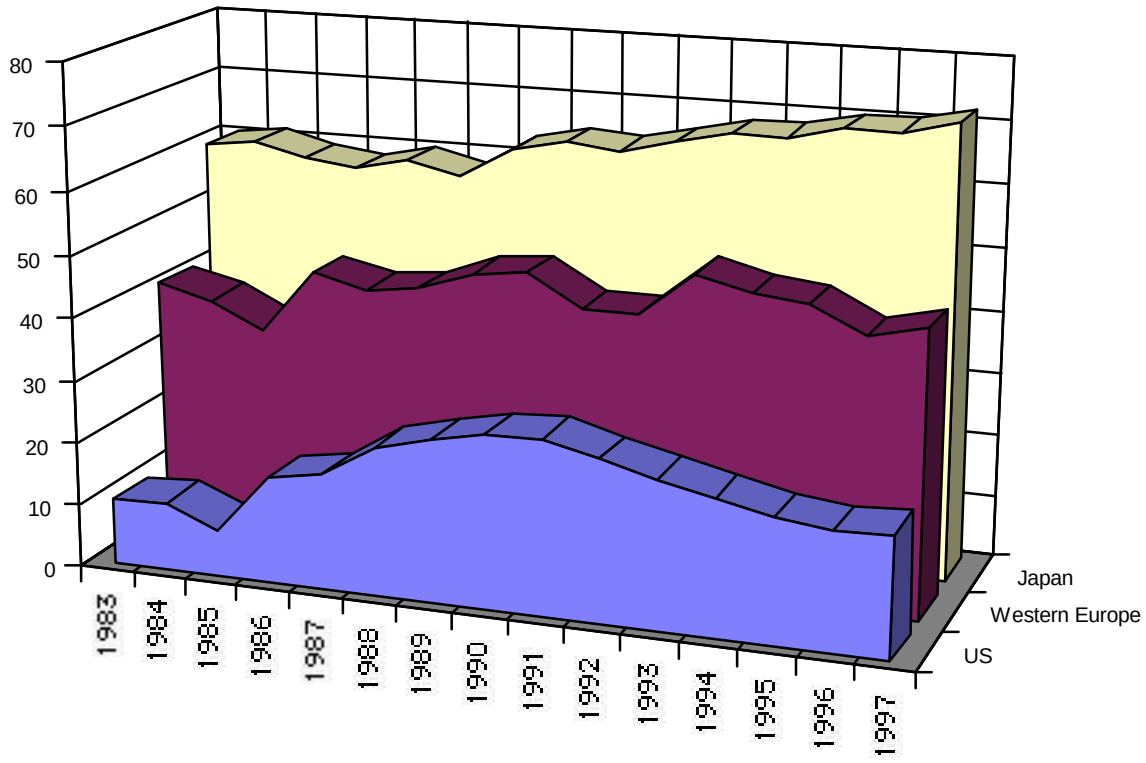


	1983	1984	1985	1986	1988	1989	1990	1991	1992	1993	1995	1996	1997
US	2.9	3.2	2	5.6	8.9	10.7	11.6	11	10.4	10.3	8.9	8.8	9.3
Western Europe	27	25	22	29	28	30	31	27	27	30	24	22	23
Japan	60	61	58	58	57	64	66	64	66	69	70	69	74

Source: Adapted by Anthony H. Cordesman from EIA, Persian Gulf Oil Export Fact Sheet, www.ei.DOE.GOV/EMERU/CABS/PGULF.HTML, February, 1998.

Patterns in Gulf Oil Exports as a Percent of Net Demand for Oil Imports by Principal Country and Area of Destination

(EIA Estimates in Percent)

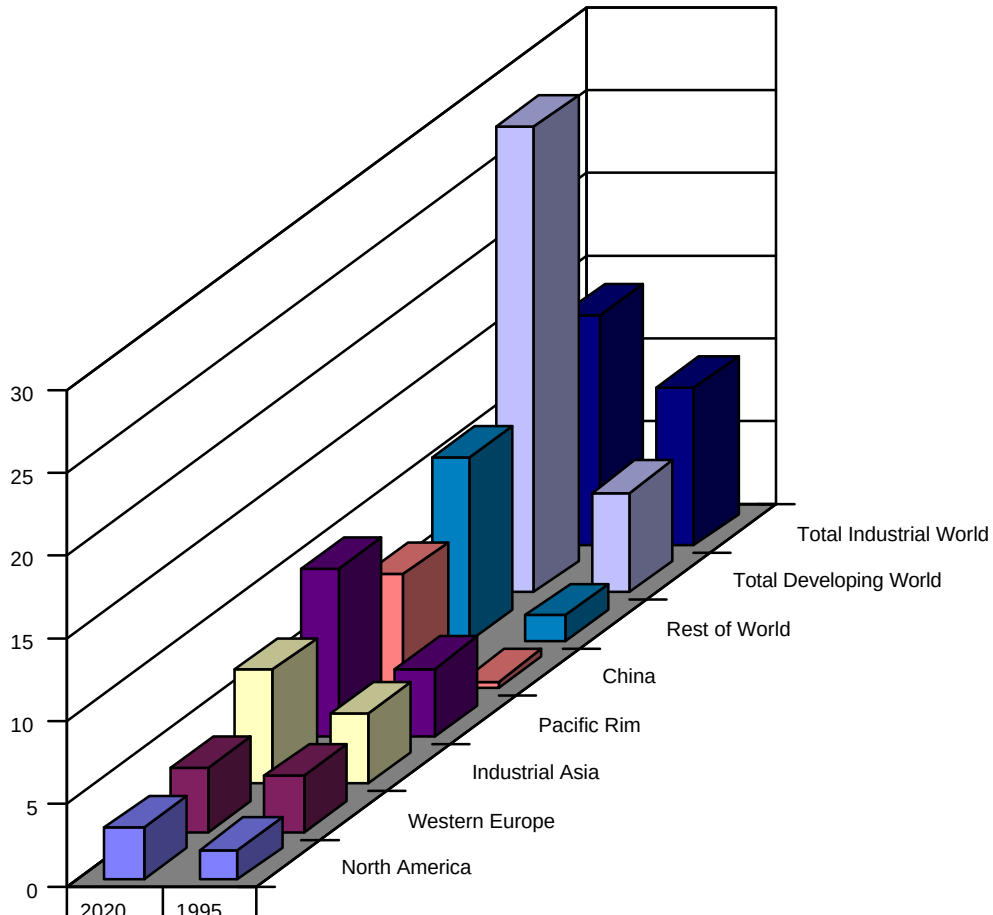


	1983	1984	1985	1986	1988	1989	1990	1991	1992	1993	1995	1996	1997
US	10.3	10.7	7.3	16.8	23.4	25.8	27.5	27.8	25.6	23.4	19.9	18.9	19.2
Western Europe	41	39	35	45	44	47	48	43	43	50	47	43	45
Japan	60	61	59	58	58	63	65	64	66	68	70	70	72

Source: Adapted by Anthony H. Cordesman from EIA, Persian Gulf Oil Export Fact Sheet, www.ei.DOE.GOV/EMERU/CABS/PGULF.HTML, February, 1998.

Where Gulf Petroleum Will Go in the Future: Estimated Gulf Exports by Region of Destination: 1995-2020

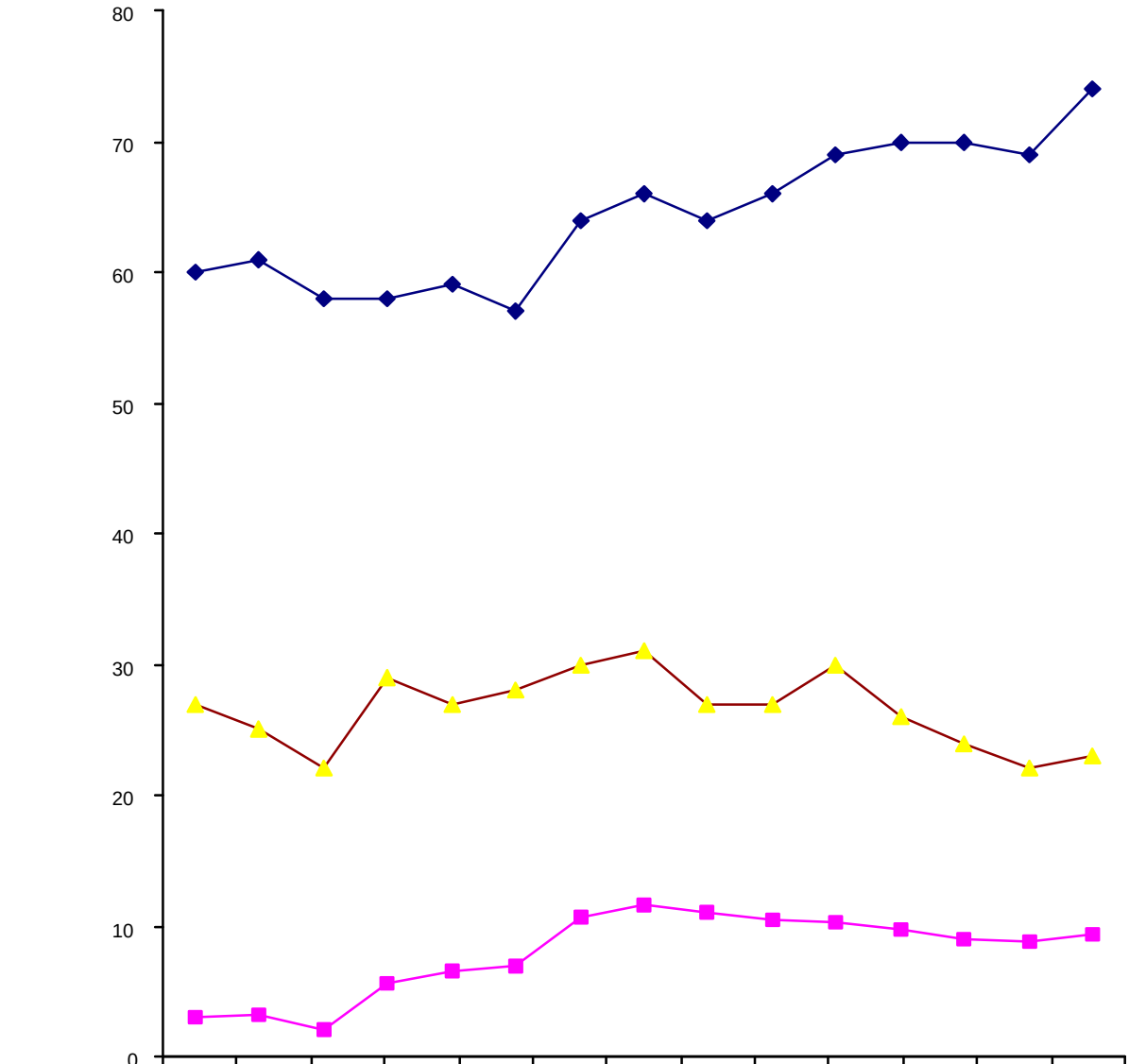
(MMBD, EIA Reference Case)



	2020	1995
North America	3.1	1.8
Western Europe	3.8	3.4
Industrial Asia	6.9	4.2
Pacific Rim	10.1	4.1
China	6.9	0.4
Rest of World	11	1.5
Total Developing World	28	6
Total Industrial World	13.8	9.4

Source: Adapted by Anthony H. Cordesman from EIA, International Energy Outlook, 1998, DOE/EIA-0484 (97), April 1998, p. 36.

Percent of Total Domestic and Crude Oil Coming from the Gulf by Major Consumer: 1983-1997



	1983	1984	1985	1986	1988	1989	1990	1991	1992	1993	1995	1996	1997
Japan	60	61	58	58	57	64	66	64	66	69	70	69	74
Europe	27	25	22	29	28	30	31	27	27	30	24	22	23
US	2.9	3.2	2	5.6	6.9	10.7	11.6	11	10.4	10.3	8.9	8.8	9.3

Bahrain	Kuwait	Iraq	UAE	Qatar	Saudi Arabia	Iran
0.02	2	0.68	2.1	0.66	8.1	2.5

Source: Adapted by Anthony H. Cordesman from EIA, Persian Gulf Export Fact Sheet, Internet edition, February, 1998.

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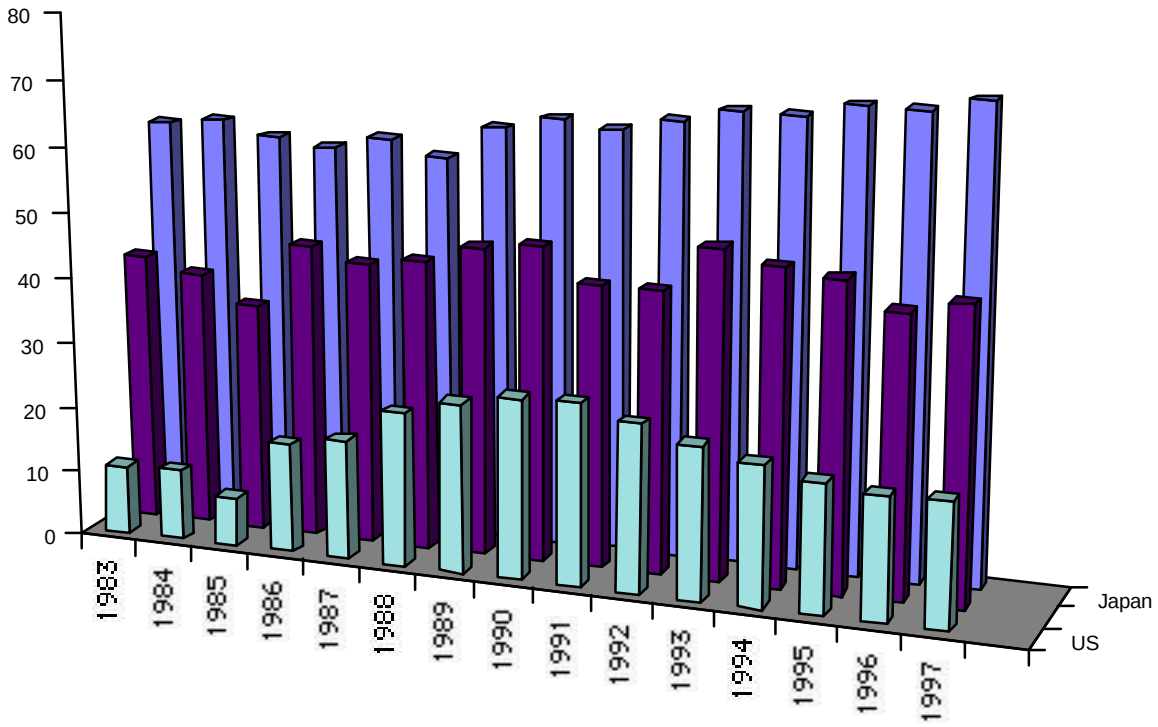


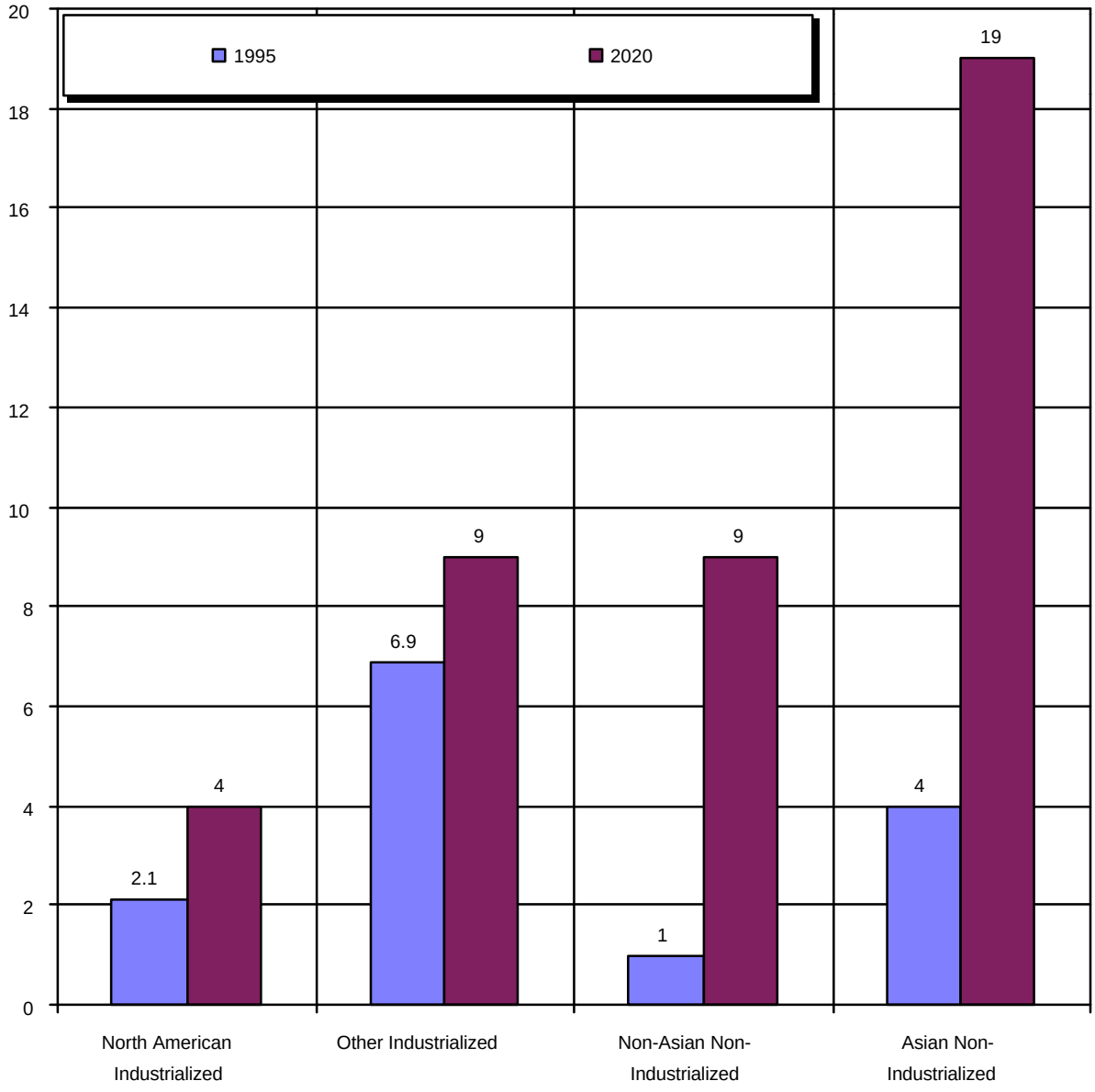
	1983	1984	1985	1986	1988	1989	1990	1991	1992	1993	1994	1996	1997	
US	10.3	10.7	7.3	16.8	23.4	25.8	27.5	27.8	25.6	23.4	21.5	18.9	19.2	
Europe	41	39	35	45	44	47	48	43	43	50	48	43	45	
Japan	60	61	59	58	58	63	65	64	66	68	68	70	72	

Bahrain	Kuwait	Iraq	UAE	Qatar	Saudi Arabia	Iran
0.02	2	0.68	2.1	0.66	8.1	2.5

Source: Adapted by Anthony H. Cordesman from EIA, Persian Gulf Export Fact Sheet, Internet edition, February, 1998.

The Direction of Gulf Oil Exports Will Decisively Shift Towards Asia: 1995-2020

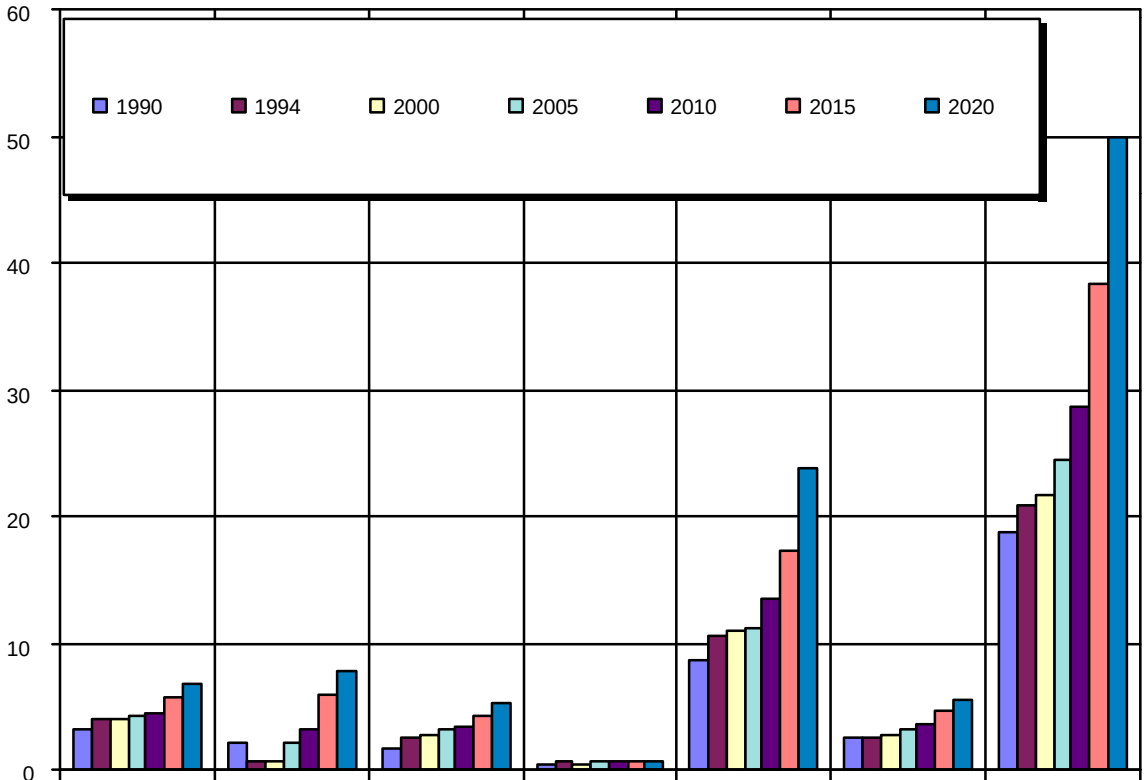
(Millions of Barrels per Day)



Source: Adapted by Anthony H. Cordesman from DOE/EIA, International Energy Outlook, 1998, April, 1998, DOE/EIA-484(97), Reference Case, p. 35.

Saudi Production Will Dominate Gulf Export Supply and the Stability of Energy Exports: Estimated Gulf Oil Production Capacity

(EIA Reference Gas in MMBD)

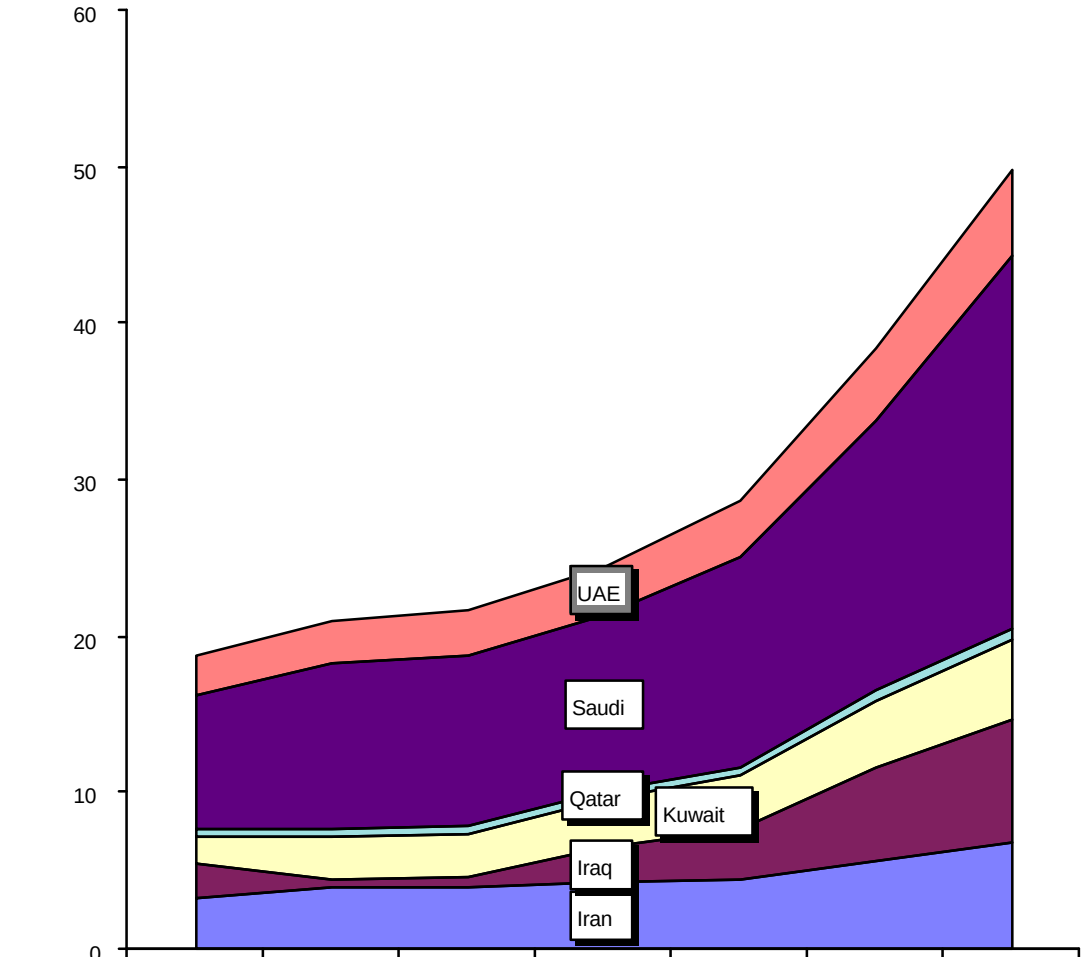


	Iran	Iraq	Kuwait	Qatar	Saudi	UAE	Total
1990	3.2	2.2	1.7	0.5	8.6	2.5	18.7
1994	3.9	0.6	2.6	0.6	10.6	2.6	20.9
2000	4	0.6	2.8	0.5	10.9	2.8	21.6
2005	4.3	2.1	3.1	0.6	11.2	3.1	24.4
2010	4.5	3.2	3.3	0.6	13.5	3.5	28.6
2015	5.7	5.9	4.3	0.6	17.2	4.7	38.4
2020	6.8	7.8	5.2	0.7	23.8	5.5	49.8

Source: Adapted by Anthony H. Cordesman from EIA, International Energy Outlook, 1998, pp. 175.

The Cumulative Need for Increased Gulf Production: Estimated Gulf Oil Production Capacity

(EIA Reference Gas in MMBD)

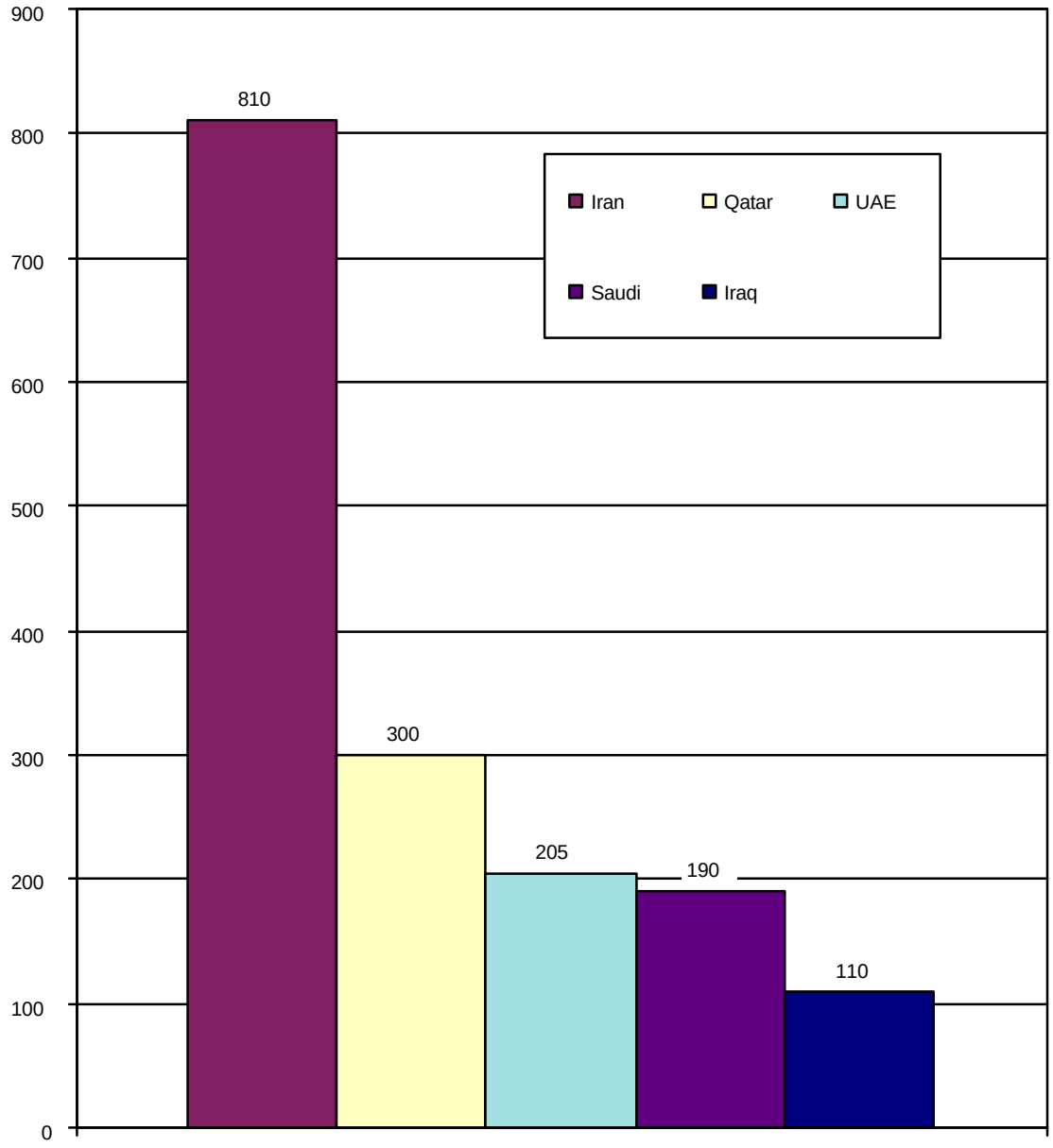


	1990	1996	2000	2005	2010	2015	2020
UAE	2.5	2.6	2.8	3.1	3.5	4.7	5.5
Saudi	8.6	10.6	10.9	11.2	13.5	17.2	23.8
Qatar	0.5	0.6	0.5	0.6	0.6	0.6	0.7
Kuwait	1.7	2.6	2.8	3.1	3.3	4.3	5.2
Iraq	2.2	0.6	0.6	2.1	3.2	5.9	7.8
Iran	3.2	3.9	4	4.3	4.5	5.7	6.8

Source: Adapted by Anthony H. Cordesman from EIA, International Energy Outlook, 1998, pp. 175.

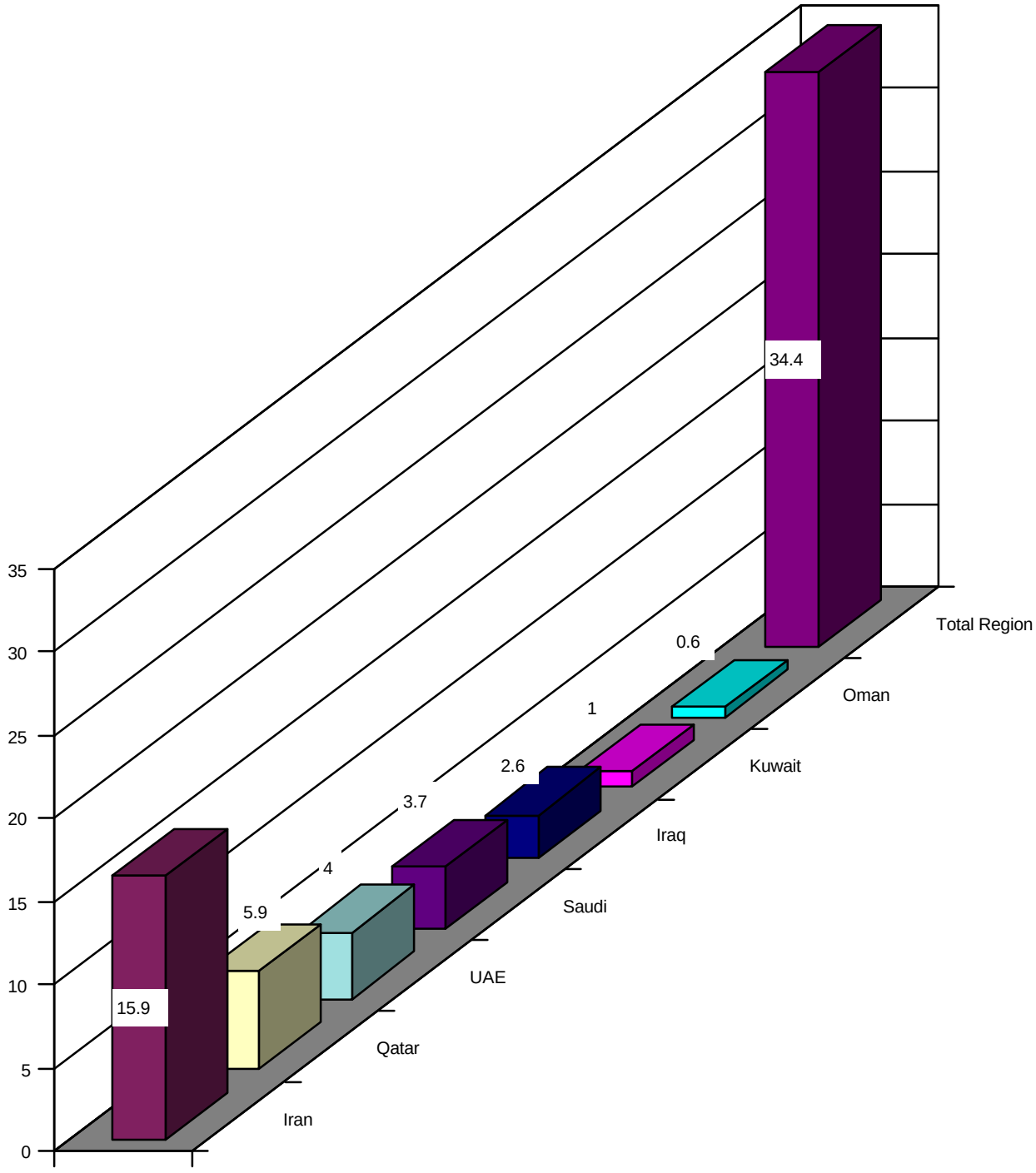
Gulf Gas Reserves by Nation

(Nations with At Least 100 Trillion Cubic Feet in Reserves)



Source: Adapted by Anthony H. Cordesman from DOE/EIA, International Energy Outlook, 1998, April, 1998, DOE/EIA-484(97), Reference Case, p. 51.

Gulf Gas Reserves as Percent of Total World Gas Reserves



Source: Adapted by Anthony H. Cordesman from DOE/EIA, International Energy Outlook, 1998, April, 1998, DOE/EIA-484(97), Reference Case, p. 51.

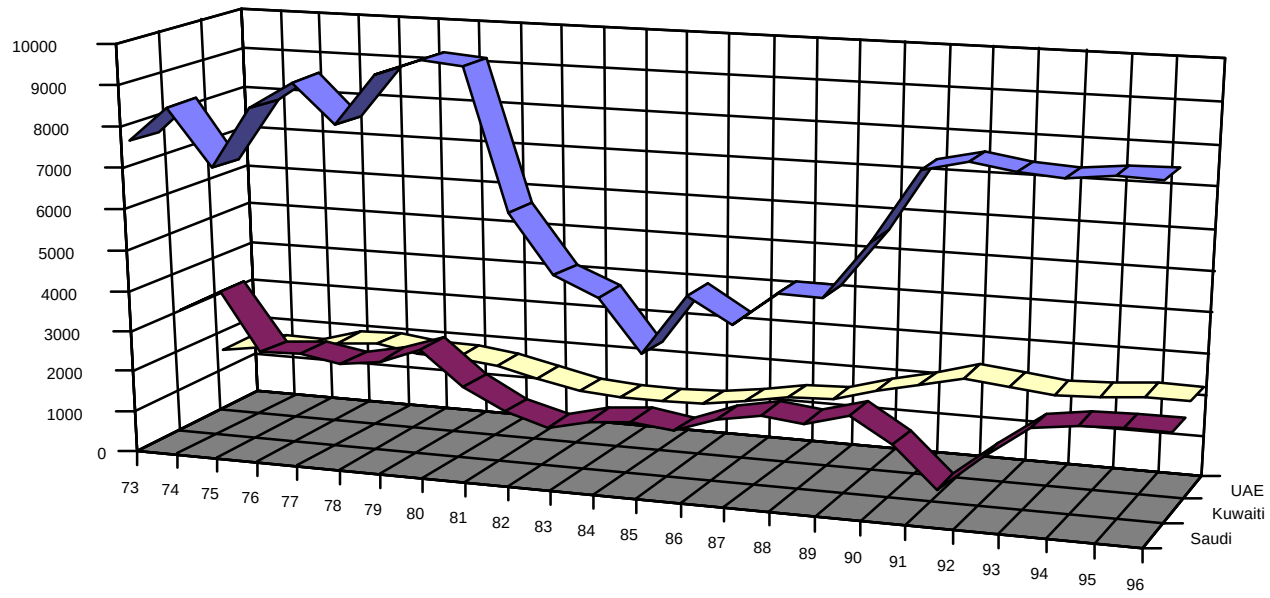
The Impact of Key Friendly Gulf States

Key Issues Affecting The Friendly Gulf States

- **Investment strategies for expanding production capacity.**
    - **Impact or non-impact of competition from Caspian, Central Asia, Iran, and Iraq.**
- **Impact of gas exports: New role for Oman, Qatar, and Dubai. Possible impact of new gas liquids technology.**
- **Internal stability given high population growth, declining real per capita income, failure to diversify economies, and dependence on foreign labor.**
    - **Long-term impact of dependence on South Asian labor.**
- **Shift from recycling petro-dollars to petro-yen: Economic and strategic impact of shift to Asia as primary customer.**
- **Where will net investment come from given 10 years of budget deficits, burgeoning population, massive infrastructure investment needs.**
- **New port, shipping facility, and pipeline requirements.**
- **The impact of the reemergence of Iraq and Iran, end of "Pax Americana," and revival of regional competition and balance of power strategy between the Southern Gulf states.**
- **Interaction with Yemen, other external relationships.**
- **Status of Arab-Israeli peace/conflict.**

A History of Uncertainty: Swings in Saudi, Kuwait, and UAE Petroleum Production: 1973-1996

(Thousands of Barrels Per Day)



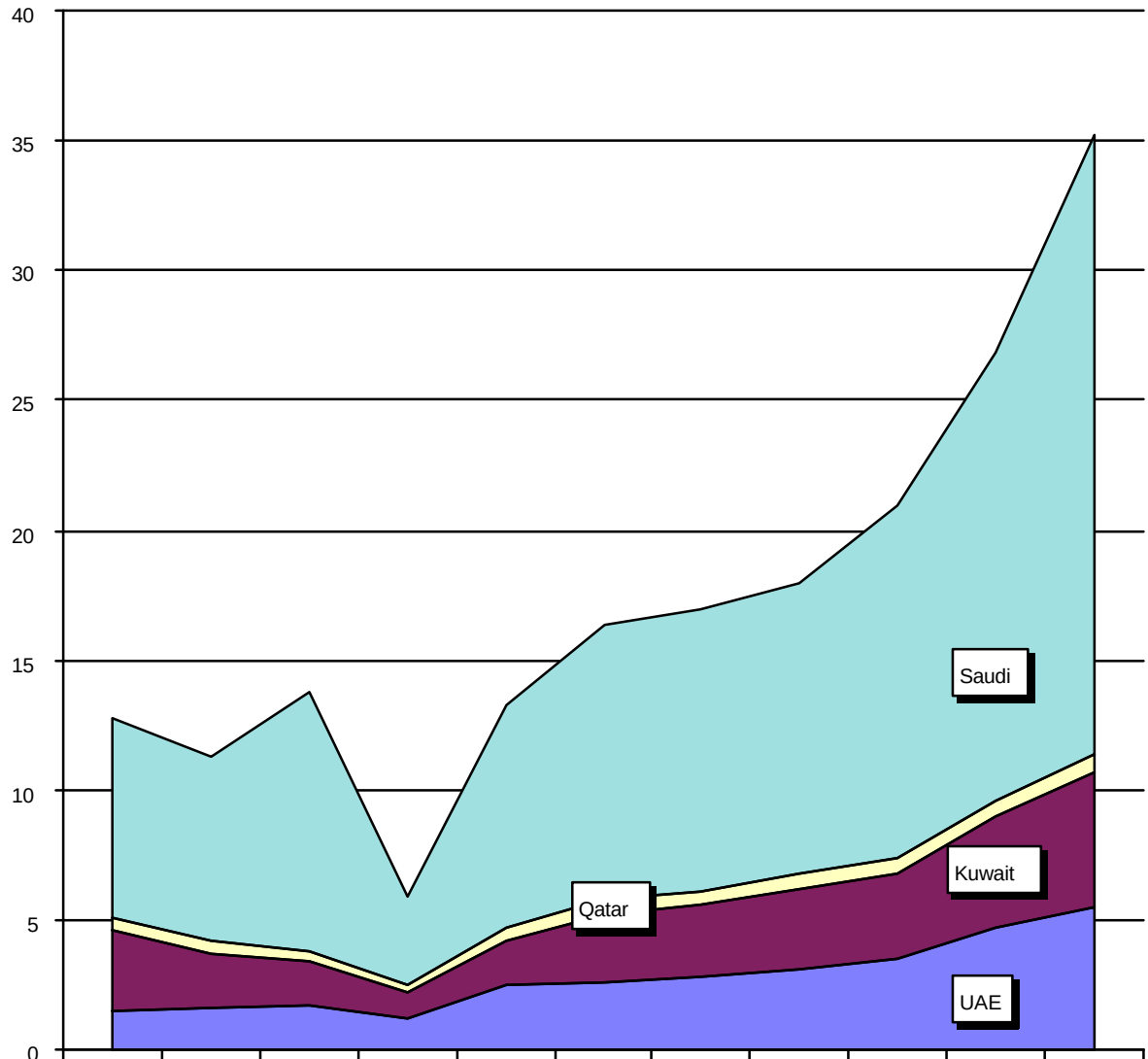
	73	74	75	76	77	78	79	80	81	82	83	84
Saudi	7596	8480	7075	8577	9245	8301	9532	9900	9815	6483	5086	4663
Kuwaiti	3020	3546	2084	2145	1969	2131	2500	1656	1125	823	1064	1157
UAE	1533	1679	1664	1936	1999	1831	1831	1709	1474	1250	1149	1146

	85	86	87	88	89	90	91	92	93	94	95	96
Saudi	3388	4870	4265	5086	5064	6410	8115	8332	8198	8120	8231	8218
Kuwaiti	1023	1419	1585	1492	1783	1175	190	1058	1852	2025	2057	2062
UAE	1193	1330	1541	1565	1860	2117	2386	2266	2159	2193	2279	2278

Source: Adapted by Anthony H. Cordesman from EIA, Monthly Energy Review, April, 1997, pp. 130-131.

The Cumulative Need for Increased Oil Production from Friendly Gulf States:

(Estimated Oil Production Capacity: EIA Reference Gas in MMBD)



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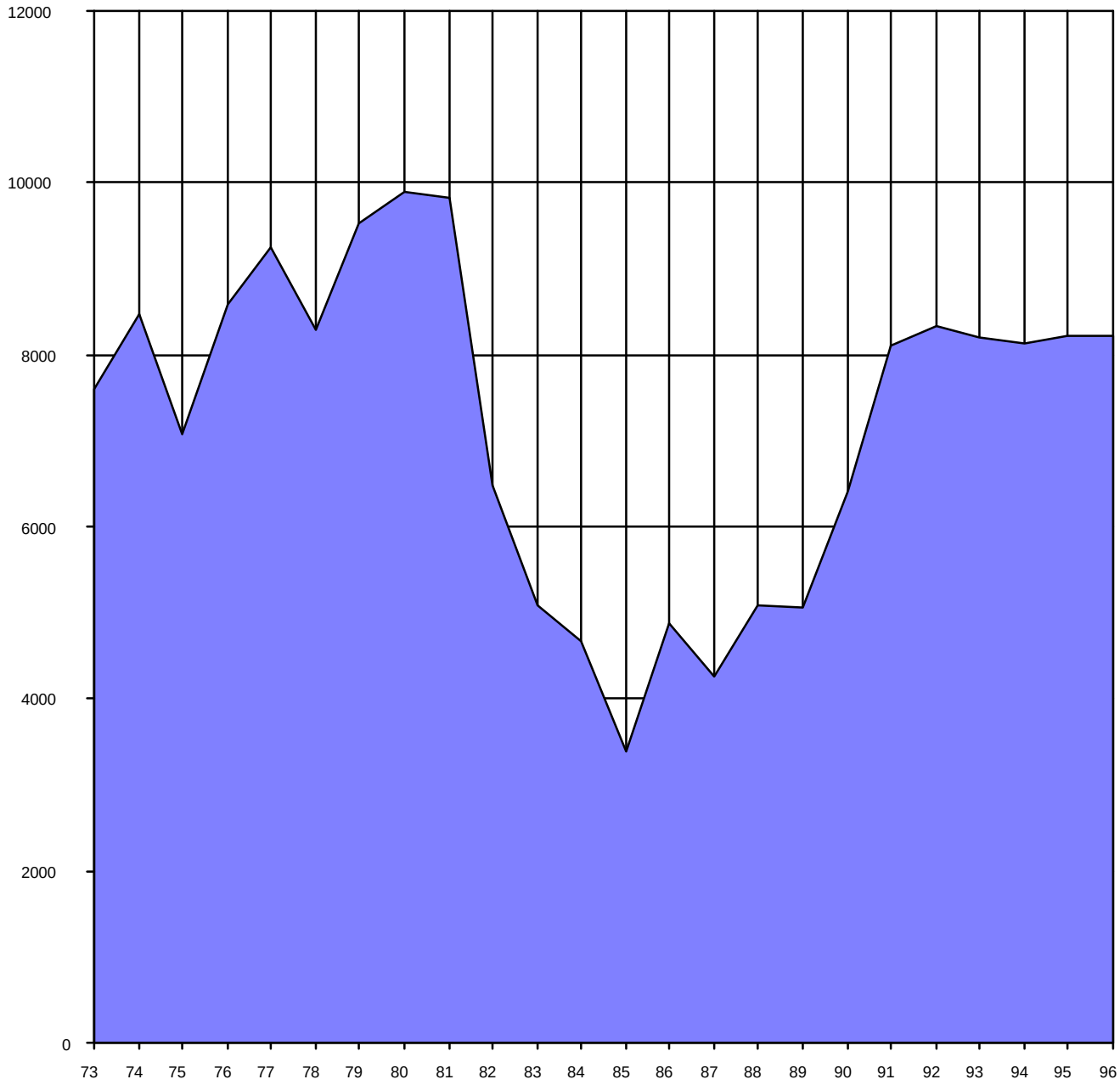
Source: Adapted by Anthony H. Cordesman from EIA, International Energy Outlook, 1998, DOE/EIA-0484 (97), April 1998, pp. 175, and EIA, Monthly Energy Review, April, 1997, pp. 130-131.

Key Issues Affecting Saudi Arabia

- **Will Saudi Arabia invest in expanding capacity to meet market demand, and maximize sales and revenues?**
- **Will Saudi Arabia retain surplus production capacity? Should Saudi Arabia be the only surplus producer?**
- **Where will net investment come from given 10 years of budget deficits, burgeoning population, massive infrastructure investment needs.**
- **New pipeline, port and shipping facility requirements.**
    - **Saudi Arabia's role as major tanker builder and owner.**
- **Saudi role in downstream operations.**
- **Saudi internal political stability. Succession issues. Islamic extremism.**

The True "Swing State:" Saudi Petroleum Production During 1973-1996

(Thousands of Barrels Per Day)



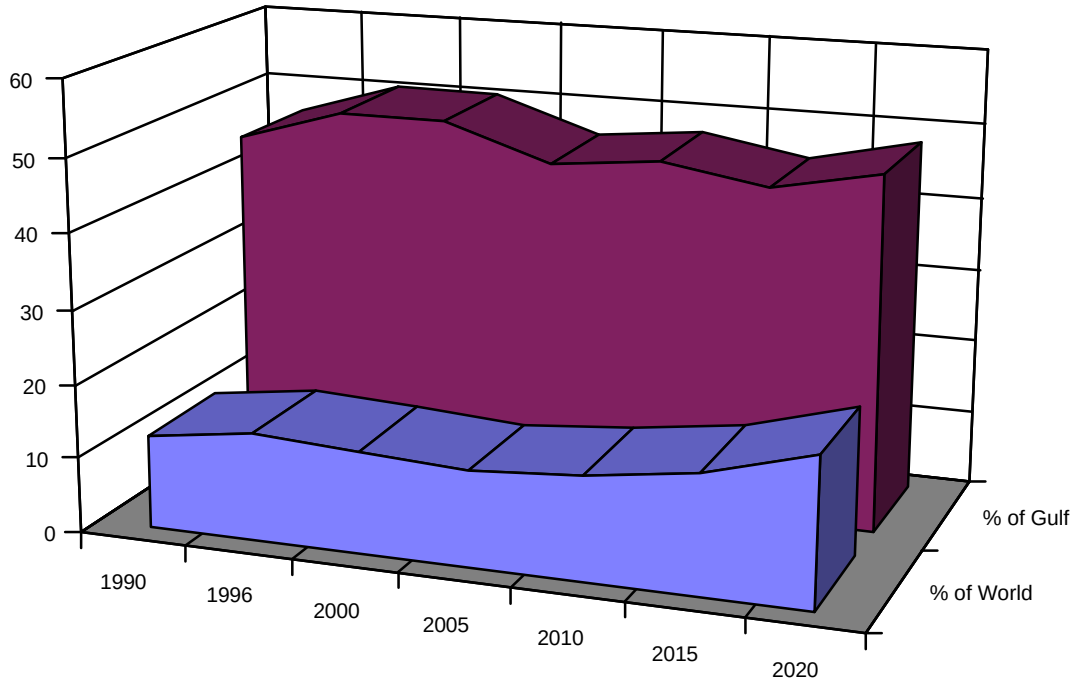
	73	74	75	76	77	78	79	80	81	82	83	84
Saudi	7596	8480	7075	8577	9245	8301	9532	9900	9815	6483	5086	4663

	85	86	87	88	89	90	91	92	93	94	95	96
Saudi	3388	4870	4265	5086	5064	6410	8115	8332	8198	8120	8231	8218

Source: Adapted by Anthony H. Cordesman from EIA, Monthly Energy Review, April, 1997, pp. 130-131.

Saudi Production as an Estimated Percent of World Supply

(EIA Reference Case in Percent)

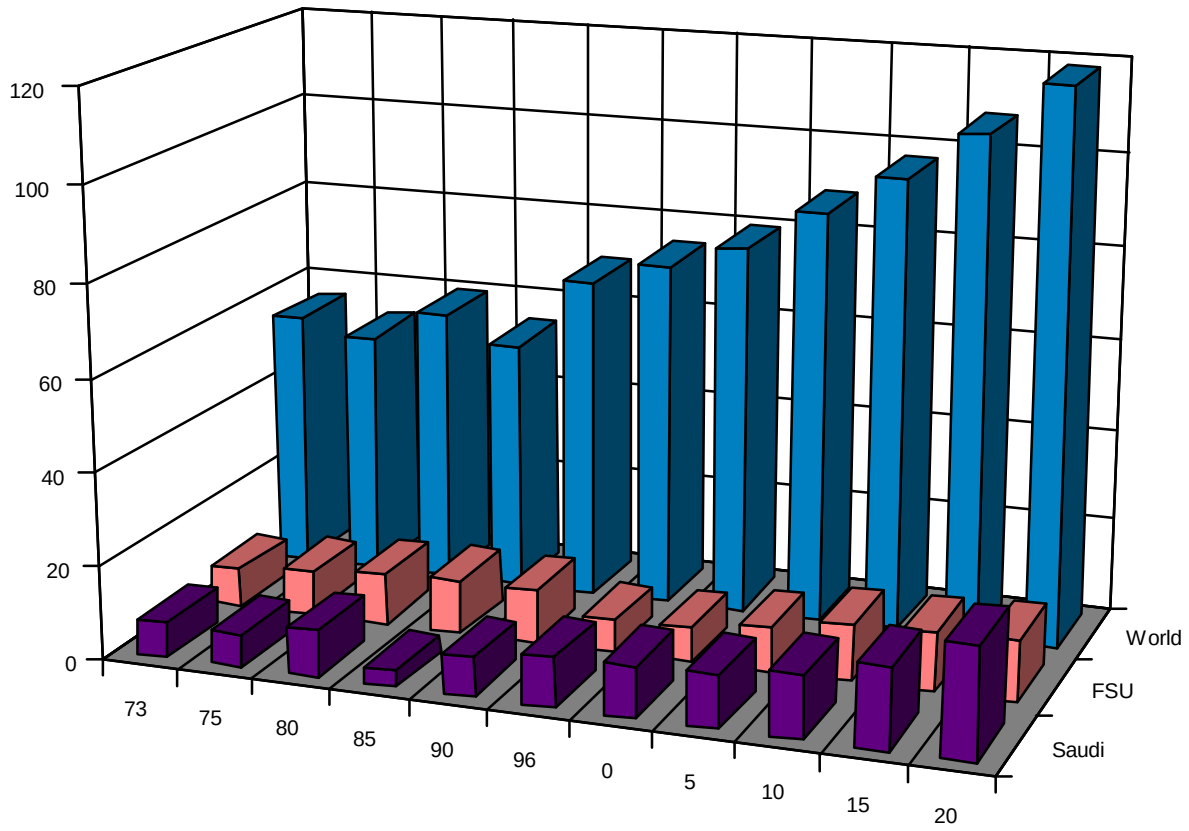


	1990	1996	2000	2005	2010	2015	2020
% of World	12.4	14.2	13.7	12.7	13.9	16	20
% of Gulf	46	50.7	50.5	45.9	47.2	44.8	47.8

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. 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.

Saudi Arabia Stability Presents the Highest Potential Single Country Risk to World Oil Output: 1995-2020

(EIA Reference Case Estimate in MMBD)

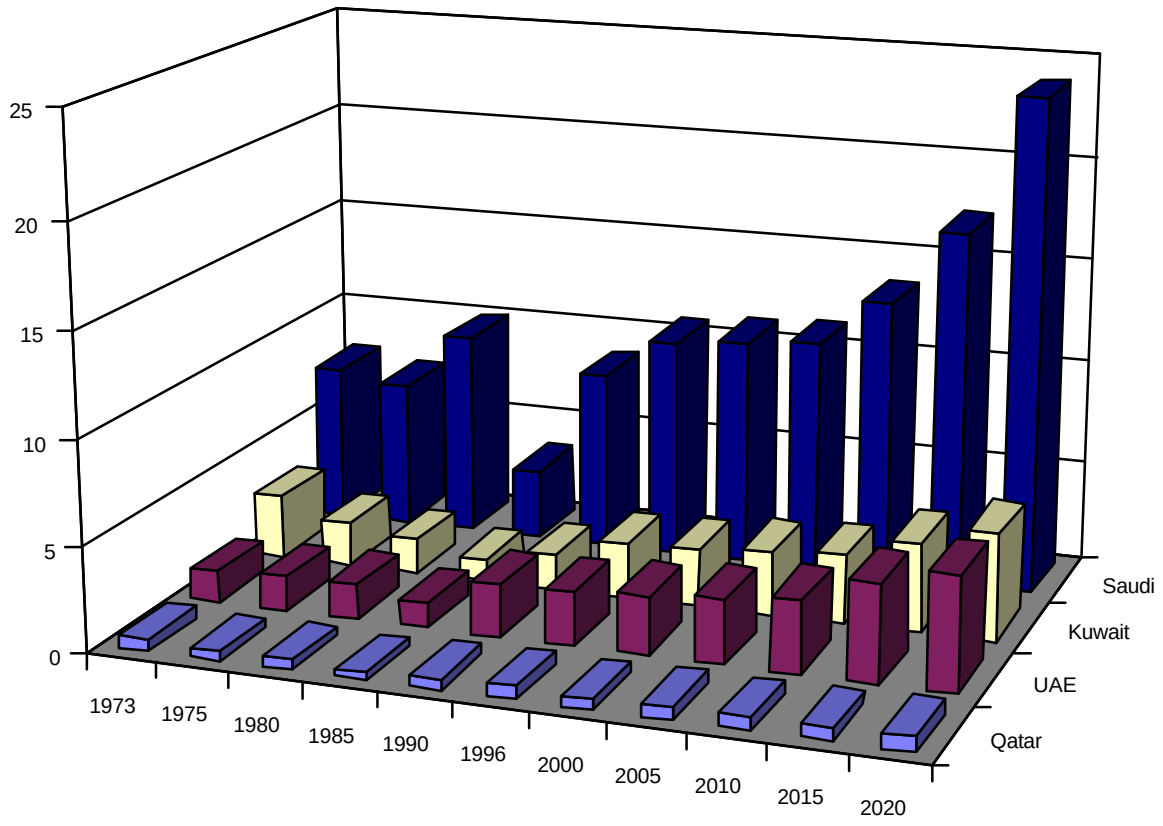


	73	75	80	85	90	96	0	5	10	15	20
Saudi	7.596	7.075	9.9	3.388	8.6	10.6	10.9	11.2	13.5	17.2	23.8
FSU	8.32	9.532	11.11	11.585	11	7.1	7.5	9.5	12.1	12.6	13.2
World	55.7	52.8	59.6	54	69.5	74.4	79.5	88.3	97.3	107.4	118.7

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. 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.

Saudi Production Will Dominate Southern Gulf Production: Estimated Oil Production Capacity

(EIA Reference Gas in MMBD)

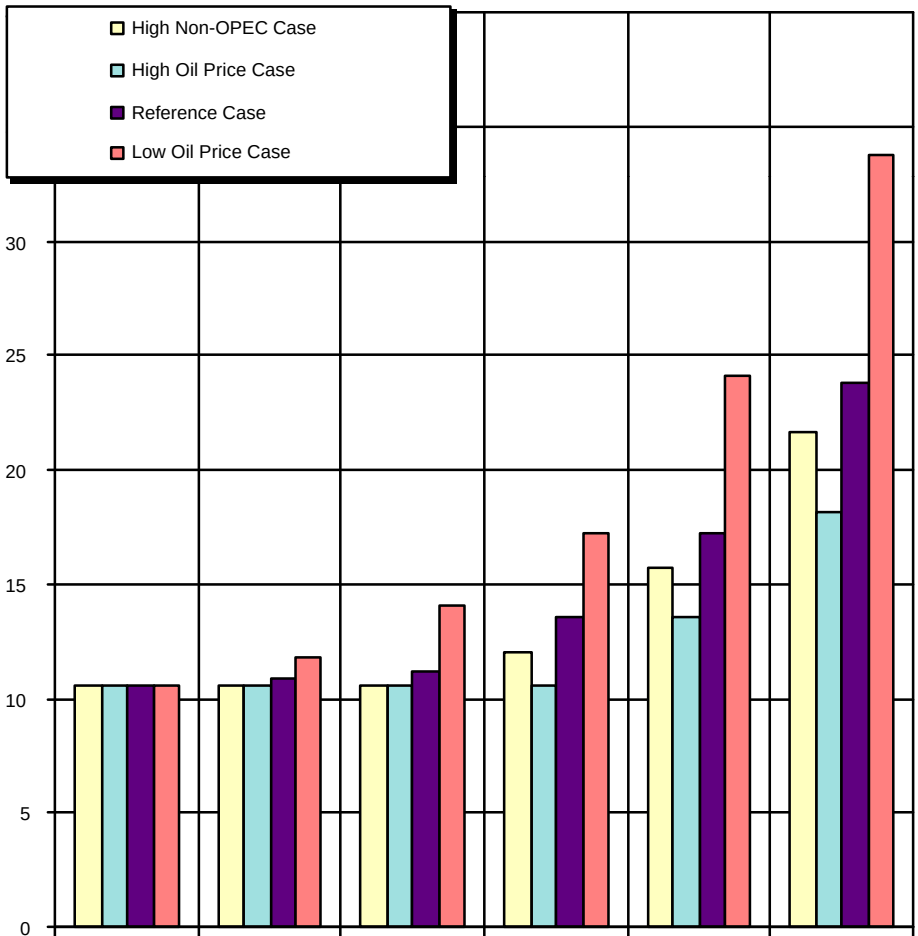


	1973	1975	1980	1985	1990	1996	2000	2005	2010	2015	2020
Qatar	0.57	0.438	0.472	0.301	0.5	0.6	0.5	0.6	0.6	0.6	0.7
UAE	1.533	1.644	1.709	1.193	2.5	2.6	2.8	3.1	3.5	4.7	5.5
Kuwait	3.02	2.084	1.656	1.023	1.7	2.6	2.8	3.1	3.3	4.3	5.2
Saudi	7.596	7.075	9.9	3.388	8.6	10.6	10.9	11.2	13.5	17.2	23.8

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.

Saudi Willingness to Increase Production Capacity is Critical World Oil Supply and Surplus Capacity

(EIA Reference Case Estimate in MMBD)

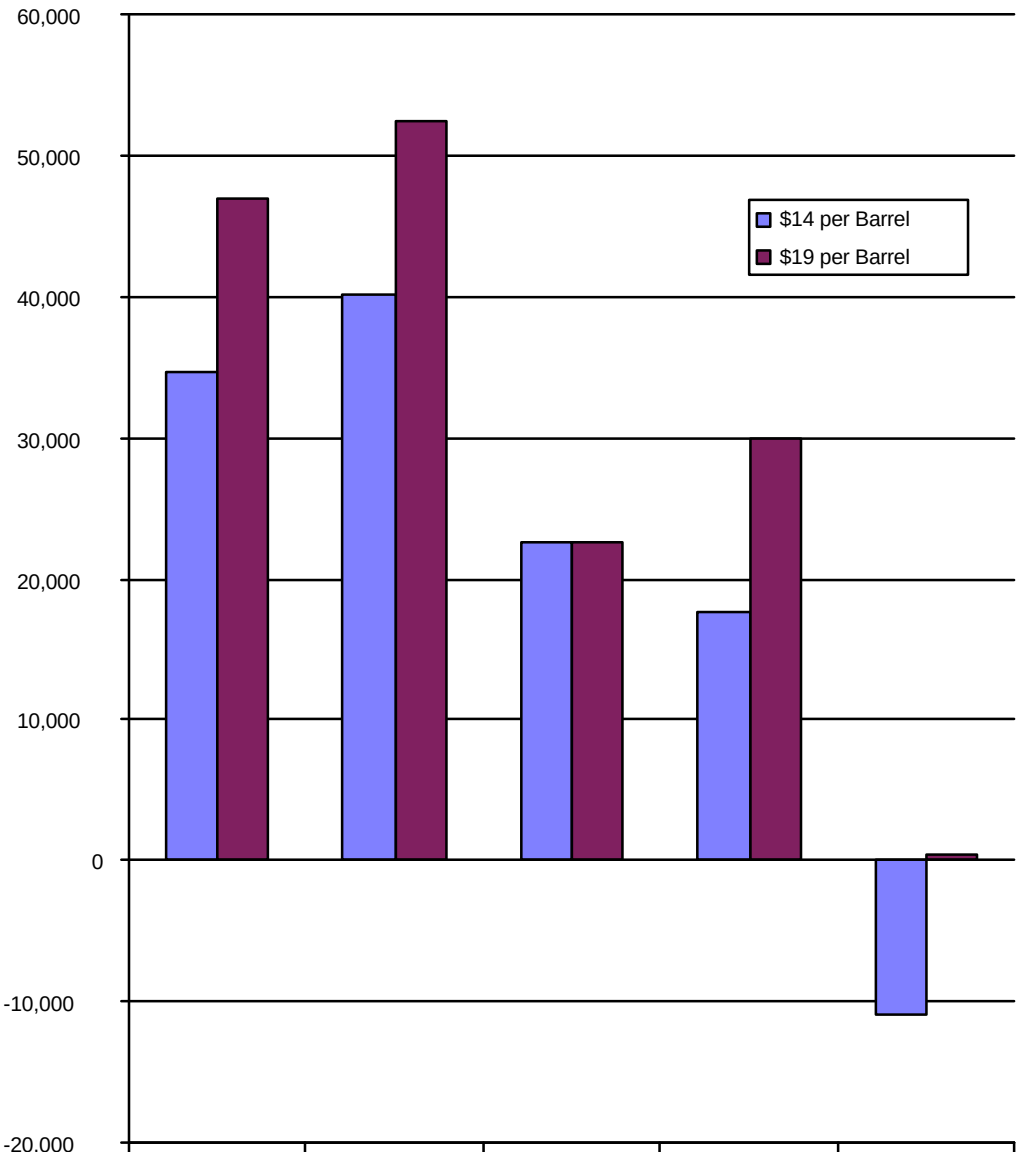


	1996	2000	2005	2010	2015	2020
High Non-OPEC Case	10.6	10.6	10.6	12	15.7	21.6
High Oil Price Case	10.6	10.6	10.6	10.6	13.5	18.2
Reference Case	10.6	10.9	11.2	13.5	17.2	23.8
Low Oil Price Case	10.6	11.8	14.1	17.2	24.1	33.7

Source: Adapted by Anthony H. Cordesman from EIA, International Energy Outlook, 1998, DOE/EIA-0484 (97), April 1998, pp. 175-178, 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.

The Dependence of the Saudi Economy on Oil Prices

($US 1,000s)

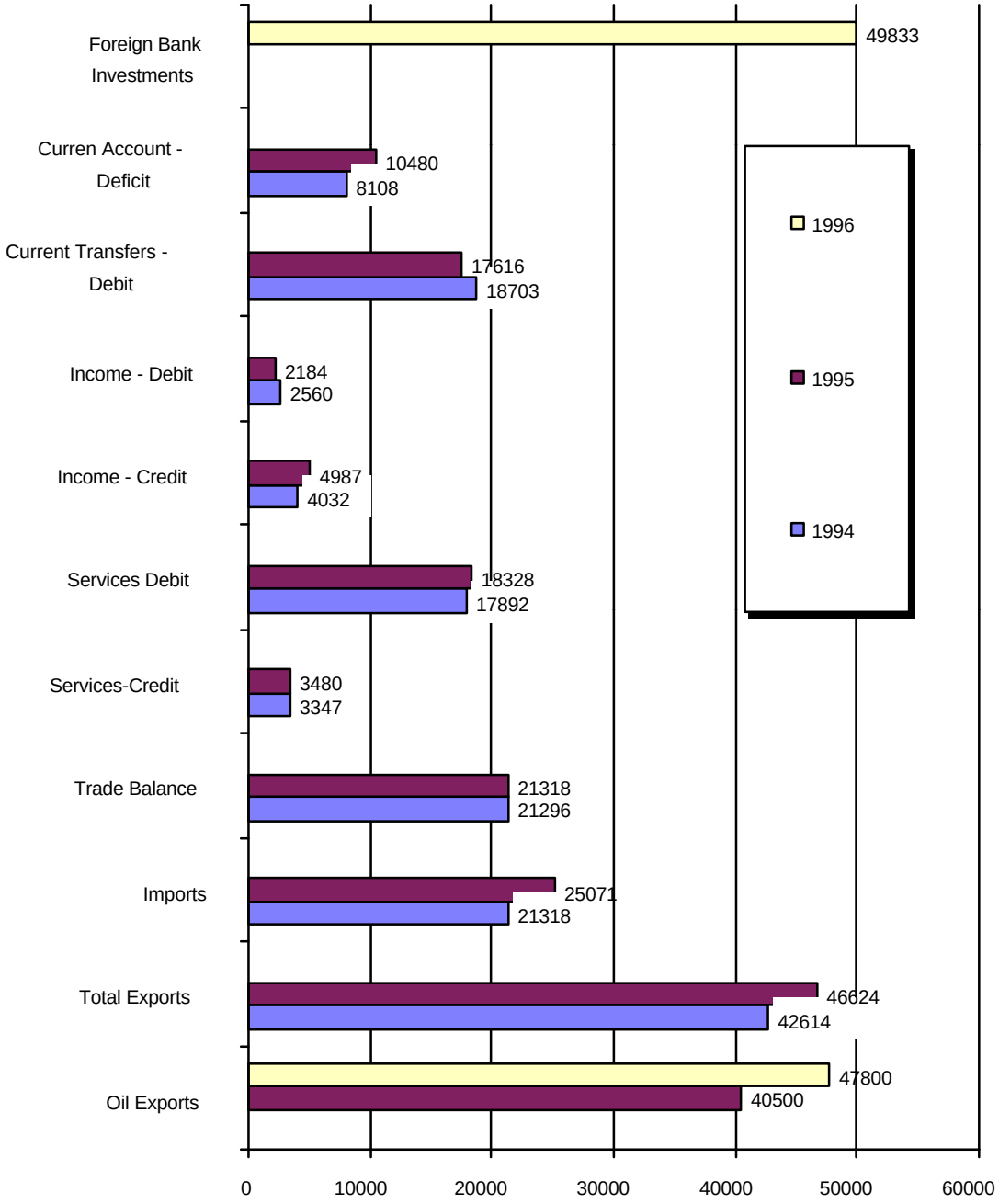


	Oil Exports	Total Exports	Imports	Trade Balance	Current Account
$14 per Barrel	34,610	40100	22500	17610	-10980
$19 per Barrel	46970	52470	22500	29970	470

Source: Adapted from Middle East Economic Digest, September 27, 1996, p. 5

Recent Saudi Economics are Mixed In Spite of Rises in Oil Prices Because of Massive Service Costs: 1994-1996

($US Millions - Ignores Substantial Additional Military Imports)



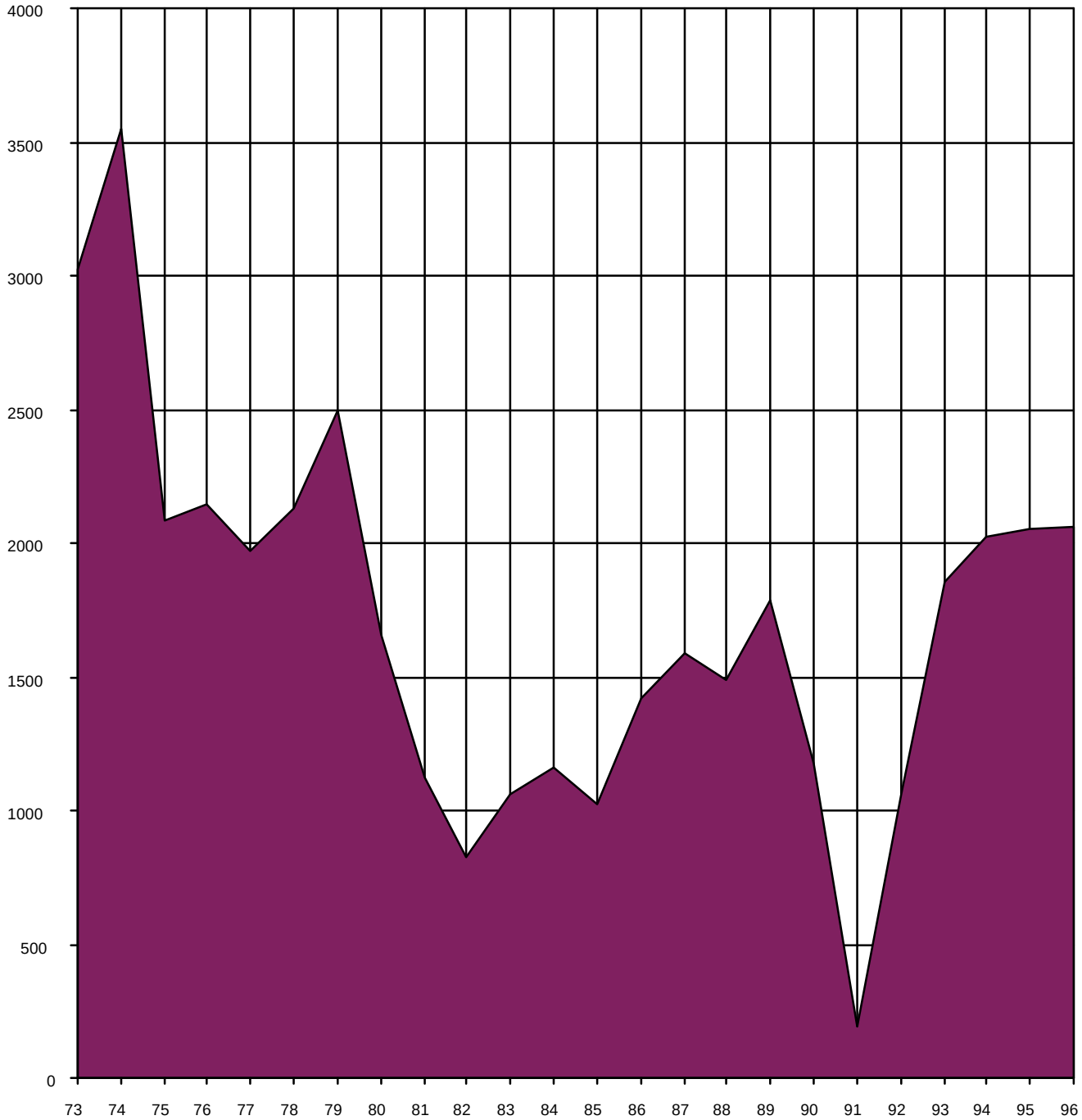
Source: Adapted by Anthony H. Cordesman from Middle East Economic Digest, September 27, 1996, p. 5; November 29, 1996, p. 28; December 6, 1996, p. 6; Economist, December 21, 1996, p. 54.

Key Issues Affecting Kuwait

- **Acute vulnerability to a re-emergent Iraq.**
- **"Failed society:" Rentier state where more than 90% of native males work for government; Minimal social commitment to defense.**
- **"Successful society:" Lesson in terms of increasing democracy.**
- **Failure to modernize oil production capacity; develop coherent production expansion strategy.**
- **"Arrogant Kuwaitis:" Isolation from other Southern Gulf states.**
- **Failure to develop effective defense cooperation with Saudi Arabia.**

The Impact of War: Kuwaiti Petroleum Production: 1973-1996

(Thousands of Barrels Per Day)



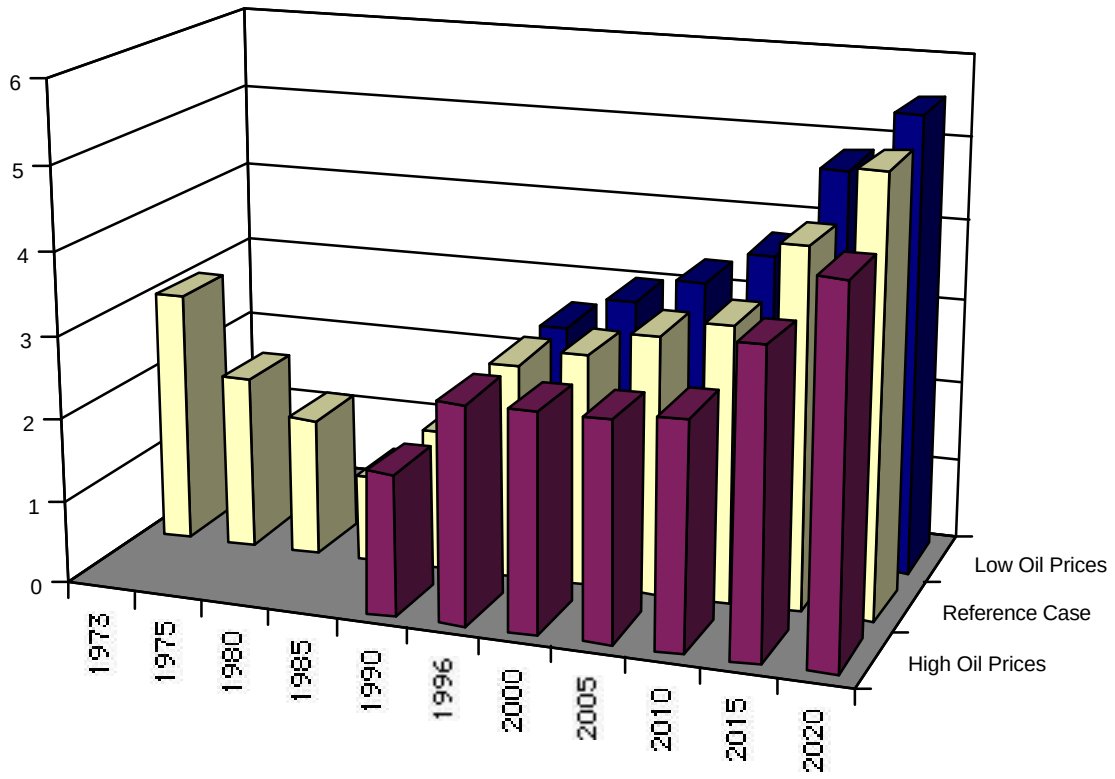
	73	74	75	76	77	78	79	80	81	82	83	84
Kuwaiti	3020	3546	2084	2145	1969	2131	2500	1656	1125	823	1064	1157

	85	86	87	88	89	90	91	92	93	94	95	96
Kuwait	1023	1419	1585	1492	1783	1175	190	1058	1852	2025	2057	2062

Source: Adapted by Anthony H. Cordesman from EIA, Monthly Energy Review, April, 1997, pp. 130-131.

The Importance of Secure Kuwaiti Oil Production: Estimated Oil Production Capacity

(EIA Reference Gas in MMBD)

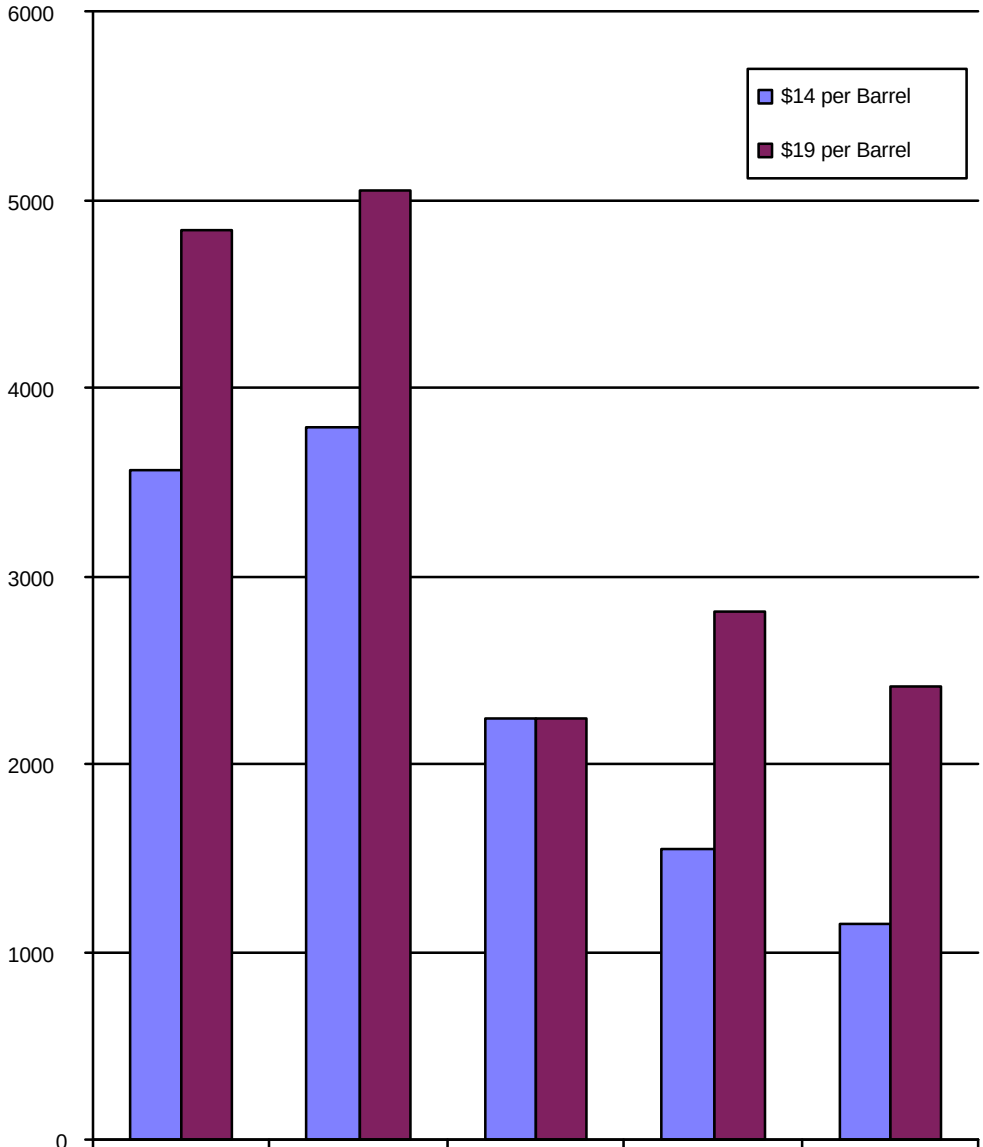


	1973	1975	1980	1985	1990	1996	2000	2005	2010	2015	2020
High Oil Prices					1.7	2.6	2.6	2.6	2.7	3.6	4.4
Reference Case	3.02	2.084	1.656	1.023	1.7	2.6	2.8	3.1	3.3	4.3	5.2
Low Oil Prices					1.7	2.6	3	3.3	3.7	4.8	5.5

Source: Adapted by Anthony H. Cordesman from EIA, International Energy Outlook, 1998, DOE/EIA-0484 (97), April 1998, pp. 175-178, and EIA, Monthly Energy Review, April, 1997, pp. 130-131.

Kuwaiti Economics Versus Oil Prices

($US 1,000s)



	Oil Exports	Total Exports	Imports	Trade Balance	Current Account
$14 per Barrel	3559	3783	2242	1541	1142
$19 per Barrel	4831	5055	2242	2813	2413

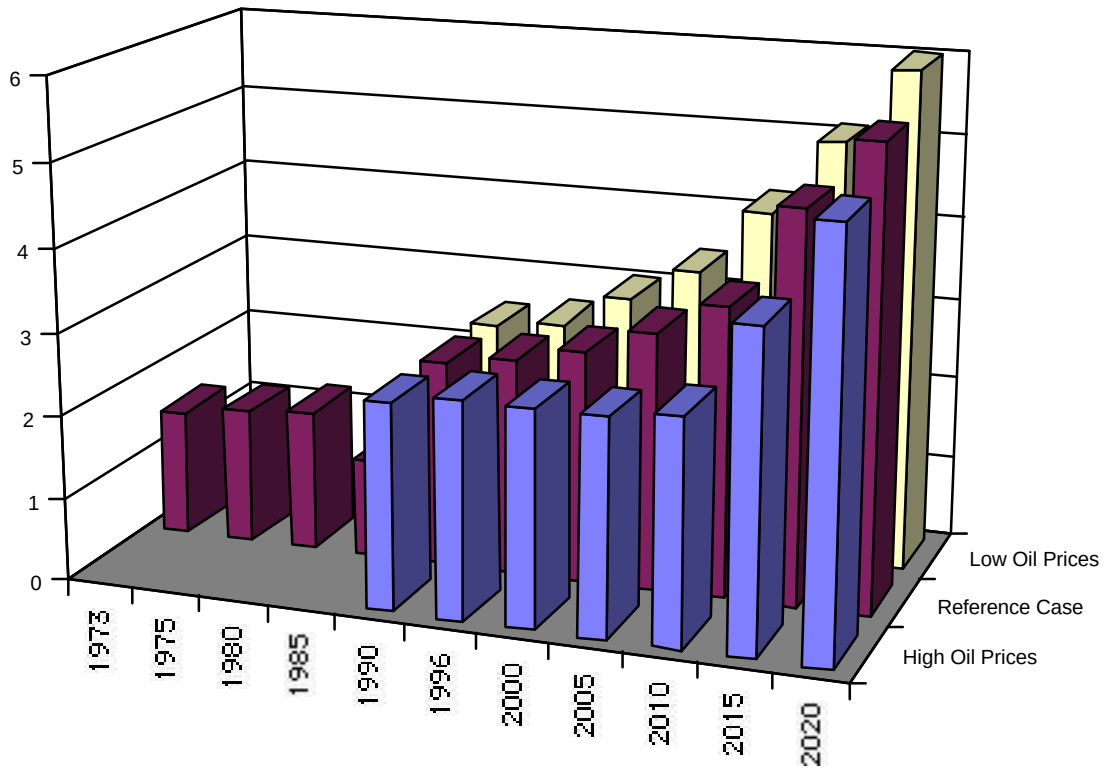
Source: Adapted from Middle East Economic Digest, September 27, 1996, p. 5

Key Issues Affecting UAE

- **Vulnerability to a re-emergent Iran.**
- **"Failed society:" Rentier state where vast majority of native males work for government; Minimal social commitment to defense.**
    - **Dubai's non-Arab status: The most successful "South Asian" state in the Gulf.**
    - **Abu Dhabi: The Potemkin Hong Kong on the Gulf.**
    - **Failure to create clear development strategy for poorer Western Emirates.**
- **Failure to modernize oil production capacity; develop coherent production expansion strategy.**
- **Uncertainty of mid to long-term economics of gas.**
- **Failure to develop effective defense cooperation with Neighbors.**

The UAE is Another Critical Producer: Estimated Oil Production Capacity

(EIA Reference Gas in MMBD)



	1973	1975	1980	1985	1990	1996	2000	2005	2010	2015	2020
High Oil Prices					2.5	2.6	2.6	2.6	2.7	3.8	5
Reference Case	1.533	1.644	1.709	1.193	2.5	2.6	2.8	3.1	3.5	4.7	5.5
Low Oil Prices					2.5	2.6	3	3.4	4.2	5.1	6

Source: Adapted by Anthony H. Cordesman from EIA, International Energy Outlook, 1998, DOE/EIA-0484 (97), April 1998, pp. 175-178, and EIA, Monthly Energy Review, April, 1997, pp. 130-131.

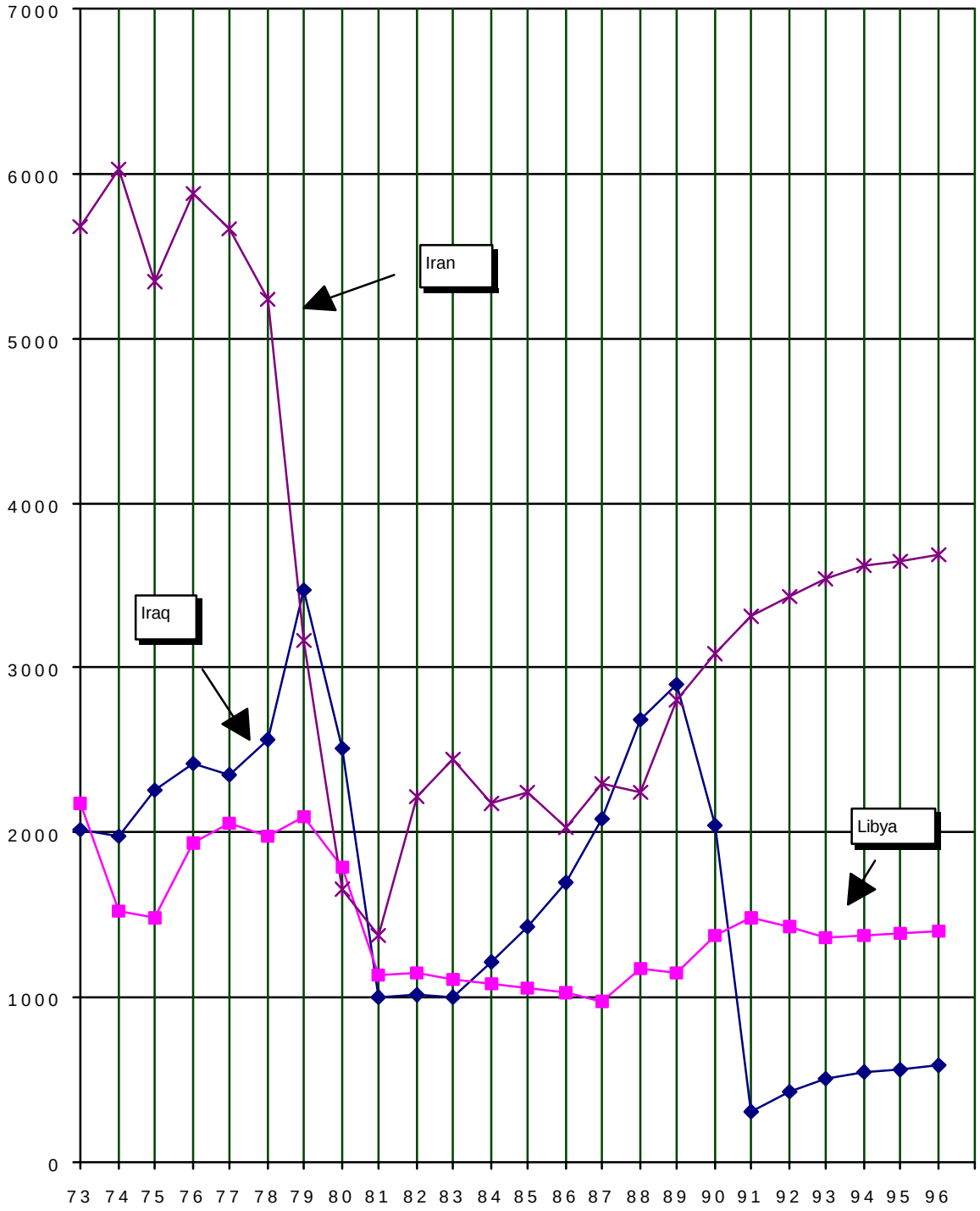
The Problem of Middle Eastern "Rogue States"

Key Areas of Uncertainty Affecting Iran, Iraq, and Libya

- **Libyan ability to finance new production and export capacity.**
- **Iranian ability to finance new production and export capacity.**
- **Iraqi ability to export and finance new production and export capacity in the face of UN sanctions.**
- **Creation of suitable new energy transportation infrastructure: Pipelines, ports, tankers, etc.**
- **Trade-off between "rogue" exports and added conventional threats and proliferation.**

The Price of Revolution, War, and Terrorism: Changes in Iranian, Iraqi, and Libyan Petroleum Production During 1973-1996

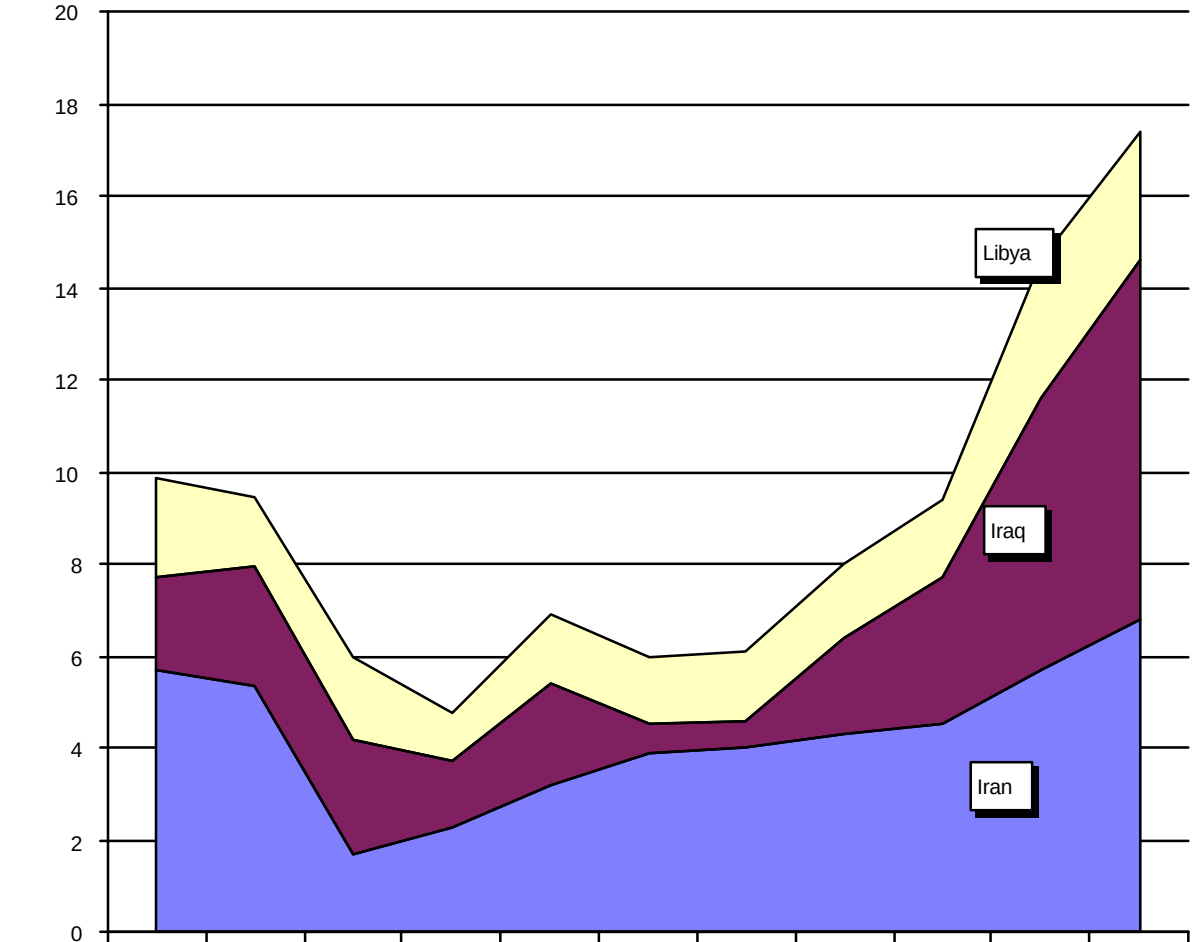
(Thousands of Barrels Per Day)



Source: Adapted by Anthony H. Cordesman from EIA, Monthly Energy Review, April, 1997, pp. 130-131.

Future Dependence on Iran, Iraq, and Libya
US Department of Energy Estimates of the Oil Production Capacity of the "Pariah" or "Rogue" States

(EIA Reference Case Estimate in MMBD)

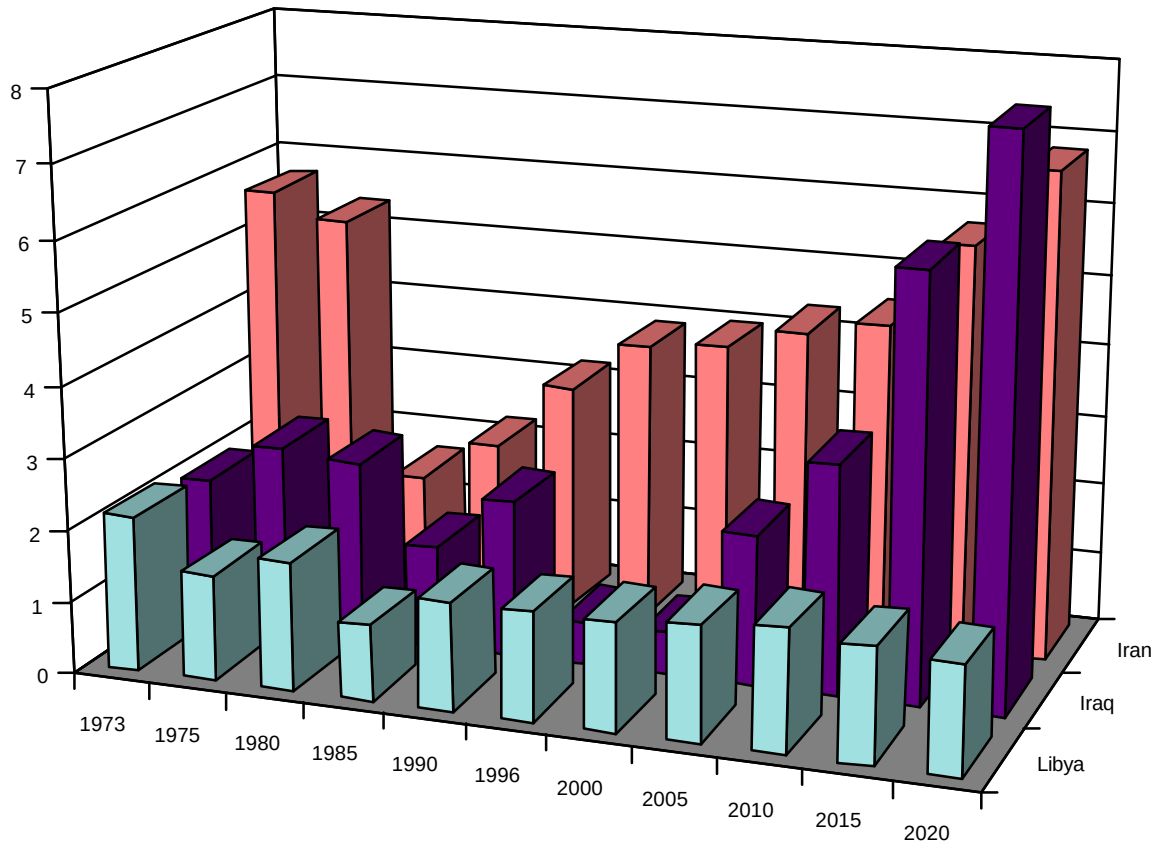


	1973	1975	1980	1985	1990	1996	2000	2005	2010	2015	2020
Libya	2.175	1.48	1.787	1.059	1.5	1.5	1.5	1.6	1.7	3	2.8
Iraq	2.018	2.62	2.514	1.433	2.2	0.6	0.6	2.1	3.2	5.9	7.8
Iran	5.681	5.35	1.662	2.25	3.2	3.9	4	4.3	4.5	5.7	6.8

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.

US Policy May Seriously Threaten World Oil Exports: US Estimates of the Oil Production Capacity of the "Pariah" or "Rogue" States

(EIA Reference Case Estimate in MMBD)

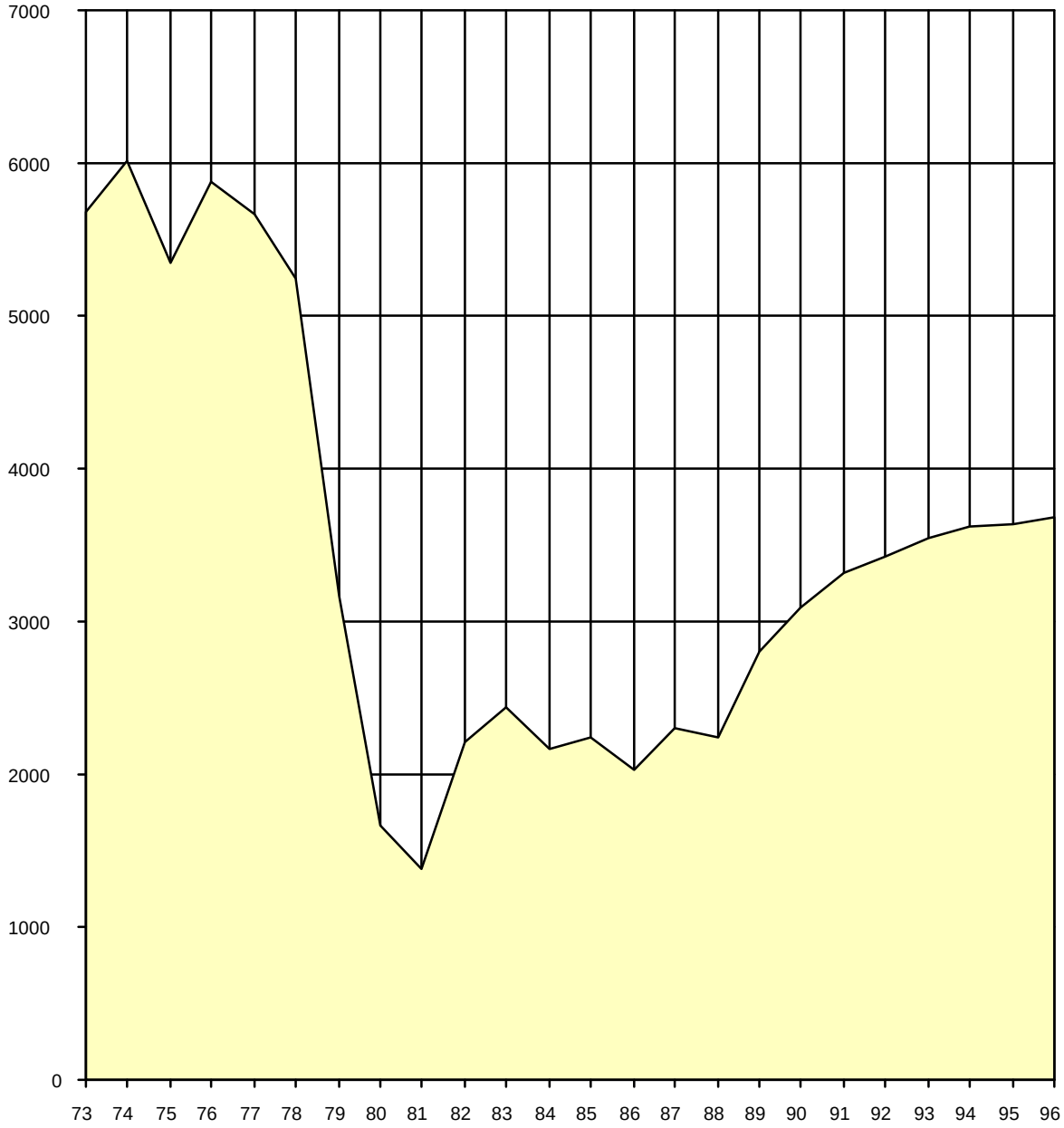


	1973	1975	1980	1985	1990	1996	2000	2005	2010	2015	2020
Libya	2.175	1.48	1.787	1.059	1.5	1.5	1.5	1.6	1.7	1.6	1.5
Iraq	2.018	2.62	2.514	1.433	2.2	0.6	0.6	2.1	3.2	5.9	7.8
Iran	5.681	5.35	1.662	2.25	3.2	3.9	4	4.3	4.5	5.7	6.8

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.

Swings in Iranian Petroleum Production During 1973-1996

(Thousands of Barrels Per Day)

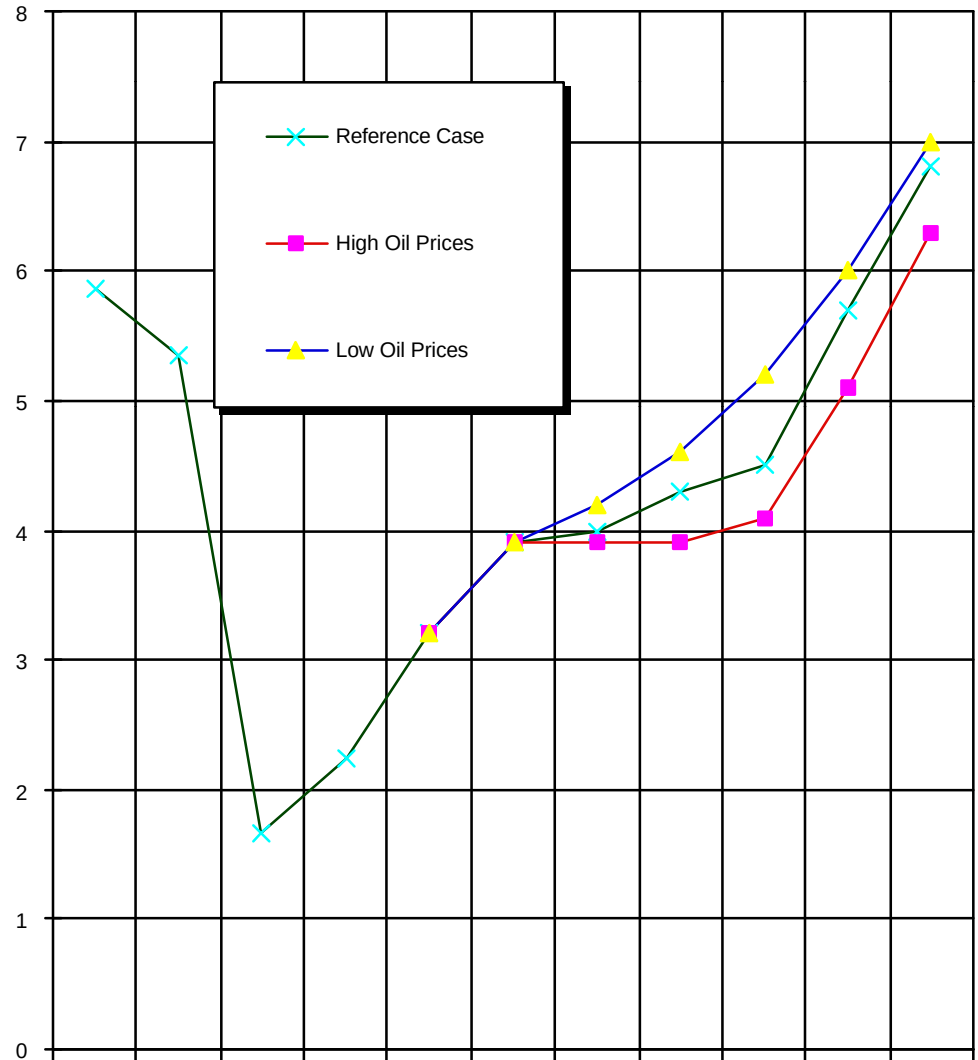


	73	74	75	76	77	78	79	80	81	82	83	84
Iran	5681	6022	5350	5883	5663	5242	3168	1662	1380	2214	2440	2174
	85	86	87	88	89	90	91	92	93	94	95	96
	2250	2035	2298	2240	2810	3088	3312	3429	3540	3618	3643	3686

Source: Adapted by Anthony H. Cordesman from EIA, Monthly Energy Review, April, 1997, pp. 130-131.

US Sanctions Versus Estimates of Iranian Oil Production Capacity

(In MMBD)



	1973	1975	1980	1985	1990	1996	2000	2005	2010	2015	2020
Reference Case	5.861	5.35	1.662	2.25	3.2	3.9	4	4.3	4.5	5.7	6.8
High Oil Prices					3.2	3.9	3.9	3.9	4.1	5.1	6.3
Low Oil Prices					3.2	3.9	4.2	4.6	5.2	6	7

Source: Adapted by Anthony H. Cordesman from EIA, International Energy Outlook, 1998, DOE/EIA-0484 (97), April 1998, pp. 175-178, and EIA, Monthly Energy Review, April, 1997, pp. 130-131.

The Iran and Libya Sanctions Act of 1996

- **President must impose two out of six sanctions on any company that invests more than $40 million or more (including any combination of investments of at least $10 million, which in total equal or exceed $40 million) in any one year in Libya or Iran.**

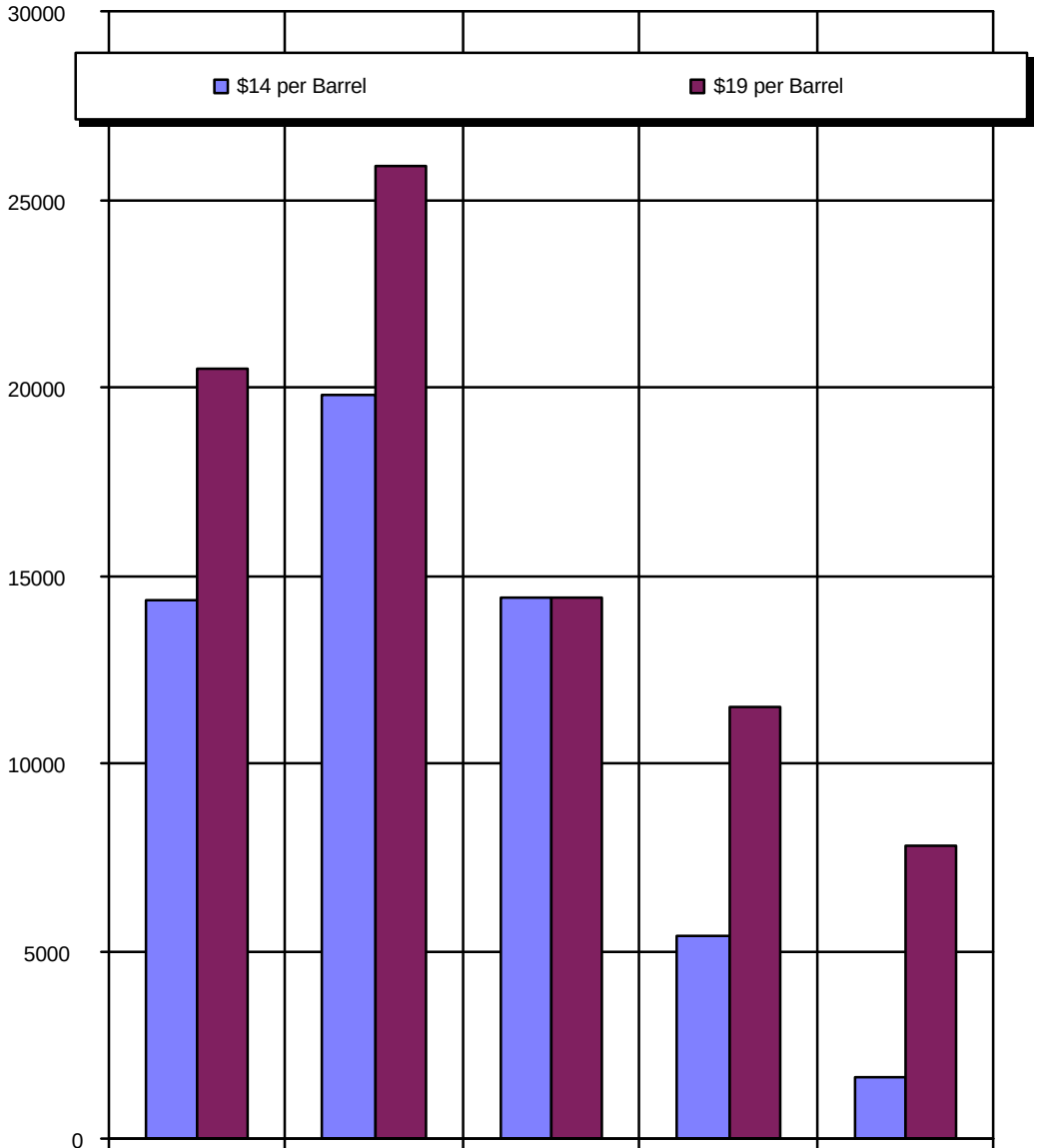
- **The list of six sanctions includes:**
  - **No US Export-Import Bank Assistance**
  - **No US export licenses to receive goods**
  - **Not eligible for loans of more than $10 million in any one year from US financial institutions**
  - **Not eligible to be a primary dealer in US government bonds**
  - **Not eligible to bid on US contracts**
  - **Not allowed to export any goods to the US**

- **The President may waive sanctions if the country where the company is based "has agreed to undertake substantial measures, including economic sanctions," to prevent Iran or Libya from acquiring weapons of mass destruction or supporting terrorism or encourages Libya to hand over two men indicted in the 1988 bombing of Pan Am 103.**

- **The President must impose two out of six sanctions on any company that violates UN embargoes on Libya, including bans on sales of weapons, aviation, and oil refining equipment.**

Iranian Economics Versus Oil Prices

($US 1,000s)

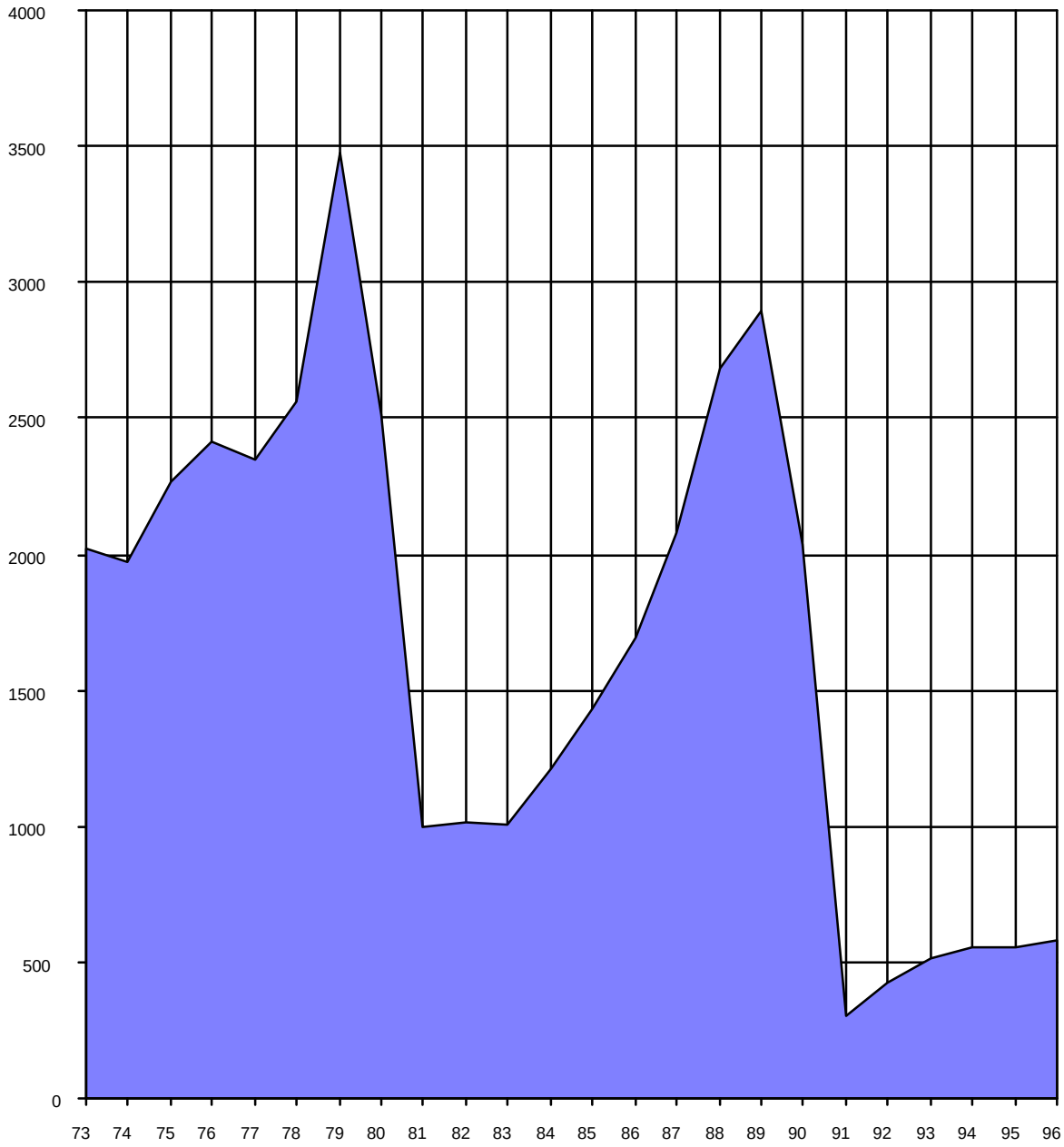


	Oil Exports	Total Exports	Imports	Trade Balance	Current Account
$14 per Barrel	14360	19760	14400	5360	1660
$19 per Barrel	20516	25916	14400	11516	7816

Source: Adapted from Middle East Economic Digest, September 27, 1996, p. 5

Saddam and Oil: Changes in Iraqi Petroleum Production During 1973-1996

(Thousands of Barrels Per Day)



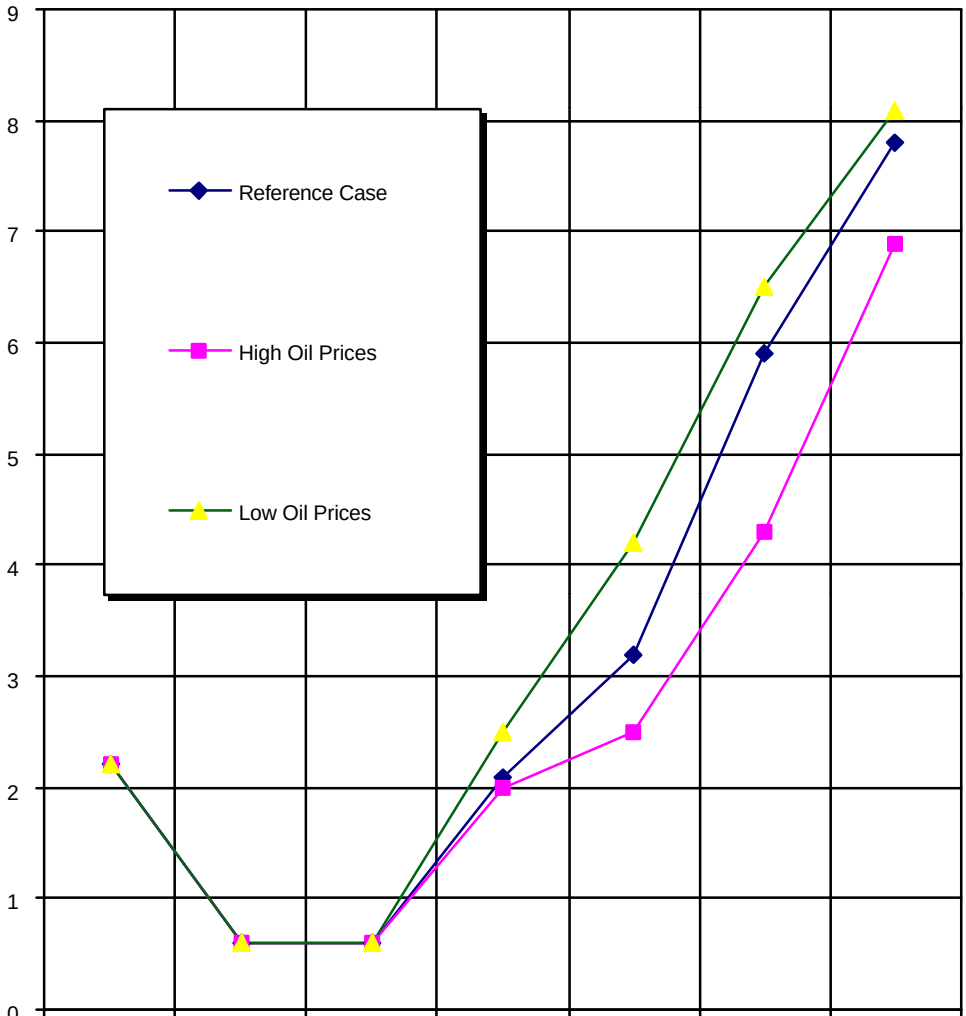
	73	74	75	76	77	78	79	80	81	82	83	84
Iraq	2018	1971	2262	2415	2348	2563	3477	2514	1000	1012	1005	1209

	85	86	87	88	89	90	91	92	93	94	95	96
	1433	1690	2079	2685	2897	2040	305	425	512	553	560	584

Source: Adapted by Anthony H. Cordesman from EIA, Monthly Energy Review, April, 1997, pp. 130-131.

UN Sanctions Already Present Major Problems in Terms of Iraq: Estimated Iraqi Oil Production Capacity

(In MMBD)



	1990	1996	2000	2005	2010	2015	2020
Reference Case	2.2	0.6	0.6	2.1	3.2	5.9	7.8
High Oil Prices	2.2	0.6	0.6	2	2.5	4.3	6.9
Low Oil Prices	2.2	0.6	0.6	2.5	4.2	6.5	8.1

Source: Adapted by Anthony H. Cordesman from EIA, International Energy Outlook, 1998, DOE/EIA-0484 (97), April 1998, pp. 175-178, and EIA, Monthly Energy Review, April, 1997, pp. 130-131.