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**The Geopolitics and Security Dimensions
of Middle Eastern and North African
Energy Exports**

***DRAFT FOR COMMENT
AND REVIEW***

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TABLE OF CONTENTS

Acknowledgements.....	ii
II. THE GEOPOLITICS AND SECURITY DIMENSION OF MIDDLE EASTERN AND NORTH AFRICAN ENERGY EXPORTS	1
A HISTORY OF CONFLICT AND TENSION	2
MILITARISM, MILITARY EXPENDITURES, AND ARMS IMPORTS	4
<i>The Overall Level of Military Efforts</i>	5
<i>The Problem of Arms Imports</i>	17
<i>The Threat to Energy Facilities</i>	18
PROLIFERATION.....	25
<i>Proliferators in the Middle East</i>	25
<i>The Threat to Energy Facilities</i>	28
East-West.....	30
Middle East.....	30
Iran Deployed? Breakout Technology.....	30
Asia and South Asia.....	30
Other.....	30
TERRORISM AND STATE TERRORISM	31
<i>The Problem of Islamic Extremism and Violence</i>	31
<i>The Regional and Global Impact of Islamic Extremist Terrorism</i>	32
<i>The Clash Within A Civilization, the Arab-Israeli Conflict, and the Western Counter-Reaction</i>	34
<i>State Support of Terrorism and the Use of Terrorist Proxies</i>	35
<i>Terrorism and Middle East Energy</i>	36
REGIONAL SELF-DEFENSE AND THE ROLE OF THE WEST AND WESTERN POWER PROJECTION	38
ENERGY VULNERABILITY AND MARITIME CHOKEPOINTS	39
OIL INTERRUPTION AND EMBARGOS.....	42
<i>The Importance of MENA Energy Exports</i>	44
<i>The Problem of Guessing at Future Scenarios</i>	45
<i>The Economic Impact of Energy Interruptions</i>	51
<i>The EIA “Rules of Thumb” for Calculating the Impact of Energy Interruptions</i>	52

LIST OF TABLES AND FIGURES

TABLE II.1	7
THE MILITARY DEMOGRAPHICS OF THE GREATER MIDDLE EAST	7
TABLE II.2	8
THE “PERCEPTUAL BALANCE”: MILITARY FORCES OF THE GREATER MIDDLE EAST	8
CHART II.1	9
“THE MOST MILITARIZED REGION IN THE WORLD”	9
CHART II.2	10
MIDDLE EASTERN MILITARY EFFORTS HAVE ALSO DROPPED SHARPLY AS A PERCENT OF GNP, GOVERNMENT EXPENDITURES, TOTAL POPULATION, AND ARMS IMPORTS: 1984-1999	10
CHART II.3	11
MIDDLE EASTERN MILITARY EXPENDITURES AND ARMS IMPORTS DROPPED SHARPLY RELATIVE TO ECONOMIC GROWTH AND GOVERNMENT SPENDING DURING 1989-1999	11
CHART II. 4	12
MILITARY EXPENDITURES AND ARMS TRANSFERS AS AN ASPECT OF “STATISM” IN INDIVIDUAL MIDDLE EASTERN COUNTRIES IN 1999	12
CHART II.5	13
THE TREND IN MIDDLE EASTERN MILITARY EXPENDITURES AND ARMS TRANSFERS SINCE THE OCTOBER WAR	13
CHART II.6	14
THE TREND IN MIDDLE EASTERN MILITARY EXPENDITURES AND ARMS TRANSFERS IN CONSTANT DOLLARS SINCE 1989	14
CHART II.7	15
NORTH AFRICAN MILITARY EXPENDITURES AND ARMS TRANSFERS IN CONSTANT DOLLARS HAVE DROPPED TO LOW LEVELS BY GLOBAL STANDARDS	15
CHART II.8	16
NORTH AFRICAN MILITARY EFFORTS DECLINED SHARPLY AS A PERCENT OF GNP, GOVERNMENT EXPENDITURES, IMPORTS, AND TOTAL POPULATION: 1985-1999	16
CHART II.9	20
MENA ARMS DELIVERIES ARE DECLINING: 1985-1999	20
CHART II. 10	21
THE CUMULATIVE IMPACT OF THE ARAB-ISRAELI PEACE ACCORDS, SANCTIONING OF LIBYA, END OF THE IRAN-IRAQ WAR, END OF THE COLD WAR, GULF WAR, AND ECONOMIC RECESSION: 1985-1999	21
CHART II.11	22
THE CUMULATIVE DECLINE IN MILITARY SPENDING BY SELECTED MAJOR BUYERS IN CONSTANT DOLLARS: 1984- 1999	22
CHART II.12	23

MIDDLE EASTERN AGREEMENTS AND DELIVERIES BY COUNTRY: 1994-2002	23
CHART II.13	24
TREND IN NORTH AFRICAN AGREEMENTS AND DELIVERIES BY COUNTRY: 1986-2002	24
TABLE II.3	30
NATIONS WITH WEAPONS OF MASS DESTRUCTION	30
TABLE II. 4.....	43
GLOBAL OIL SUPPLY DISRUPTIONS SINCE 1951.....	43
CHART II.14	48
TRENDS IN MIDDLE EASTERN PETROLEUM PRODUCTION CAPACITY THAT COULD BE AFFECTED BY A FUTURE OIL INTERRUPTION SCENARIO BY COUNTRY RELATIVE TO WORLD CAPACITY: 1990-2025	48
CHART II.15	49
RANGE OF MENA CONTRIBUTION TO WORLD OIL PRODUCTION CAPACITY: 2001-2025.....	49
CHART II.16.....	50
RANGE OF MENA CONTRIBUTION TO WORLD OIL EXPORTS: 2001-2025	50

II. THE GEOPOLITICS AND SECURITY DIMENSION OF MIDDLE EASTERN AND NORTH AFRICAN ENERGY EXPORTS

The many uncertainties affecting the international energy market, the discovery and exploitation of energy reserves, and competition between fuels are only part of the forces shaping Middle East energy supply. The analysis in the preceding chapter discussed estimates that assume that market forces will dominate the future development of energy exports in the Middle East and North Africa. The MENA region, however, has been the scene of many internal crises and external conflicts. There have been several past occasions on which these crises have affected either the flow of MENA energy exports, and the development of Middle Eastern energy production and export capacity.

The MENA region is anything but stable today, and there are a wide range of external and internal forces that may become major future threats to Middle Eastern energy exports. The politics, economics, and social dynamics that shape these threats are complex. They are driven by political and security issues, but they are also driven economic and demographic factors, and a wide range of cultural factors. It is also dangerous to generalize. The MENA area includes at least twenty-two nations, located in an arc that sweeps from North Africa to the edge of Central Asia and the Red Sea. As of 2000, these states had a total population of some 295 million, and a GNP of some \$651 billion, and each had different political, economic, demographic, and security conditions and needs..¹

Most MENA states are Arab and Muslim, but a common ethnic and religious background has never meant that they do not go to war with each other or do not have internal sectarian, ethnic, and political conflicts. The MENA region is also divided into at least four sub-regions, each of whose nations have different interests and present different risks. These four sub-regions include the Maghreb, with Mauritania, Morocco, Algeria, Libya, and Tunisia; the Levant and the Arab-Israeli confrontation states: Egypt, Israel, Jordan, Lebanon, and Syria; the Gulf: Iran, Iraq, Kuwait, Bahrain, Qatar, Saudi Arabia, the UAE, and Oman; and the Red Sea states like Yemen, the Sudan, and Somalia.

Each subregion includes states that have been the source of recent terrorism or conflicts, although many states have been comparatively stable and have regimes with a long history of friendship to the West. The economics of every MENA state relies on strong trading partners outside of the region, and these links also differ by subregion and nation. The nations of North Africa are linked closely to Southern Europe, and also have ties to the Sub-Saharan states. The states of the Levant trade primarily with Europe and the U.S. The Southern Gulf states trade with the West and increasingly with Asia and the developing world. Iran is in many ways a Central Asian state that exports through the Gulf. It has good reason to be deeply concerned about security issues in Afghanistan and proliferation in India and Pakistan.

Treating the Middle East as a “region,” rather than as a group of disparate actors, often conceals far more than it reveals. The future development of energy supply in each nation and subregion will be affected by exporting different political, security, ethnic, and sectarian fault lines. The internal character and strategic interests of given nations differ sharply from state to state. In many cases, regional or national tensions, have already led to war or could lead to future conflicts. In other cases, internal tensions have already produced civil conflicts. Violent religious extremism is an ongoing problem in many MENA countries, and the events of September 11th, 2001 have only dramatized internal security problems and terrorism on global level that long existed on a national and regional level.

A History of Conflict and Tension

MENA nations have a long history of violence and conflict. The Arab-Israeli Wars of 1948, 1956, 1967, 1970, 1973, 1982, and the first and second Intifada are all cases in point. So are the Iran-Iraq War, the Iraqi invasion of Kuwait, the Gulf War and the Iraq War. There is little chance that the region will avoid new conflicts between the present and 2020. Many Middle Eastern states still dispute at least one border with one of its neighbors, and most countries have serious religious and/or ethnic divisions. Low-level conflicts and internal unrest are virtual certainties.

In several cases, Middle Eastern states are either currently at war, or there is a serious risk of future conflict. Mauritania has long been the scene of a low-level race war between Arabs and Black Africans. Morocco is still in the process of a long war with the Polisario for control of the Western Sahara. Algeria is involved in a bitter civil war between its ruling military junta and

Islamic extremists. Tensions have grown between Libya's leader, Muammar Qadhafi and Libya's Islamists and there has been low-level fighting in a number of areas. The Egyptian government and a number of other regional governments are fighting low-level wars against Islamic terrorists.

A "war process", or "Second Intifada," has replaced the Arab-Israeli peace process. Israel is still formally at war with Syria and Lebanon, and faces a serious potential threat from outside terrorists. Israel may become involved in a broader conflict with its Arab neighbors and Iran, and has clashed on its northern border with the Hezbollah – a Shi'ite Islamic movement with strong Iranian and Syrian sponsorship. Lebanon remains under Syrian, and its factions still present the threat of another round of civil war.

The Southern Gulf states are relatively stable, and have resolved many of their border disputes in recent years, but there has been civil violence in Bahrain between Sunni and Shi'ite. Saudi Arabia has growing problems with Al Qaida and Islamic extremists, and there are extremist elements in every Southern Gulf state. Islamic extremism, and terrorism are at least low-level problems in Yemen, and many southern Gulf states are heavily dependent on foreign workers to the extent this raises serious issues about their future stability.

While Iran may be becoming more moderate, there is little sign that the Khatami faction or Iranian moderates will gain firm control of the country. Khatami expressed deep dissatisfaction about his ability to accomplish meaningful reform in August 2003, and there still a serious risk of internal clashes between its "moderates" and "traditionalists." Iran also presents major problems in terms of proliferation, its opposition to the Arab-Israeli peace process, and continued hostility to any U.S. presence in the Gulf.

The fall of Saddam Hussein in 2003 has removed one major source of instability in the region, but the war and the looting that followed have seriously damaged some aspects of Iraq's oil industry. There is also a risk that the aftermath to Saddam's repressive regime could be some form of lingering civil conflict or a long period of internal stability. Iraq is divided along sectarian lines between Sunni and Shi'ite, and Arab, Kurd, and Turkmen. Nation building in Iraq presents major challenges and risks, and there is a threat of that the US and Britain will face a growing threat from guerrilla attacks and sabotage. The Iraq War has already serious cut Iraq's

oil exports and there is no current way to predict the future development of its Petroleum industry and exports.

The civil war in the Sudan has entered its second decade, and the death toll from fighting and starvation will probably exceed well over one million. Yemen faces tensions between its government and key political and tribal groups in the South, and has clashed with Eritrea over the control of islands in the Red Sea.

None of these tensions and conflicts poses immediate threats to the flow of MENA oil exports, but they have affected the development of energy supply in Algeria, Iran, Iraq, Libya, and Yemen, and new outbreaks of violence could occur in many MENA states with little or no warning. Most MENA states suffer from internal political, economic, and demographic problems that compound intra-regional conflicts and tensions. Virtually all Middle East states have regimes with a high degree of authoritarianism – regardless of whether the ruler is called a King, Sheik, Sultan, President, General, or Ayatollah. Virtually all suffer from weak or failed economic development, high rates of population growth and a virtual youth explosion, aging and largely authoritarian regimes, and serious problems with internal stability.

The MENA region also suffers from a process of creeping proliferation that may ultimately change the nature of conflicts and the balance of power, in the region. Algeria, Egypt, Iraq, Iran Israel, Libya, Syria, and Yemen have all created missile programs and have at least conducted research into weapons of mass destruction. Israel is a major regional nuclear power and has chemical and biological programs. Egypt has chemical and biological research programs. Iran, Libya, and Syria are either trying to develop biological and chemical weapons or have already deployed them, and Iran seems to have made a major effort that it may or may not have halted in late 2003. Iraq continue to seek nuclear weapons. So far, such weapons have only been used in the Yemeni civil war and the Iran-Iraq War, but there is little doubt that the Middle East is acquiring far more lethal chemical, biological, radiological, and nuclear (CBRN) weapons and delivery systems than it has possessed in the past.

Militarism, Military Expenditures, and Arms Imports

One of the problems in analyzing trends in the MENA area is the tendency to separate the analysis of the overall trends in the economy and state spending from the trends in energy

spending and from military spending and arms imports. This often suits the regimes involved, who do not want serious public or external debate over their use of energy revenues or military spending and arms purchases, and who often seek to avoid close examination of any aspect of their overall level of state spending or “statism.” The fact remains, however, that their failure to invest in economic development, to modernize their economies and to privatize state industry, often interacts in embarrassing ways with a lack of any clear mid-term to long-term energy investment strategy and their overspending on military forces and arms imports.

The level of waste in MENA military efforts, and the burden they place on economic and energy development, is difficult to put in perspective -- particularly because reliable data are not always available for recent years. It has long been clear, however, that the region’s militarism poses serious dangers to its peoples as well as to its stability as an energy supplier.

Several factors are involved. One is the history of crises escalating into serious conflicts, some of which have led to energy interruptions. Another is a level of total expenditure –often without a clear threat and/or producing any effective defense capability – that is so high that it seriously limits the funds available for development, including energy investment. Finally, many MENA countries are finding it harder and harder to sustain their present conventional force structures. At least in some cases, this adds to the pressures to acquire weapons of mass destruction and proliferate. Such weapons present a major potential future threat to MENA energy facilities and exports.

The Overall Level of Military Efforts

There has been a decline in MENA military expenditures and arms imports since the end of the Cold War, Middle Eastern military expenditures dropped from \$93.0 billion in 1985 to \$38.4 billion during 1997-2000.² Nevertheless, the region still spends nearly 6.8% of its GNP on military expenditures, and this compares with an average of only 2.3% and for the developed world and 2.7% for the developing world. Militarism remains a serious problem and the MENA area. It remains the largest arms market in the developed world. It currently and accounts for roughly half of the world’s conventional weapons purchase agreements.³

Once again, numbers and trends often speak louder than words:

- Table II.1 illustrates the scale of MENA military efforts in terms of demographics. This table also provides some of the best data currently available on the number of males entering the labor forces, and in the age groups most needing jobs and most prone to terrorism and violent political action.
- Table II.2 summarizes the present strength of MENA military forces.
- Chart II.1 shows why the MENA region is described in various assessments as the most militarized area in the world. While current data are not available in a directly comparable form, the CIA World Factbook indicates that the basic trends shown in this Chart, and the other charts based on US State Department, Bureau of Verification and Compliance, World Military Expenditures and Arms Transfers, 1989-1999, do reflect valid current trends.
- Chart II.2 shows that the overall level of military effort in the region has dropped since the end of the Gulf War. This chart does not reflect the impact of the Israeli-Palestinian conflict that began in September 2000, but other data indicate that the decline in overall regional military efforts has continued and even accelerated in some cases. The fall of Saddam Hussein's regime in April 2000 is also likely to result in further cuts in military efforts in the Gulf area.
- Chart II.3 shows that economic growth, and overall central government expenditures, are outpacing military expenditures and arms imports.
- Chart II.4 shows that military expenditures represent far too large a portion of central government expenditures in many MENA states, limiting the funds available for development and energy investment. In some cases, military expenditures are so large that they either compound the burden excessive state spending puts on the entire economy or come close to dominating that burden as the largest single aspect of "statism." This combination of excessive military spending, state spending, and inefficient state industrial blocks the growth and diversification of the economy as well as the work of market forces.
- Chart II.5 shows a declassified US estimate of the long-term trend in Middle Eastern (less North Africa) military spending and arms imports in current dollars. It reflects the massive swings that can occur in a time of war, but also a trend towards smaller defense expenditures and more limited arms imports.
- Chart II.6 shows more recent trends in current dollars. The capping of military expenditures and limits to arms imports emerge more clearly. One key implication of these data, however, is that most Middle Eastern states are not spending enough to recapitalize their force structures and maintain modern forces at anything like their present equipment strength. The slope of arms imports would have to have risen steadily from 1991 onwards and spending levels would have had to nearly double in constant dollars to both maintain the force size shown in Table II.2 and force quality.
- Chart II.7 shows the trends in current dollars for military expenditures and arms transfers in North Africa. It is clear from the decline in North African arms imports that North African countries have not come close to spending what they need to replace the equipment in their military forces. The end result is large, wasteful, force structures that are incapable of fighting any advance enemy – although the low overall standard of military modernization means that fighting can be sustained among North African states. The rise in military spending toward the end of the 1990s reflects the growing internal threat in several states, and the cost of the ongoing civil war in Algeria.
- Chart II.8 shows how these trends in North Africa spending relate to the overall trends in the regional economy. There has been a decline in the burden of military spending, but it is still high. The burden of arms imports is far lower, but has been heavily offset by internal security spending.

Table II.1

The Military Demographics of the Greater Middle East

Country	Total Population	Males Reaching Military Age Each Year	Males Between the Ages of			Males Between 15 and 49	
			13 and 17	18 and 22	23 and 32	Total	Medically Fit
Egypt	70,712,345	712,983	3,707,000	3,313,000	5,150,000	19,030,030	12,320,902
Gaza	1,225,911*	-	-	-	-	-	-
Israel	6,029,529	51,666	284,000	272,000	535,000	1,542,835	1,262,973
Jordan	5,307,470	57,131	280,000	247,000	454,000	1,517,751	1,073,991
Lebanon	3,677,780	-	216,000	194,000	397,000	1,003,174	618,129
Palestinian	2,900,000*	-	163,000	140,000	233,000	-	-
Syria	17,155,814	200,859	1,076,000	883,000	1,274,000	4,550,496	2,539,342
West Bank	2,163,667*	-	-	-	-	-	-
Iran	66,622,704	823,041	4,735,000	3,960,000	5,959,000	18,868,571	11,192,731
Iraq	24,001,816	274,035	1,472,000	1,270,000	1,899,000	6,135,847	3,430,819
Bahrain	656,397	5,926	35,000	26,000	40,000	222,572	121,955
Kuwait	2,111,561	18,309	124,000	107,000	148,000	812,059	486,906
Oman	2,713,462	26,470	163,000	140,000	233,000	780,292	434,026
Qatar	793,341	6,797	26,000	22,000	38,000	316,885	166,214
Saudi Arabia	23,513,330	233,402	1,391,000	1,177,000	1,725,000	6,007,635	3,359,849
UAE	2,445,989	25,482	87,000	87,000	143,000	773,938	419,851
Yemen	18,701,257	238,690	1,008,000	803,000	1,328,000	4,272,156	2,397,914
Algeria	32,277,942	388,939	1,986,000	1,834,000	2,962,000	9,016,048	5,513,317
Libya	5,368,585	61,694	387,000	320,000	492,000	1,503,647	890,783
Morocco	31,167,783	348,380	1,780,000	1,612,000	2,726,000	8,393,772	5,289,283
Tunisia	9,815,644	105,146	529,000	505,000	869,000	2,806,881	1,597,565
Chad	8,997,237	82,003	408,000	332,000	518,000	1,881,769	985,094
Mauritania	2,828,858	-	149,000	121,000	194,000	644,294	312,276
Western Sahara	256,177	-	-	-	-	-	-
Afghanistan	27,755,775	252,869	1,499,000	1,194,000	2,053,000	6,896,623	3,696,379
Djibouti	472,810	-	42,000	35,000	57,000	110,221	64,940
Eritrea	4,465,651	-	252,000	210,000	320,000	-	-
Ethiopia	67,673,031	703,625	3,977,000	3,172,000	4,780,000	14,925,883	7,790,977
Somalia	7,753,310	-	626,000	511,000	726,000	1,881,634	1,040,662
Sudan	37,090,298	398,294	1,990,000	1,693,000	2,542,000	8,739,982	5,380,917
Turkey	67,308,928	674,805	3,264,000	3,251,000	6,242,000	19,219,177	11,623,675

Note: Totals include non-nationals, Total population, males reaching military age, and Males between 15 and 49 are generally CIA data, the rest are IISS data. * Totals for Palestinians are IISS, totals for Gaza and West Bank are CIA.

Source: Adapted by Anthony H. Cordesman, CIA, [World Factbook, 2002](#), IISS, [The Military Balance](#), various editions,

Table II.2

**The “Perceptual Balance”: Military Forces of the
Greater Middle East**

<u>Country</u>	<u>Total Active Manning</u>	<u>Total Active Army Manning</u>	<u>Tanks</u>	<u>OAFVs</u>	<u>Artillery</u>	<u>Combat Aircraft</u>	<u>Armed Helicopters</u>
Egypt	443,000	320,000	3,860 ^a	4,179	1,415 ^a	608	128
Israel	161,500	120,000	3,750	7,808	1,653	454	135
Jordan	100,240	84,700	1,101 ^a	1,545	531	101	22
Lebanon	71,830	70,000	327	1,463	183	0	0
Palestine ^b	(35,000)	(35,000)	-	-	-	-	-
Syria	319,000	215,000	3,500	5,025	2,560	611	106
Iran ^c	520,000	450,000	1,565	1,455	3,284	306	69
Iraq	389,000	350,000	2,600	3,400	2,300	316	62
Bahrain	10,700	8,500	140	306	93	34	40
Kuwait	15,500	11,000	293	561	95	81	20
Oman ^c	41,700	31,400	117	349	126	40	0
Qatar	12,400	8,500	35	302	44	18	19
Saudi Arabia ^c	199,500	150,000	710	5,057	390	294	33
UAE	41,500	35,000	381	1,305	343	101	49
Yemen ^a	66,500	60,000	790	1,040	695	76	8
Algeria	136,700	120,000	1,089	1,964	729	222	63
Libya	76,000	45,000	985	2,383	1,921	400	48
Morocco	196,300	175,000	520	1,279	452	95	24
Tunisia	35,000	27,000	84	391	117	29	15
Chad	30,350	25,000	60	203	5	2	2
Mauritania	15,750	15,000	35	75	75	8	0
Afghanistan ^b	-	-	-	-	-	-	-
Djibouti	9,850	8,000	0	31	6	0	0
Eritrea	172,200	170,000	100	80	155	17	0
Ethiopia	252,500	250,000	300	400	360	55	30
Somalia ^b	(35,900)	(35,900)	-	-	-	-	-
Turkey	514,850	402,000	4,205	4,543	2,990	485	53

Notes: Totals count all “active” equipment, much of which is not operational. They do not include stored equipment, but are only approximate estimates of combat-ready equipment holdings. Light tanks, APCs, AIFVs, armored recon vehicles, and misc. AFVs are counted as OAFVs (Other Armored Fighting Vehicles). Artillery counts towed and self-propelled tube weapons of 100-mm+ and multiple rocket launchers, but not mortars. Only armed or combat-capable fixed wing combat aircraft are counted, not other trainers or aircraft.

a: Egypt has 100 additional M-1A1 Abrams MBT, 179 M-109A2/A3 SP ARTY on order. Jordan is awaiting 47 additional Challenger 1 MBT. Yemen has an additional 5 MiG-29S/UB on order.

b: No current data available for Palestine, Afghanistan and Somalia due to recent combat.

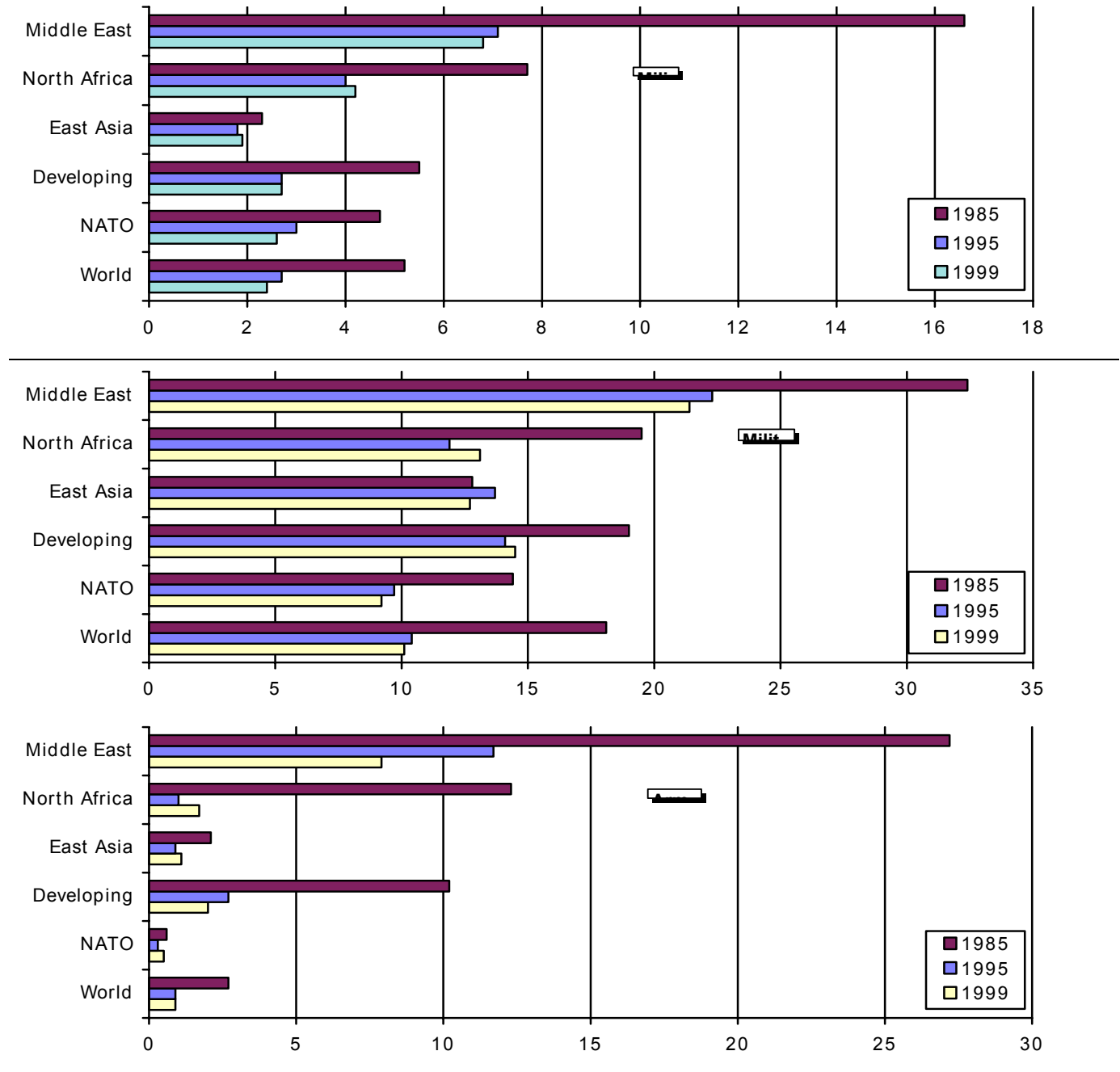
c: Iranian totals include Revolutionary Guard Corps, Saudi totals include the Saudi National Guard and Omani totals include the Royal Household Guard.

Source: Adapted by Anthony H. Cordesman, CIA, World Factbook, various editions and IISS, The Military Balance, various editions

Chart II.1

“The Most Militarized Region in the World”

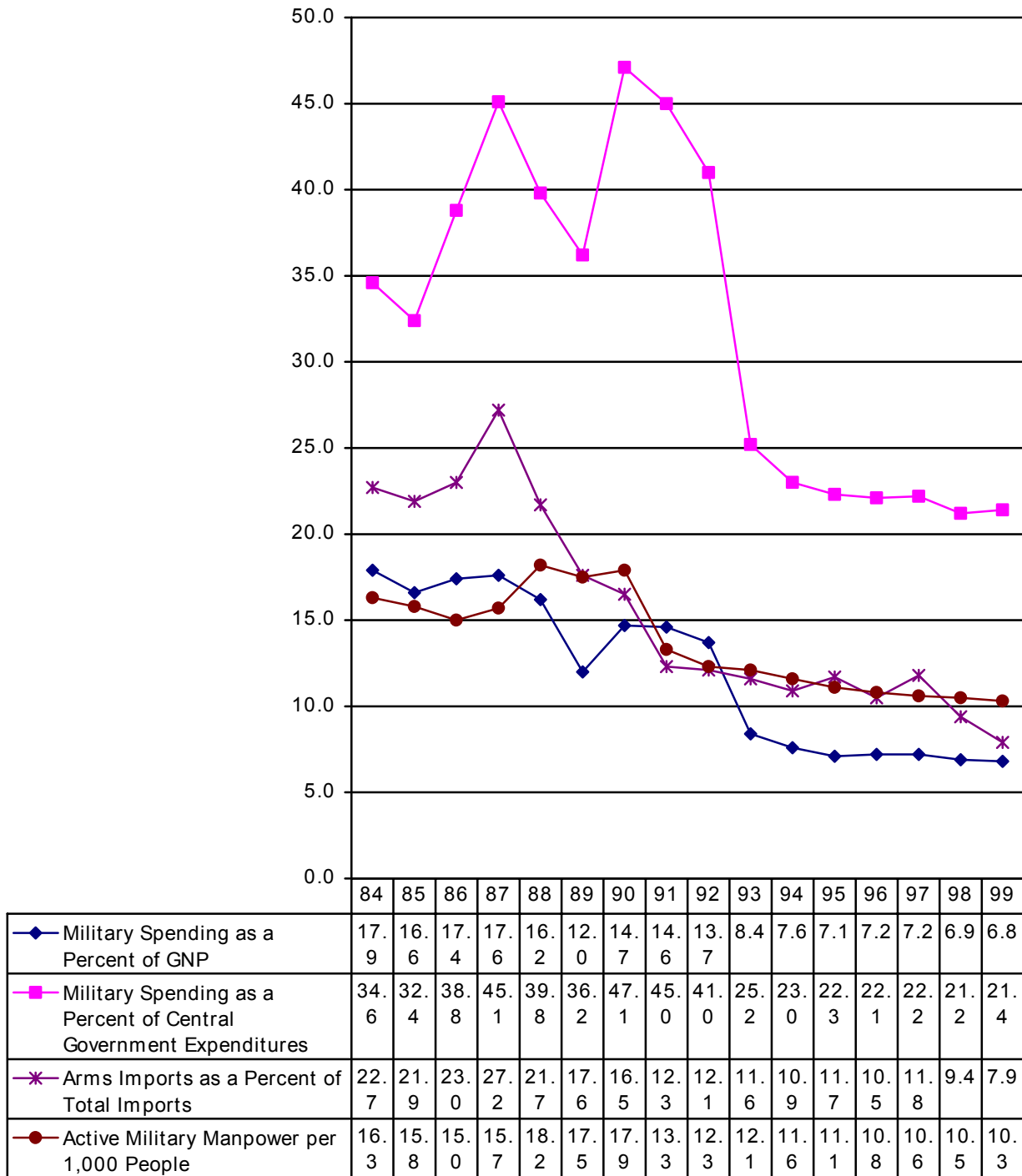
(Military Expenditures and Arms Imports as an Economic Burden in the Middle East Relative to Other Regions)



Source: Adapted by Anthony H. Cordesman from US State Department, Bureau of Verification and Compliance, World Military Expenditures and Arms Transfers, 1989-1999. Middle East does not include North African states other than Egypt.

Chart II.2

Middle Eastern Military Efforts Have Also Dropped Sharply as a Percent of GNP, Government Expenditures, Total Population, and Arms Imports: 1984-1999

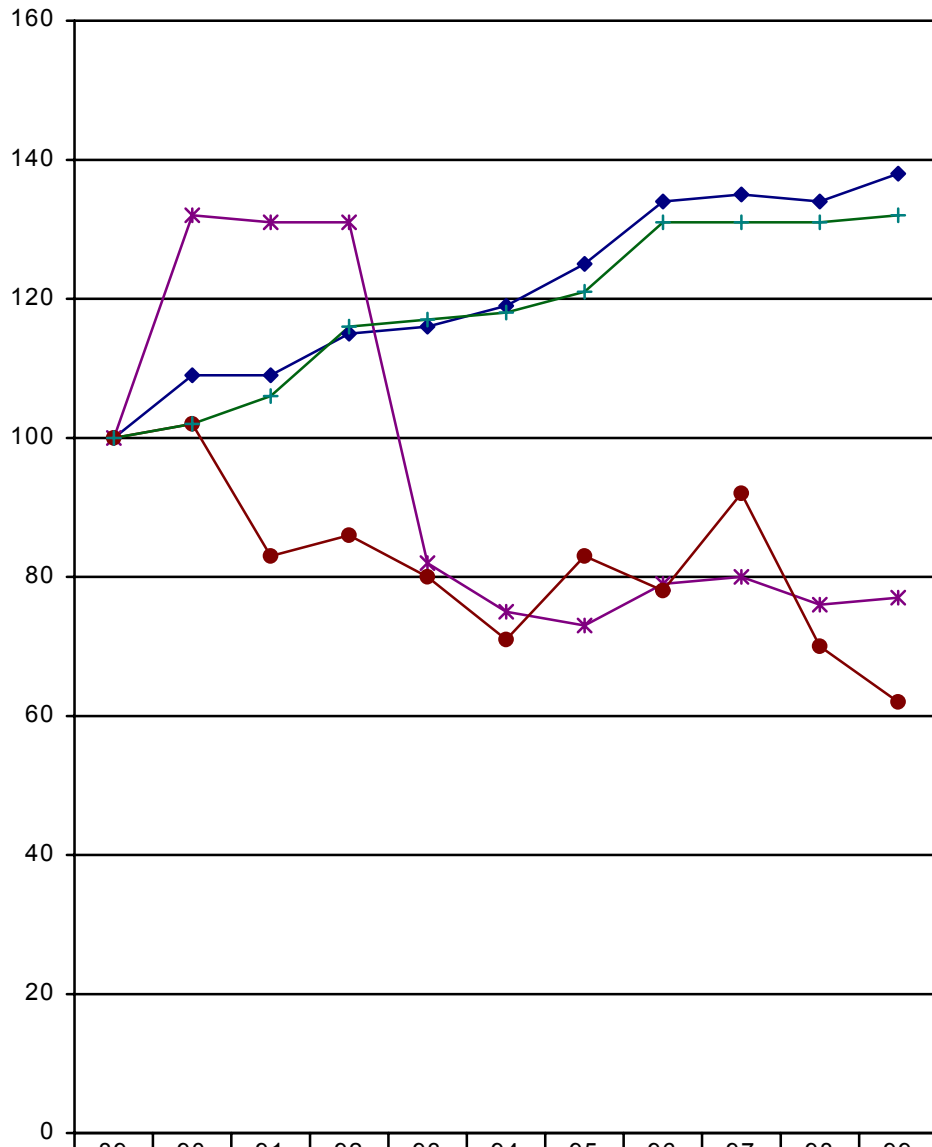


Source: Adapted by Anthony H. Cordesman from US State Department, World Military Expenditures and Arms Transfers, various editions. Middle East does not include North African states other than Egypt.

Chart II.3

Middle Eastern Military Expenditures and Arms Imports Dropped Sharply Relative to Economic Growth and Government Spending During 1989-1999

(1989=100, and all following years are percentages of 1989 as base year. All expenditure totals are measured in constant 1989 US dollars.)



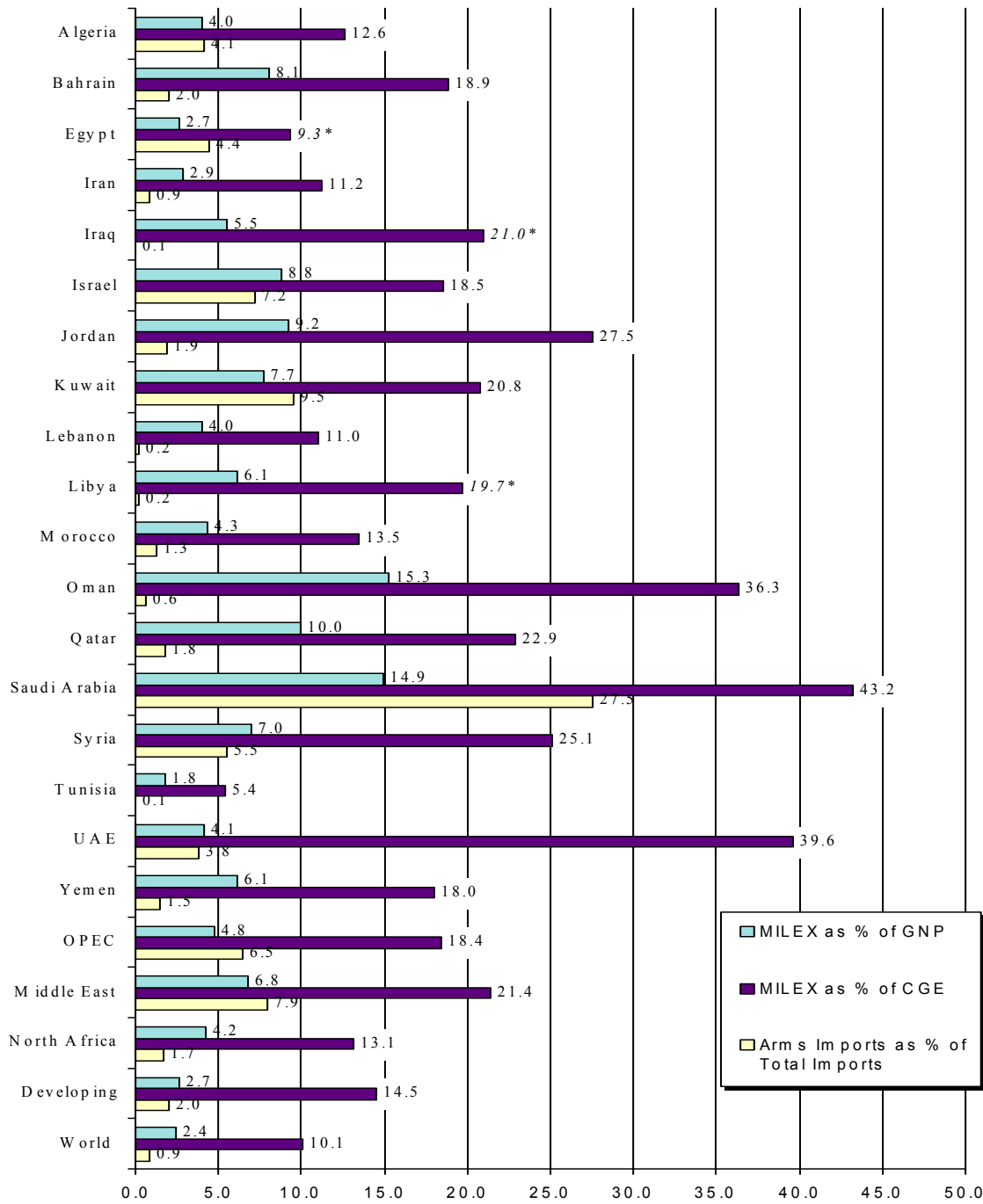
	89	90	91	92	93	94	95	96	97	98	99
◆ Gross National Product	100	109	109	115	116	119	125	134	135	134	138
* Military Expenditures	100	132	131	131	82	75	73	79	80	76	77
● Arms Imports	100	102	83	86	80	71	83	78	92	70	62
+ Central Government Expenditures	100	102	106	116	117	118	121	131	131	131	132

Source: Adapted by Anthony H. Cordesman from US State Department, Bureau of Verification and Compliance, World Military Expenditures and Arms Transfers 1999-2000. Middle East does not include North African states other than Egypt.

Chart II. 4

Military Expenditures and Arms Transfers as an Aspect of “Statism” in Individual Middle Eastern Countries in 1999

(Military spending as a percent of Central Government Expenditures (CGE) and Gross National Product (GNP), and Arms Imports as a Percent of Total)



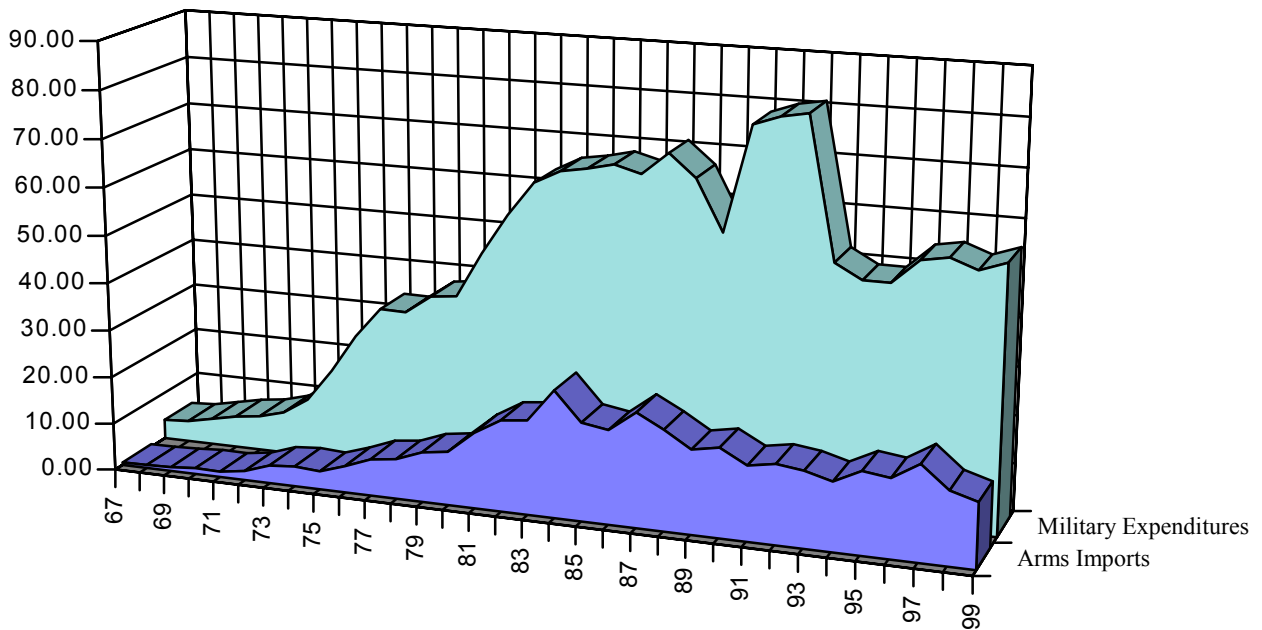
Note: Figures marked with asterisks are estimated or older data.

Source: Adapted by Anthony H. Cordesman from US State Department, Bureau of Verification and Compliance, World Military Expenditures and Arms Transfers, various editions.

Chart II.5

The Trend in Middle Eastern Military Expenditures and Arms Transfers Since the October War

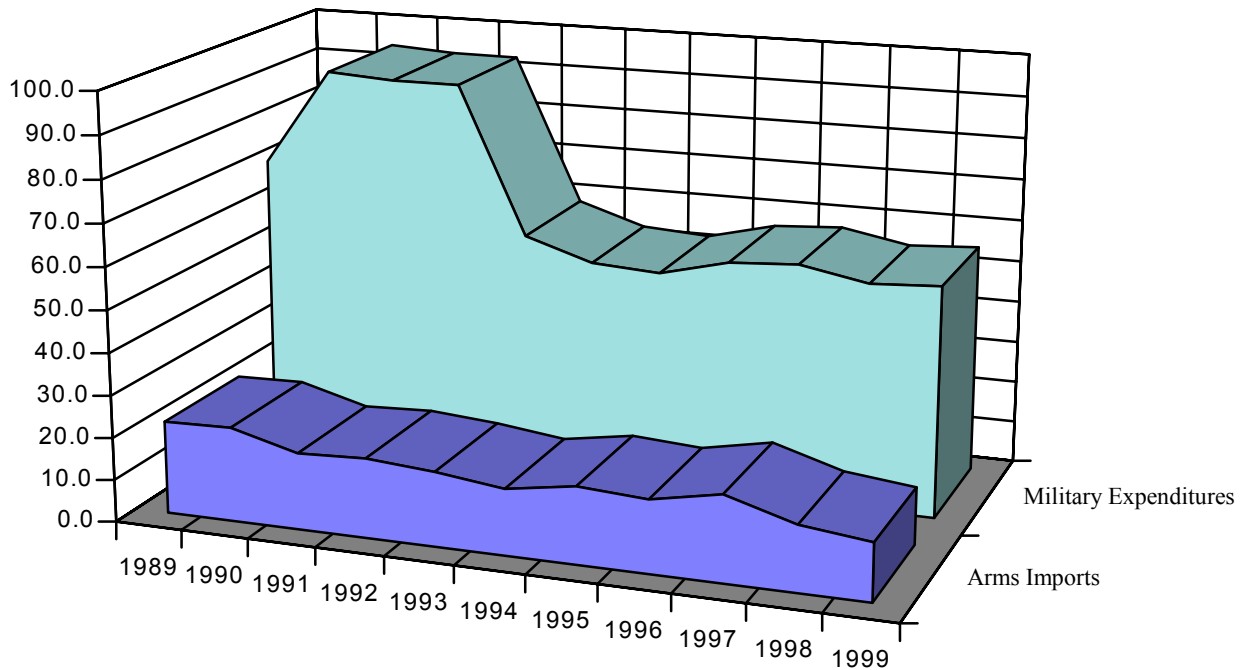
(1967-1999 in \$Current Billions)



Source: Adapted by Anthony H. Cordesman from US State Department, Bureau of Arms Control, World Military Expenditures and Arms Transfers, various editions. Middle East does not include North African states other than Egypt.

Chart II.6

The Trend in Middle Eastern Military Expenditures and Arms Transfers in Constant Dollars Since 1989
 (1989-1999 in \$US 1999 Constant Billions)



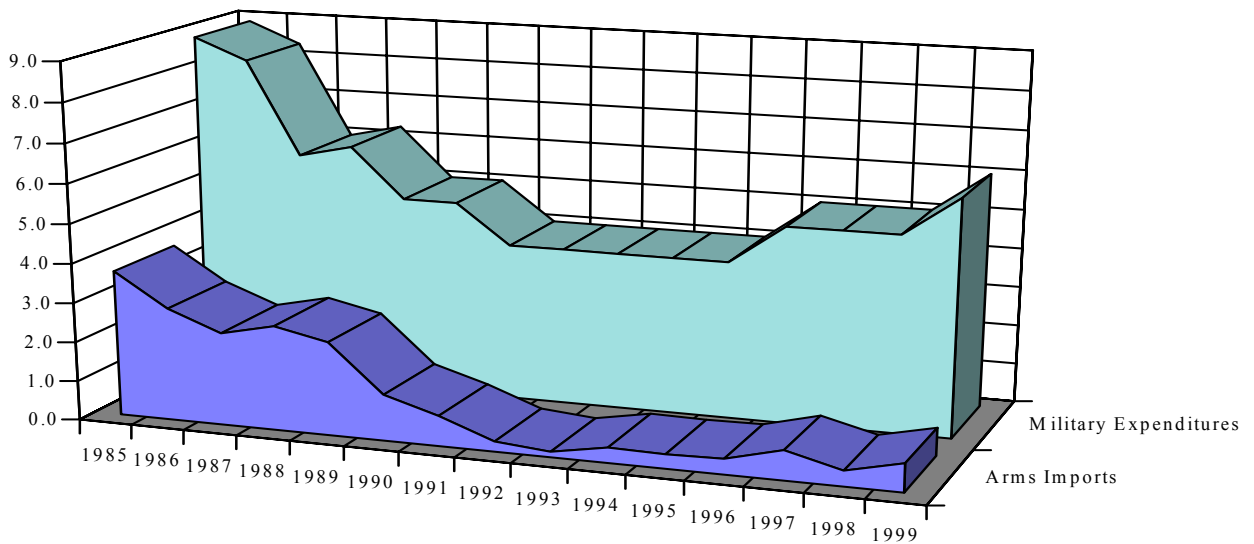
	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
■ Arms Imports	22.0	22.3	18.1	18.8	17.5	15.5	18.2	17.1	20.3	15.4	13.5
■ Military Expenditures	71	94	93	93	58	53	52	56	57	54	55

Source: Adapted by Anthony H. Cordesman from US State Department, Bureau of Verification and Compliance, World Military Expenditures and Arms Transfers 1999-2000. Middle East does not include North African states other than Egypt.

Chart II.7

North African Military Expenditures and Arms Transfers in Constant Dollars Have Dropped to Low Levels by Global Standards

(Algerian, Libyan, Moroccan, and Tunisian spending in Constant \$US 1999 Billions)

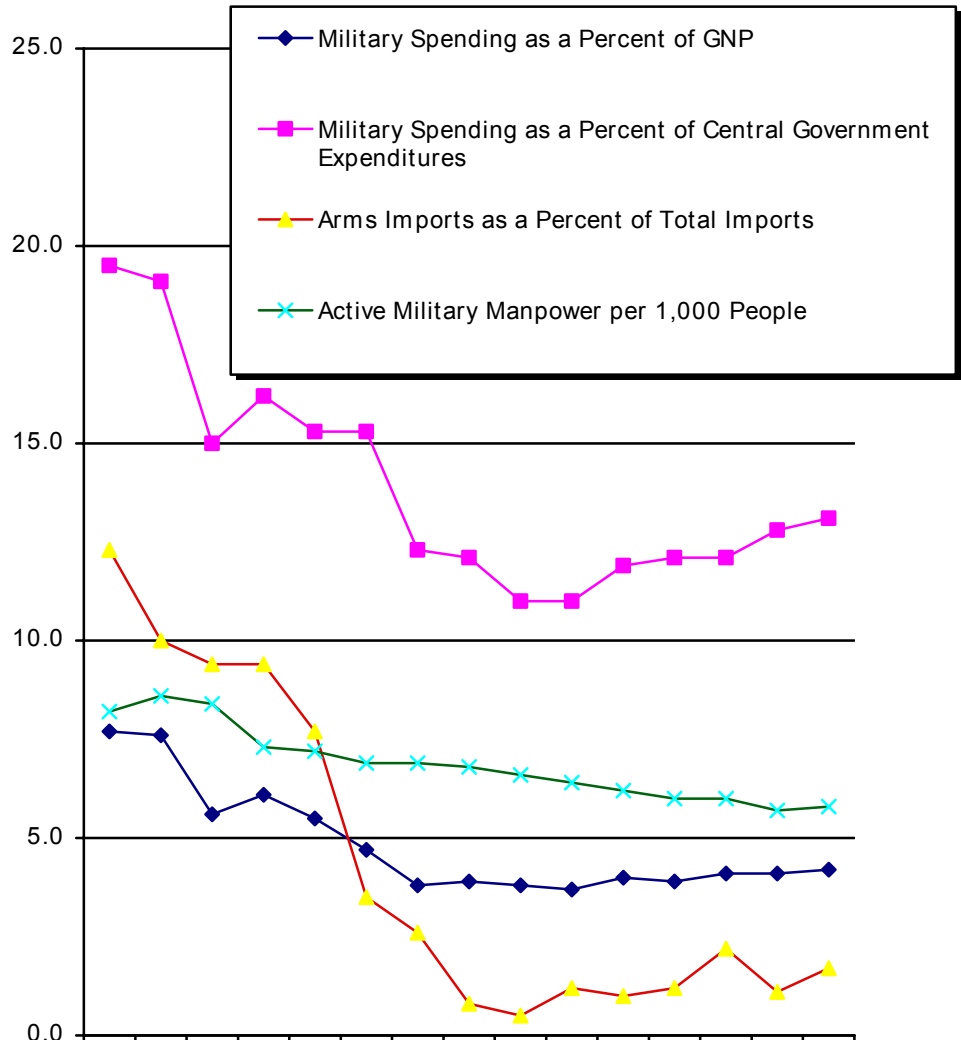


	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Arms Imports	3.7	2.9	2.3	2.6	2.4	1.2	0.8	0.3	0.1	0.4	0.4	0.4	0.7	0.4	0.7
Military Expenditures	8.9	8.3	6.0	6.3	5.0	5.0	4.0	4.0	4.0	4.0	4.0	5.0	5.0	5.0	6.0

Source: Adapted by Anthony H. Cordesman from Bureau of Arms Control in the US State Department (formerly US State Department, Bureau of Arms Control), World Military Expenditures and Arms Transfers, various editions.

Chart II.8

North African Military Efforts Declined Sharply as a Percent of GNP, Government Expenditures, Imports, and Total Population: 1985-1999



	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99
◆ Military Spending as a Percent of GNP	7.7	7.6	5.6	6.1	5.5	4.7	3.8	3.9	3.8	3.7	4.0	3.9	4.1	4.1	4.2
■ Military Spending as a Percent of Central Government Expenditures	19.5	19.1	15.0	16.2	15.3	15.3	12.3	12.1	11.0	11.0	11.9	12.1	12.1	12.8	13.1
▲ Arms Imports as a Percent of Total Imports	12.3	10.0	9.4	9.4	7.7	3.5	2.6	0.8	0.5	1.2	1.0	1.2	2.2	1.1	1.7
× Active Military Manpower per 1,000 People	8.2	8.6	8.4	7.3	7.2	6.9	6.9	6.8	6.6	6.4	6.2	6.0	6.0	5.7	5.8

Source: Adapted by Anthony H. Cordesman from US State Department, *World Military Expenditures and Arms Transfers*, various editions, GPO, Washington. Middle East does not include North African states other than Egypt.

The Problem of Arms Imports

The decline in MENA arms imports summarized in the previous charts often has not been a matter of choice on the part of the individual nations involved. It has been forced on by them by the need to spend far more on internal security and counterterrorism, the end of concessionary arms transfers by the FSU, growing regional economic problems, and a range of sanctions on key states like Iran, Iraq, and Libya.

The recent drop in spending on arms imports must also be kept in careful perspective. Spending on arms is still high enough to divert important sums away from economic and energy development. The cumulative impact of the resulting drop in force quality is broad enough so that it limits the ability of MENA countries to fight powers like the US, but it does not affect their ability to fight each other – since most regional states are left at nearly the same level of force quality. Moreover, the more the trend in arms imports is analyzed, the more clear it is why the problems in modernizing conventional forces have been a factor leading some nations to shift their resources away from conventional forces to the acquisition of weapons of mass destruction, long-range delivery systems, and carefully selected advanced conventional weapons.

- Chart II.9 puts the MENA level of arms imports in global perspective. It should be noted, however, that this table also shows that MENA arms deliveries still cost some \$15 billion a year, and these figures do not include the cost of military related imports of civilian and dual-use equipment likes trucks, communications, etc. The true cost is clearly in excess of \$20 billion that could otherwise be used for economic or energy development.
- Chart II.10 shows how cumulative trends relate to the impact of given wars. Presumably, the fall of Saddam Hussein will cause a further cut in regional arms imports, although no Gulf country has yet announced since plans. It should also be noted that the data are somewhat skewed by the fact the Israeli-Palestinian War does not involve major arms imports, and Israel's true level of imports is grossly understated in any case because only complete weapons sales – not components for military industries – are counted. Similarly, Algeria's imports relating to its civil war are often civilian or dual use goods. The graph also sharply understates spending for nations like Iran and Syria because the costs do not include proliferation and imports for WMD.
- Chart II.11 shows in more detail just how dramatic the impact of end of the Iran-Iraq War, and the sanctioning of Iraq and Libya, were in leading to the cuts in arms imports. The data for Syria do not reflect the real nature of its arms transfers because it was obtaining arms at concessionary price or through loans through most of the 1980s, and these ceased to be available after the start of the 1990s. As a result, the number of arms per dollar dropped precipitously.
- Chart II.12 uses declassified US data on arms sales to show the trend by major Middle Eastern country for both new arms orders and deliveries. The dominant role of two critical energy exporters – Saudi Arabia and the UAE – is clearly apparent. The Saudi data are particularly striking because many of the nation's economic and energy development problems could be solved if it cut its arms imports to more rational levels.

- Chart II.13 shows similar data on North African arms imports. The militaristic character of Algeria is clearly apparent. So is the impact of UN sanction in producing a sharp decline in Libyan arms imports, effectively putting an end to Qaddafi's dreams of becoming a serious regional military power.

The Threat to Energy Facilities

War and military forces have long affected the development and security of MENA energy supplies. The Arab-Israeli wars of 1956 and 1967 each affected the flow of exports to some degree, although at a time the world was far less dependent on the MENA region. The October War of 1973 triggered an oil embargo that led to a drastic strategic reappraisal of the importance of energy exports and imports. The Iran-Iraq War of 1980-1998, and the closely related US-Iranian tanker war of 1997-1998, involved deliberate and systematic attempts to target energy production and export capabilities in a prolonged conflict. Iraq burned Kuwait's oil fields and looted the country during its withdrawal, oil, and sabotage and looting seriously reduced Iraq's oil production and export capacity during the Iraq War of 2003.

The net impact of such wars, however, has so far been relatively limited. As yet, no country has had both the motive and capability to launch well-planned precision strikes against an opponent's energy facilities and exports, although Iran and Iraq at least attempted to carry out such attacks during 1980-1988. The overthrow of Saddam Hussein's regime has removed one of the few governments in the MENA region that was willing to conduct such attacks without extreme provocation, and it is unclear that any other government has an incentive to conduct some form of energy war in the near future. If anything, it is terrorism, not state-vs.-state conflicts, which is likely to be the future threat.

The downward trend in MENA military forces, spending, and arms transfers does not, however, mean that MENA energy facilities and exports are necessarily becoming safer. Both MENA nations and extremist movements are learning a great deal more about asymmetric war with time, and states are using their remaining funds to acquire more precision weapons and better platforms to launch them from. These weapons include air launched weapons that can be used against such key targets as export facilities, major energy processing and distribution facilities and oil separators, desalination and water injection facilities, power plants, gas train refineries, and petrochemical plants. MENA countries are also buying better maritime

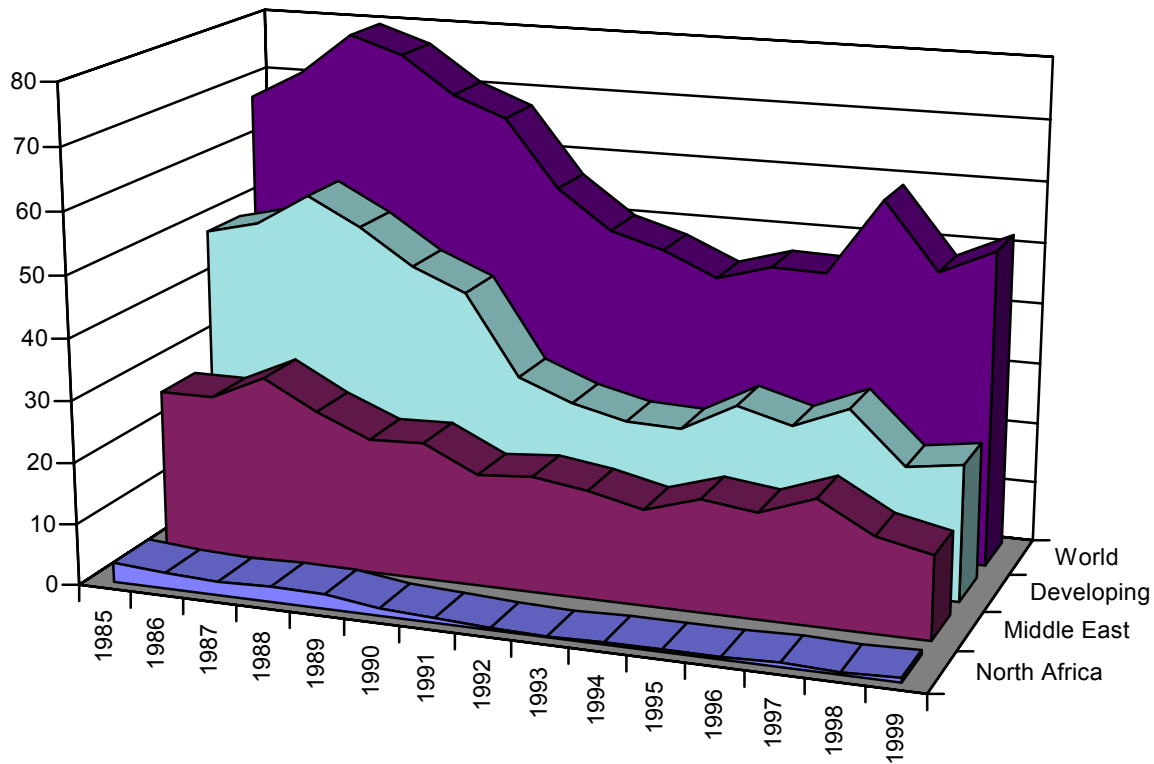
surveillance systems and longer range anti-ship missiles, better mines, and submarines also allow MENA states to do a better job of attacking tankers and offshore facilities.

The history of war is also the history of sudden explosive crises, and unplanned escalation. There is no way to predict whether one MENA state will launch such attacks on another's energy facilities, or whether such attacks will then be well planned and well executed. What does need to be understood, however, is that the broader trends in MENA military forces do not necessarily affect the security of energy facilities. In fact, it is at least possible that MENA nations with limited overall capability for conventional war would lash out at high value targets to try to defeat, intimidate, or punish their neighbors. If so, they will continue to acquire the means to conduct such attacks over time.

Chart II.9

MENA Arms Deliveries Are Declining: 1985-1999

(Arms Deliveries in Constant \$US 1999 Billions)



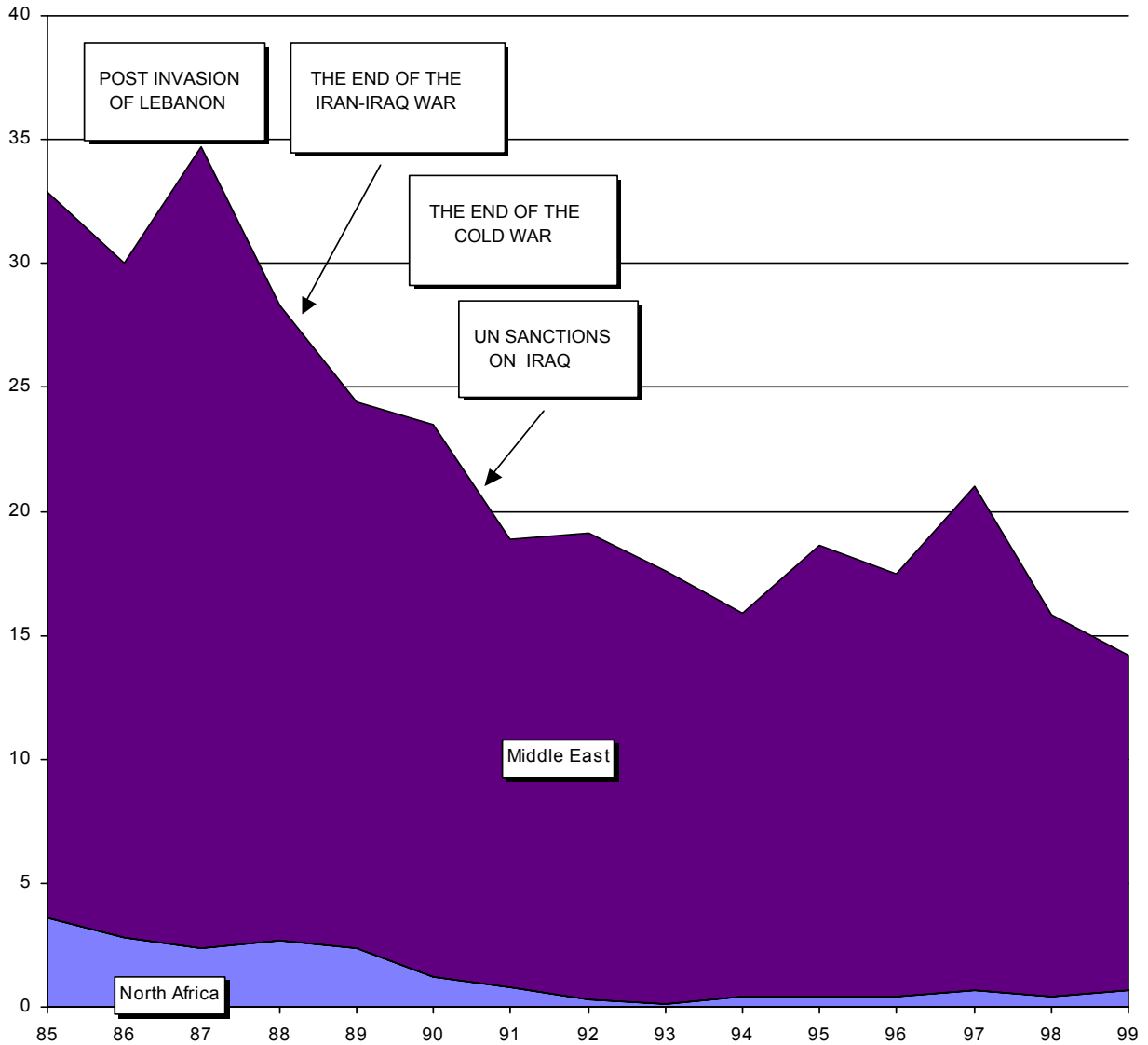
	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
■ North Africa	3.2	2.6	2.2	2.5	2.4	1.2	0.8	0.3	0.1	0.4	0.4	0.4	0.7	0.4	0.7
■ Middle East	26.2	26.2	30.2	25.6	22	22.3	18.1	18.8	17.5	15.5	18.2	17.1	20.3	15.4	13.5
■ Developing	48.7	50.7	56	51.5	45.8	42.2	29.1	25.7	23.6	23.3	28	25.6	29.3	20.9	22.2
■ World	67.9	72.5	79.3	76.5	70.5	67.2	56.2	49.9	47.4	43.5	46.1	45.8	58.4	47.5	51.6

Source: Adapted by Anthony H. Cordesman from Bureau of Arms Control in the US State Department, World Military Expenditures and Arms Transfers, various editions. Middle East does not include North African states other than Egypt.

Chart II. 10

The Cumulative Impact of the Arab-Israeli Peace Accords, Sanctioning of Libya, End of the Iran-Iraq War, End of the Cold War, Gulf War, and Economic Recession: 1985-1999

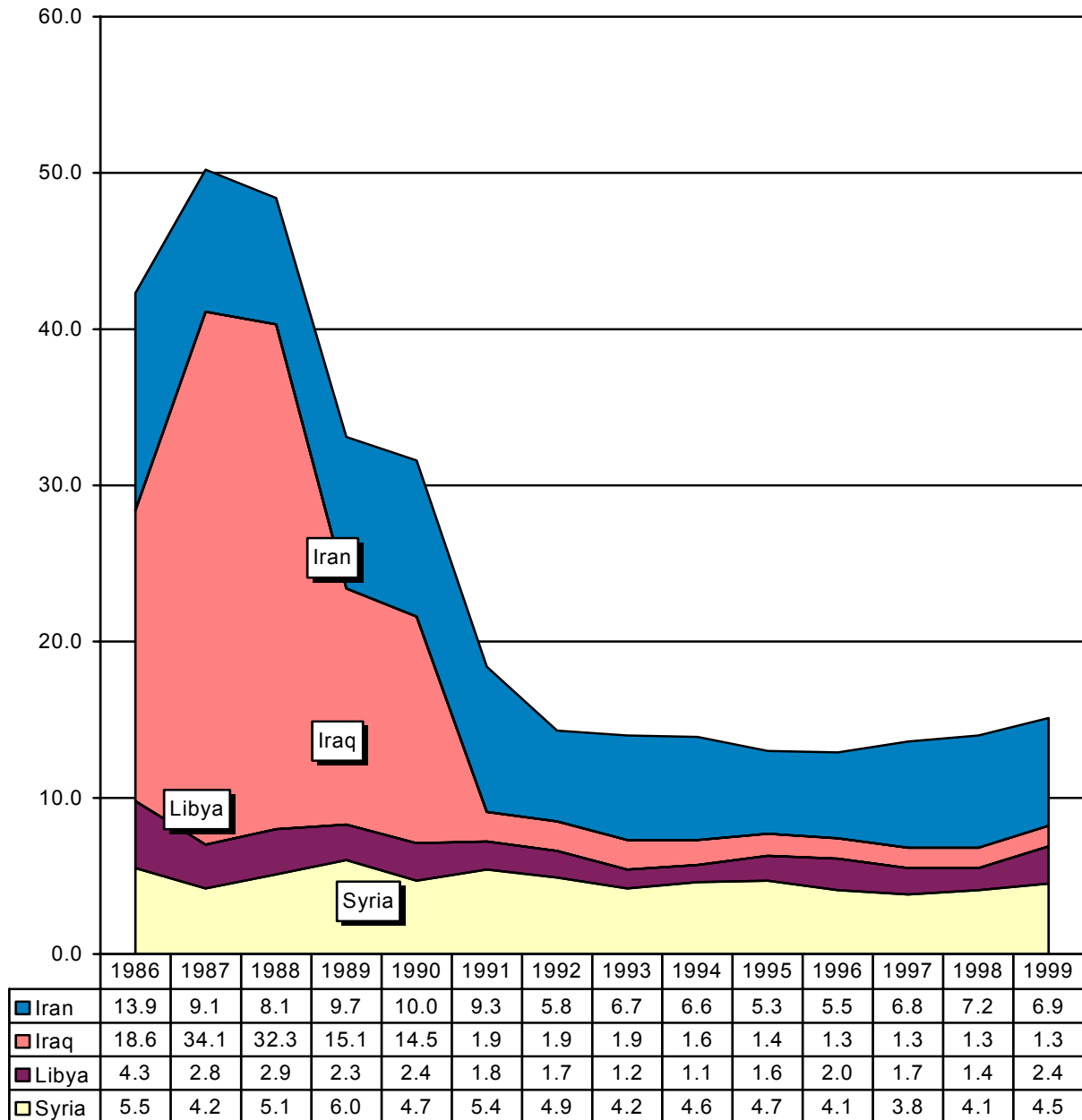
(Arms Deliveries in Constant \$US 1999 Billions)



	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Oceania	1.5	1.1	1.3	1.7	1.7	1.6	1.4	1.2	1.4	1.5	1.5	1.5	1.9	1.7	1.7
South America	1.5	1.4	1.6	1.7	1.4	0.9	1.5	0.8	0.8	0.8	1.6	1.3	1.5	1.2	0.8
North Africa	3.6	2.8	2.4	2.7	2.4	1.2	0.8	0.3	0.1	0.4	0.4	0.4	0.7	0.4	0.7
Central America	4.2	3.4	3.4	3.3	2.2	2.0	0.9	0.3	0.3	0.1	0.2	0.2	0.1	0.1	0.1
Sub-Saharan Africa	4.2	4.1	7.1	5.8	3.9	2.5	1.3	0.9	1.0	1.4	0.7	0.7	0.7	1.0	1.2
South Asia	5.5	6.9	6.6	8.2	9.4	7.9	4.2	1.5	1.2	0.8	1.4	0.8	1.4	1.2	1.8
East Asia	8.8	8.4	10.3	9.6	8.6	8.4	8.5	8.3	7.5	9.1	9.8	10.3	17.2	12.3	11.4
Developed World	21.7	20.7	26.6	24.8	24.7	25.1	27.0	24.3	23.7	20.3	18.1	20.2	29.1	26.4	29.5
Middle East	29.3	27.2	32.3	25.6	22.0	22.3	18.1	18.8	17.5	15.5	18.2	17.1	20.3	15.4	13.5

Source: Adapted by Anthony H. Cordesman from US State Department, Bureau of Verification and Compliance, World Military Expenditures and Arms Transfers, various editions. Middle East does not include North African states other than Egypt.

Chart II.11
The Cumulative Decline in Military Spending by Selected Major Buyers in Constant
Dollars: 1984-1999
 (Constant \$US 1999 Billions)

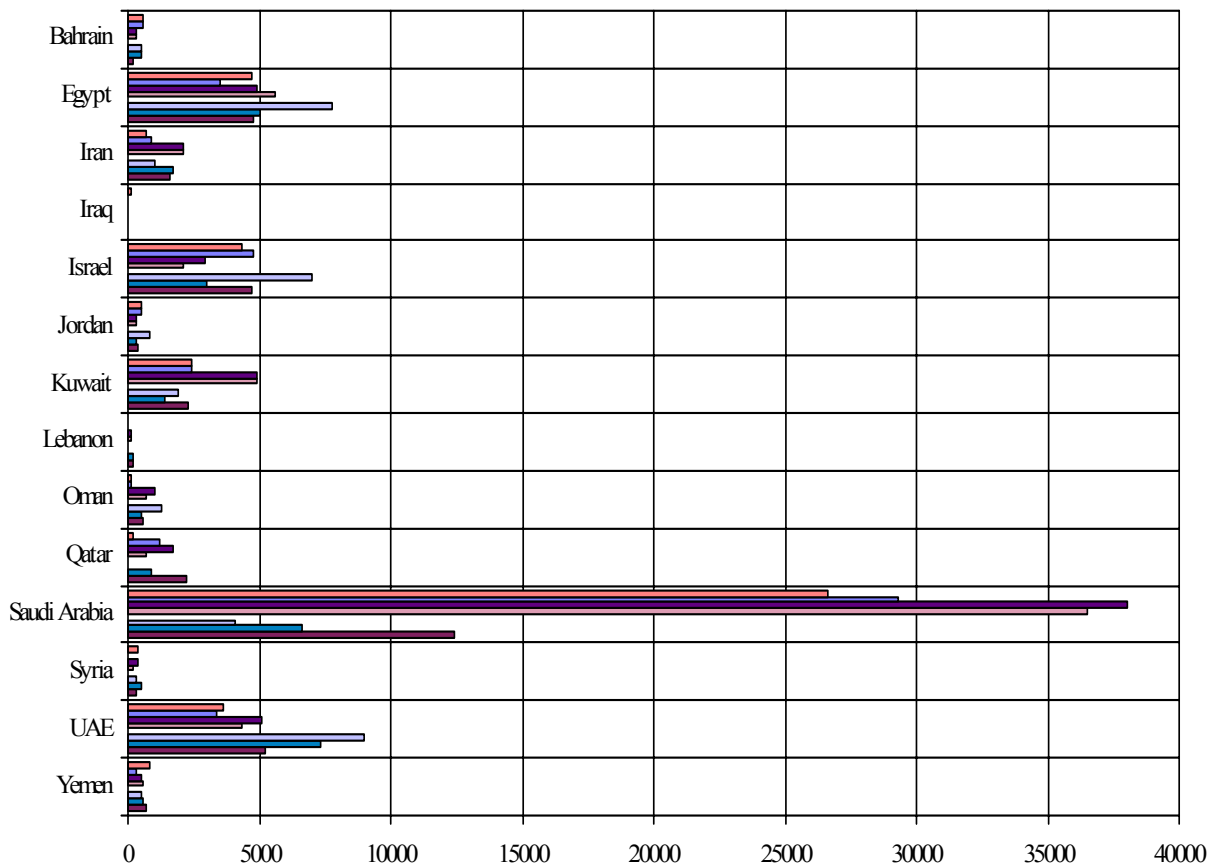


Source: Adapted by Anthony H. Cordesman from US Arms Control and Disarmament Agency, World Military Expenditures and Arms Transfers, various editions. Some data adjusted or estimated by author.

Chart II.12

Middle Eastern Agreements and Deliveries by Country: 1994-2002

(Arms Agreements and Deliveries to North African nations in \$US Current Millions)



	Yemen	UAE	Syria	Saudi Arabia	Qatar	Oman	Lebanon	Kuwait	Jordan	Israel	Iraq	Iran	Egypt	Bahrain
Deliveries: 99-02	800	3600	400	26600	200	100	*	2400	500	4300	100	700	4700	600
Deliveries: 98-01	300	3400	*	29300	1200	100	*	2400	500	4800	*	900	3500	600
Deliveries: 95-98	500	5100	400	38000	1700	1000	100	4900	300	2900	*	2100	4900	300
Deliveries: 92-95	600	4300	200	36500	700	700	100	4900	300	2100	*	2100	5600	300
Agreements: 99-02	500	9000	300	4100	*	1300	*	1900	800	7000	*	1000	7800	500
Agreements: 95-98	600	7300	500	6600	900	500	200	1400	300	3000	*	1700	5000	500
Agreements: 92-95	700	5200	300	12400	2200	600	200	2300	400	4700	*	1600	4800	200

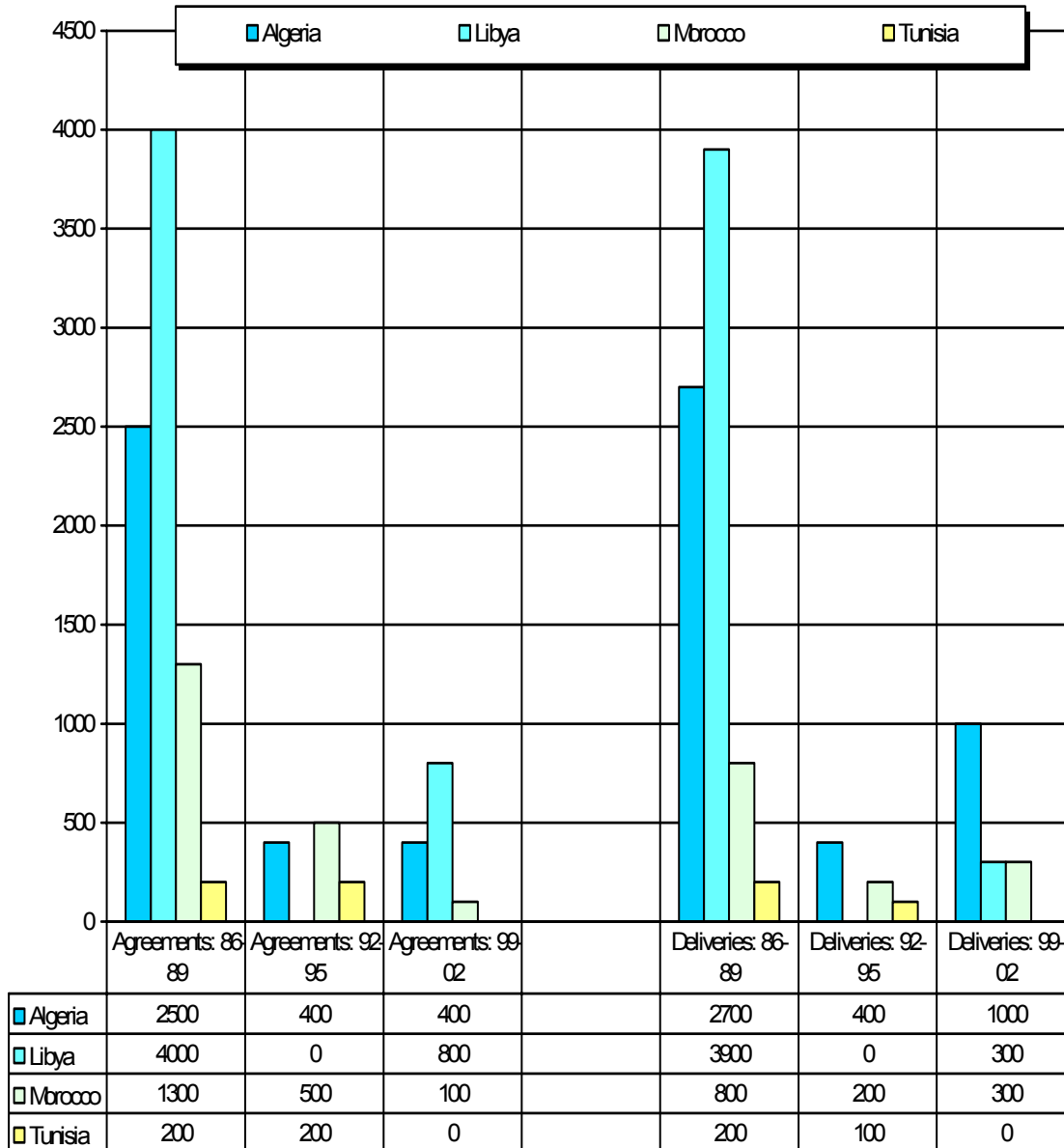
0 = Data less than \$50 million or nil. All data rounded to the nearest \$100 million.

Source: Richard F. Grimmett, Conventional Arms Transfers to the Developing Nations, Congressional Research Service, various editions.

Chart II.13

Trend in North African Agreements and Deliveries by Country: 1986-2002

(Arms Agreements and Deliveries to North African nations in \$US Current Millions)



0 = Data less than \$50 million or nil. All data rounded to the nearest \$100 million.

Source: Richard F. Grimmett, Conventional Arms Transfers to the Developing Nations, Congressional Research Service, various editions.

Proliferation

Proliferation is a serious problem in the Middle East, and one that is not likely to diminish in the near future. There is a complex pattern of proliferation in the region, and the range of delivery systems is steadily expanding. Algeria, Egypt, Iran, Iraq, Israel, Libya, the Sudan, and Yemen have all been involved in past efforts to acquire weapons of mass destruction – albeit at very different levels and with different goals and intentions. Algeria, Iraq, the Sudan, and Yemen are no longer part of the list of serious proliferators, but Iran, Israel, and Syria are. Israel has large nuclear forces, and Iran has a rapidly maturing nuclear program, Iran and Syria have significant biological warfare programs, and Egypt and Israel have conducted significant research and development activity. All of the proliferators in the Middle East are working on – or have --chemical weapons; Iran, Libya, and Syria probably have a stockpile of such weapons. Algeria, Egypt, and Israel have the technical capability to produce them. Egypt, Iran, Iraq, Israel, Libya, and Saudi Arabia have long-range missiles or programs to acquire them.

Terrorist movements like Al Qaida have also sought weapons of mass destruction and there is no way to predict how asymmetric wars or terrorism using CBRN weapons could damage oil and gas production and petroleum export facilities, or the level and duration of any interruption in exports. It is all too clear, however, that the threat posed by future wars and terrorism is becoming far more serious than in the past.

Proliferators in the Middle East

Table II.3 shows the list of MENA proliferators and the current estimated status of their efforts. The nations listed in Table II.3 are so different in terms of regime, goals, and behavior that it is obvious that there is no regional threat to the West, but rather the possibility that individual states might pose a threat to individual Western nations or interests. Two major proliferators – Iran and Libya – are of special interest. These are nations that have posed a threat to the West in the past and which have also sponsored attacks of state terrorism against Western targets and/or on Western soil.

Iran currently poses the most significant near-term threat in terms of acquiring biological and nuclear weapons, and long-range missiles that might strike Europe or the United States. In spite of Iranian denials, there is little doubt that Iran has an active nuclear and biological weapons program, and has already begun to test long-range missiles. Iran's capabilities, however, will remain highly limited for the next decade, and Iran faces a strong regional threat

from Israel. While Iran's regime may or may not become truly moderate in character, it has become more pragmatic since the death of Khomeini, and it is far from clear that it would take "existential" risks of the kind posed by such an attack on the West.

There has, however, been growing international pressure on Iran to cutback on its nuclear program. The discovery of two major undeclared underground facilities in 2003 that included a centrifuge plant suitable for producing fissile Uranium, and a heavy water plant for a reactor fuel cycle that could produce weapons grade Plutonium, led to broad international pressure on Iran to permit full-scale inspection on the terms provided to the protocol for the Nuclear Non-Proliferation Treaty. So did a follow on analysis by the International Atomic Agency that investigated Iran's nuclear program in depth and reported a number of forbidden research and development activities; and confirmation of the fact that Pakistan had secretly sold nuclear weapons technology to Iran. The a protocol to the Nuclear Nonproliferation Treaty that allows the International Atomic Energy Agency broader rights of access to sites in the country on December 18, 2003, but this does not preclude Iran from going on with covert R&D activity. Iran is also proceeding with long-range missile developments that have little military meaning unless the missiles are armed with weapons of mass destruction, and there are no effective limits on its chemical and biological weapons programs.⁴

Libya has the dubious distinction of being the only MENA state to have fired a long-range missile on a Western target – it fired on the Italian island of Lampedusa following the U.S. raid on Tripoli. At the same time, a lot of Libya's grandiose military plans have so far ended in failure. Libya has some chemical weapons capability, but has failed to develop ballistic missiles with longer ranges than the Scud. It has explored biological and nuclear weapons programs, but there is little evidence of success. Moreover, the interception of a ship carrying nuclear centrifuge and weapons technology to Libya in the fall of 2003 led to political pressure that resulted in Libya's declaration in December 2003 it would give up all its programs for developing missiles and weapons of mass destruction and allow unconditional inspections. This was followed by both US and IAEA inspections, and the transfer of much of Libya's technology to the US.

Given this background, it currently seems unlikely that even the most radical MENA power would readily take the risk of directly confronting a combination of its neighbors, the US, and other Western states, given the relative military weakness of key potential threats, and the risk of massive retaliation. No Middle Eastern state can disregard the fact that any use of a biological or nuclear weapon that produced massive casualties could trigger devastating conventional strategic strikes or even the use of nuclear weapons by the West.

At the same time, there are dangers in assuming that Middle Eastern states will always behave as “rational actors,” and terrorist and extremist movements are far harder to deter than states. The history of the region is filled with miscalculations, erratic behavior, and risk taking. Behavior can alter rapidly in a crisis, and the most threatening states have rulers or ruling elites that may choose to escalate in ways that are far less conservative than what Western planners would consider under similar conditions. Extremist movements like Al Qaida have also shown that they will take extreme risks to take extreme action, and they may either cooperate with proliferating states or act as their covert proxy.

The following scenarios could involve either the more radical proliferators in the region or terrorist attacks and may not represent even moderate probability cases, but they are possible enough so they deserve serious consideration:

- Weapons of mass destruction might be used against key energy and energy export facilities in intra-regional conflicts to pose a major economic threat to a regime or put pressure on the West.
- Attacks might be carried out on Western power projection forces in the region, or the threat of such attacks might be used to try to force a regional power to expel Western power projection forces, or deprive regimes of Western support.
- Threats against the West, demonstrative long-range missile attacks against targets in the West, or low-level use of weapons of mass destruction might be used against targets in the region or the West to try to force Western nations to support the policies of a given Middle Eastern state, or intervene in a regional conflict. The escalation of an Israeli-Syrian conflict, or future Iranian-Iraqi conflict might lead to such a threat.
- A regional power might set up a launch on warning or launch-under-attack system targeted on the West in an effort to deter Western intervention or military action. Such a system might be created to prevent Western counterproliferation strikes.
- The threat, demonstrative use, or larger scale use of such weapons might be utilized in an effort to force an end to sanctions or containment.

- A regime on the edge of collapse might lash out, feeling it had nothing to lose and accepting the risk of broader retaliation against the nation. Alternatively, a nation under nuclear attack by Israel might feel that attacks were justified against Western targets, particularly U.S. bases.
- Terrorists could use such weapons in the West to try to further divide the West and Arab world, building on the tensions caused by the Second Intifada and hostility growing out of September 11, 2001.
- Middle Eastern states are not limited to conventional forms of warfare. While a great deal of attention focuses on long-range missiles, a Middle Eastern state might use unconventional delivery means or a terrorist proxy to deliver such weapons – hoping that it would not be identified as the source or that enough ambiguity would exist to prevent a decisive response.
- Technology or fissile material transfers might suddenly destabilize the balance. This might include the transfer of long-range missiles or fissile material, or key components and technology for missiles and weapons. This could suddenly alter the regional balance and the perceived risk in threatening the West or Western interests.

Once again, the problem is to balance possible risks against probable risks over a period as long as 2003-2030, knowing that new proliferators can emerge and many regional powers could acquire missiles, cruise missiles, or better strike aircraft. Most MENA states and leaders are normally cautious and self-preservation is normally the highest single priority. There is no question, however, that a combination of creeping proliferation, and having to rely on the judgment and stability of at least five major proliferators, presents risks.

The Threat to Energy Facilities

Proliferation represents the most serious potential threat to MENA energy facilities in terms of lethality. Even a small nuclear weapon could destroy any energy production or export complex in the Middle East, although oil and gas fields are too dispersed and “hardened” for such attacks to have much effect. Radiological weapons are far harder to produce in effective lethal form than many analysts seem to understand, but are probably within the state of the art of the more advanced Middle Eastern economies, and even small, relatively non-lethal, radiological weapons might keep workers from entering a site or facility,

Biological weapons can be more lethal than nuclear weapons, and have the advantage of leaving facilities intact. Persistent biological weapons are possible, and can be used to contaminate facilities in much the same way as radiological weapons. Once again, their psychological effect might be more important than their lethality or killing effect.

Large amounts of chemical weapons are needed to achieve high lethality against large energy facilities, but such attacks are within the state of the art for countries like Syria and Iran, - - which seem to have cluster munitions and persistent nerve gas. Advances in warhead and weapons design are also improving the capability to disseminate both chemical and biological weapons from missiles, cruise missiles, bombs, and UCAVs. There is no way to know how advanced MENA countries now are, or how much progress they will make in the future, but it is clear that some could have a limited capability now and that they could all potentially acquire relatively sophisticated capabilities during 2005-2010.

Proliferating MENA nations may never use weapons of mass destruction against energy facilities, but there are incentives that could lead to making such threats or to actually using such weapons in a crisis. Energy facilities are a natural hostage in a strategic confrontation, and involve far less provocation than attacks on civilian populations. The threat of such attacks might offset a major conventional advantage on the part of an opponent or be used to deter military action or the support/basing of outside powers like the US. The effective destruction of a key energy facility could also produce a serious mid to long-term blow in economic terms.

In any case, it is dangerous to assume that crises and escalation are handled in rational terms or from a common set of perceptions. Proliferating nations know that even the threat of such strikes can have a powerful deterrent or intimidating impact, and threats can lead to use. Moreover, world energy markets might well panic at the very threat of the use of WMD and might take days or weeks to stabilize after even a token use of a weapon whose effects would be difficult to estimate and understand.

Independent or proxy action by terrorist groups presents a further problem, as does the risk of covert attack. Extremist groups cannot present the same range of military threats as states, but this might not matter if they picked the right target. State use of a terrorist group as a proxy, or covert attack, could achieve significant results in some scenarios with far less fear of retaliation or some kind of serious action by the international community.

Table II.3**Nations with Weapons of Mass Destruction**

<u>Country</u>	<u>Type of Weapon of Mass Destruction</u>		
	<u>Chemical</u>	<u>Biological</u>	<u>Nuclear</u>
		<i>East-West</i>	
Britain	Breakout	Breakout	Deployed
France	Breakout	Breakout	Deployed
Germany	Breakout	Breakout	Technology
Sweden	-	-	Technology
Russia	Residual	Residual	Deployed
US	Residual	Breakout	Deployed
		<i>Middle East</i>	
Algeria	Technology	Technology	Interest
Egypt	Residual	Breakout	-
Israel	Breakout	Breakout	Deployed
Iran	Deployed?	Breakout	Technology
Iraq	?	?	Technology
Libya	Deployed	Research	-
Syria	Deployed	Technology?	-
Yemen	Residual	-	-
		<i>Asia and South Asia</i>	
China	Deployed?	Breakout?	Deployed
India	Breakout?	Breakout?	Deployed
Japan	Breakout	Breakout	Technology
Pakistan	Breakout?	Breakout?	Deployed
North Korea	Deployed	Deployed	Deployed (?)
South Korea	Breakout?	Breakout	Technology
Taiwan	Breakout?	Breakout	Technology
Thailand	Residual	-	-
Vietnam	Residual	-	-
		<i>Other</i>	
Argentina	-	-	Technology
Brazil	-	-	Technology
South Africa	-	-	Technology

Terrorism and State Terrorism

Many of the regimes in the region are repressive, and state terrorism is endemic. A lack of representative government, a failure to establish a sound rule of law, and human rights abuses have led human rights groups and the US state Department to cite a continuing pattern of arbitrary arrests, abuse of internal security efforts, and corruption. These problems have often helped to breed extremist and terrorist opposition groups.

Many other forces are at work, however, and terrorism is scarcely limited to attacks on the most repressive regimes. As Chapter III describes, the MENA area is filled with serious economic, cultural, and demographic problems. Many moderate regimes face problems with internal and external terrorism, much of it directed against their secular character and often against progressive change and reform.

The Problem of Islamic Extremism and Violence

Islamist extremist violence has proved to be exceptionally dangerous and destabilizing. Every nation in the Middle East, no matter how moderate, faces some level of internal and external threat from such movements. Active internal fighting has taken place in Algeria, Libya, Egypt, Lebanon, Syria, Saudi Arabia, and Yemen. Iran is torn between Islamic “hardliners” and “moderates,” and the fall of Saddam Hussein has unleashed new Islamist forces in Iraq. Every other MENA country has had to establish new security procedures, and cope with its own Islamist extremists. The problem is also an international one that reaches far outside the MENA area. It now involves Central Asia, South Asia, the Islamic countries of Southeast Asia, and movements in Europe and North America.

While militarism and proliferation pose potential threats to the region’s development and energy exports, the most active threat of violence now comes from this violent extremism. It does not, however, have one source or represent one cause. Some have arisen in response to state terrorism, in response to regional conflicts like the Israeli-Palestinian War, but other elements have developed in part due to the pressures of social change. The end result is a complex mix of threats mixes national movements, regional movements, and truly international movements like Al Qaida.

The ideology and goals of these movements differ from group to group, but there are often loose alliances of groups with different goals. What most do have in common is that their ideology is based on an extremist version of Shi'ite, Sufi, Salafi, and Wahhabi Islam and that the religious goals of each movement are mixed with an antiseccular political agenda and a rejection of modern economic priorities and reform. So far, they are all small extremist groups that do not represent the views and hopes of the vast majority of the people in their country of the MENA region, but several have already proven to be dangerous both inside and outside the Middle East.

The Regional and Global Impact of Islamic Extremist Terrorism

Long before 9/11, the attacks on Al Khobar, the USS Cole, and the World Trade Center showed that terrorism posed a threat to the moderate regimes in the Middle East and a transnational threat to the West. There have been many serious terrorist attacks on Western targets in the Middle East in the past, such as the bombing of the Marine Corps Barracks in Beirut.⁵

The November 13, 1995 truck bombing of the National Guard Headquarters in Riyadh killed five U.S. service men and two Iranians. The June 25, 1996 bombing of the Khobar Towers killed 19 U.S. servicemen. The attacks on the U.S. Embassies in Kenya and Tanzania involved large numbers of innocent casualties – 247 dead and over 5,000 wounded in the case of Kenya, and 10 dead and more than 75 wounded in the case of Tanzania. These attacks involved truck bombs with 600-800 pounds of explosive.

Civil tension in the Middle East has made tourists a target. For example, the worst terrorist attack in Egypt's history occurred on November 17, 1997. Six gunmen belonging to the Egyptian terrorist group al-Gama'at al-Islamiyya (Islamic Group or IG) entered the Hatsheput Temple in Luxor. For nearly half an hour, they methodically shot and knifed tourists trapped inside the Temple's alcoves. Fifty-eight foreign tourists were murdered, along with three Egyptian police officers and one Egyptian tour guide. The gunmen then fled the scene, although Egyptian security forces pursued them and all six were killed. Terrorists launched a grenade attack on a tour bus parked in front of the Egyptian National Antiquities Museum in Cairo on September 18, 1997, killing nine German tourists, an Egyptian bus driver, and wounding eight others.

The West began to respond long before “9/11.” The U.S. cruise missile attacks on targets in Afghanistan and the Sudan on August 20, 1998 reflected the fact that U.S. intelligence had reliable information that Osama Bin Laden, a leading sponsor and financier of terrorism, planned large-scale attacks on U.S. targets. The U.S. attack on the Shifa Pharmaceutical Plant in Khartoum was a preemptive attempt to prevent the production and use of VX nerve gas by Bin Laden’s organization. These attacks, however, show that the wrong use of military power can do more to provoke than deter.

Nevertheless, the attack that truly globalized Middle Eastern terrorism was the series of attack on the World Trade center and the Pentagon on September 11, 2001. There have been many previous attempts at such attacks, and many smaller successful attacks on targets in Europe. It was “9/11,” however, that showed the US that its territory and civil population could be as vulnerable as the nations of the Middle East.

While Al Qaida emerged as the most important current threat, there were many causes of transnational terrorism in the Middle East, and many different targets:

- The U.S. is a major target because it projects the most power into the region, because of its close ties to Israel, because attacks on the U.S. produce the most world-wide publicity, and because the U.S. can often be used as a proxy for less popular attacks on Middle Eastern regimes.
- The breakdown in the Arab-Israeli peace process has triggered a wave of Palestinian “terrorism” in response to steadily escalating Israeli “excessive force.” It is a tragedy that could trigger a broader Arab-Israeli conflict and make Americans a target, both out of frustration and in an effort to break up the peace process.
- The failures of Middle Eastern secular governments, state terrorism and authoritarianism, economic hardship, social dislocation, and the alienation of youth, combine to create extremist groups that not only attack their governments, but use Western targets as proxies. Motives can include attempting to drive out the Western military forces that provide Middle Eastern countries with security, cripple the economy to weaken governments, or win public recognition in the region. While some of these groups are secular, most are Islamic in character. Some totally reject both secularism and any ties to the West or Western values.
- The West can be attacked on the basis of its values, and for corrupting Islamic countries and supporting secular regimes. While the U.S. is the primary target of such attacks, figures like the Saudi terrorist financier Osama Bin Laden want to drive the West out of the region. Unlike more conventional forms of terrorism, such attacks deliberately seek to create a “clash of civilizations” and to build on other regional problems and tensions to divide the West and Arab worlds.⁶
- European nations can become the scene of attacks by opposition groups on the Embassies of Middle Eastern regimes, or by opposition groups attacking each other. Iran has sponsored state terrorist attacks on the People’s Mujahideen and Kurdish opposition groups in France, Germany, Switzerland and Turkey. Israel has killed Palestinians in nations like Norway. France has become the scene of fighting between Algerian factions.

- Western tourists and businessmen can be the targets of terrorists in the Middle East, as such groups seek to put economic pressure on local regimes, or prove their status and power. For example, an Algerian terrorist group called the GIA (Armed Islamic Group) killed seven foreigners in Algeria in 1997, bringing the total number of foreigners the GIA has killed in Algeria to 133 (since 1992). Bombs have been used in civilian areas in Bahrain, although Westerners have not been major targets. Four U.S. employees, of Union Texas Petroleum, and their Pakistani driver were shot and killed in Karachi on November 12, 1998, when the vehicle they were riding in was attacked by terrorists that seem to have been affiliated with Middle Eastern extremist groups.

The Clash Within A Civilization, the Arab-Israeli Conflict, and the Western Counter-Reaction

It is still unclear how Islamic extremism and the aftermath of “9/11” will play out in the MENA area. What is clear is that Al Qaida launched a new series of bloody attacks of Saudi Arabia that such attacks have taken place in Iraq, that the Algerian civil war continues and extremist Islamic movements exist at some level on every MENA state. Extremism and terrorism remain a major threat to MENA governments, and the end result is more a clash within an Islamic civilization and than not a clash between Islam and the Arab world and the West. The primary goal of most Islamic extremist movements is not to attack the West but to create Islamic regimes, based on ill-defined concepts of religious Puritanism, radical socialism or economic change, and conservative social customs. Such an extremism is an attack on secularism per se, and explains why such movements oppose MENA secular governments and social and economic modernization without clearly articulating the kind of government, society, and economy that should replace them. Islamic extremists know what they are against. They have only vague and impractical ideas of what they are for.

There are, however, other forms of terrorism and extremist violence. The fact that the Arab-Israel peace process has given way to an Israeli-Palestinian war has led to a new wave of violence on both sides. The Israeli side has used conventional forces to occupy and attack the Palestinians. The Palestinians have used asymmetric and guerrilla warfare, and terrorism – most notably in the form of suicide bombings. The Palestinian terrorist attacks have been overwhelmingly by Islamist groups like Hamas and the Palestinian Islamic Jihad, but have increasingly involved support from the hard-line elements of secular Palestinian groups as well.

The lines between Islamic extremism and the Arab-Israeli conflict have been further blurred by the role Shi’ite groups like the Hezbollah played in driving Israel out of Lebanon, and the role Iran and Syria have played in supporting the Hezbollah. Syria at least tolerates terrorist groups on its soil that oppose Israel. Iran has increasingly funded non-Shi’ite groups like Hamas

and the PIJ, and money has flowed to such groups from the Gulf and other Arab states – partly to support their charities and partly to support the groups in attacking Israel.

Unlike most forms of Islamic extremism and terrorism, the Israeli-Palestinian conflict also polarizes the Arab world at a popular level. If the Israeli image is one of Palestinian terrorism, the Arab image is one of excessive Israeli use of force, continued occupation, and continued settlements. It allows extremist and terrorist groups to exploit the conflict to win popular support, and exploit the image of the US as Israel's ally and supporter. More generally, it allows them to exploit the image of the West as exploiting the Arab world.

The West, and particularly the US, have often reacted by confusing Islamist extremism and terrorism with Islam, the Arab world, and Iran. US officials have tried to avoid such stereotypes and dangerous generalizations, but many American Western media and analysts have not. One of the ironies of "9/11" is that Osama bin Laden and Al Qaida have succeeded in part in producing a Western counterreaction that does to some extent reflect a "clash between civilizations." The US and British invasion and occupation of Iraq has increased such tensions as have the failures to bring effective security and development to Afghanistan, and US talk of broad regime change along lines where its concept of future "democracies" is as vaguely defined as of the future desired by most Islamist extremists.

State Support of Terrorism and the Use of Terrorist Proxies

The regional security problems created by independent terrorist movements are further compounded by the state support of terrorism or state use of terrorist proxies. Several states have actively sponsored external terrorist movements, or have conducted acts of terrorism outside their own territory. These states have included Iran, Iraq, Libya, and Syria.

Such states may help extremist movements acquire weapons of mass destruction in the future, and the most serious challenge proliferation poses to MENA energy facilities may well prove to be the risk that proliferation interacts with terrorism. At present, this is only a possibility, but terrorist attacks using weapons of mass destruction would present a fundamentally different kind of threat. They would be a far more lethal kind of terrorist threat than the region and the West have yet faced.

Under many conditions, a single act of terrorism can kill thousands of people and/or induce levels of panic and political reaction that governments cannot easily deal with. Under some conditions, the use of weapons of mass destruction can pose an existential threat to the existing social and political structure of a small country -- particularly one where much of the population and governing elite is concentrated in a single urban area.

Terrorism and Middle East Energy

Both MENA energy exporters and global energy consumers need a smooth flow of energy exports that must be delivered reliably on a day-by-day basis and be expanded over time to meet global demand. Chapter I has shown that the world needs the Middle East and North Africa to both make massive increases in its energy exports, and to sustain these at moderate market prices provide reliable daily deliveries, and avoid any interruptions in supply. The next chapter shows that MENA states face immense demographic and economic challenges that require them to earn as much from energy exports as possible, although the era of “oil wealth” has ended and stability can only come from both energy export and a much more diversified pattern of overall economic development.

So far, terrorism and extremism have rarely made direct attacks on energy facilities, This may be because most Islamic extremist movements act largely as national groups or subgroups and see energy export earnings as serving national needs and not just these of the regime or Western interests. There has, however, been a history of minor sabotage in Bahrain and Saudi Arabia, and Al Qaida has attacked foreign compounds in Saudi Arabia in ways that could have a future impact on the foreign expertise Saudi Arabia still needs for some aspects of its energy production. There have been occasions in the Algerian civil war when terrorists attacked energy targets and workers in energy facilities. Pipelines and energy facilities were sabotaged during the Iran-Iraq War, although conventional attacks dominated the damage to energy facilities. There has also been a consistent pattern of systematic terrorist attack and sabotage of Iraq's nation's energy facilities since the US and British occupation of Iraq.

It is difficult to generalize from such a unique case, and particularly one that is still in progress, but the Iraq War has at least shown that such attacks can have a powerful political and economic success, that pipelines and export facilities are vulnerable. The attacks to date have also shown that much of the reaction is a matter of how the target is then perceived as a reliable

supplier and country for investment, rather than determined by the success of the attack or its impact on exports.

Middle Eastern states are also becoming steadily more vulnerable to sabotage and terrorist attacks. Economies of scale lead to the procurement of highly specialized facilities whose equipment involves long lead times for manufacture and repair. Increases in pipeline capacity increase vulnerability, and petrochemical plants often make lucrative targets as do refineries. Attacks on desalination facilities offer extremely lucrative targets that affect the workers in energy facilities. The creation of large, heavily automated gas trains is creating a new target mix in many countries, and electric power is necessary for oil and gas field operations, export facilities, petrochemical production, and civil life. Even comparatively low value targets like individual oil and gas wells can be attacked in ways that can lead to importer panic or overreaction and force states to deploy large forces to protect entire fields.

There is no present way to know how these various forces will play out, or how much they will affect energy development and supply from the MENA region. It is clear, however, that they already have significantly increased the risk premium many Western companies see as necessary to invest and do business in the MENA area. They have increased the reluctance to provide foreign investment to an area whose nations have long created legal and economic barriers to such investment, and they have led a number of Western businessmen and technical personnel to leave key MENA energy exporting nations like Saudi Arabia. The Arab world, in turn, is increasingly more reluctant to deal with the US and there have been minor boycotts of US companies over US support of Israel. There has been much less reluctance to deal with Europe, but Islamic extremists continue to attack outside investment and secular influences in broad terms, and not just US influence.

There does, therefore, seem to be a growing risk that the forces of extremism and terrorism will present a growing direct threat to energy exports and facilities. The target is extremely tempting. It is one of the few areas where attacker s can easily threaten the fiscal stability of the MENA regimes they are seeking to overthrow, and have significant leverage against the West. At the same time, Saudi Arabia has already been the scene of broader attacks

on Western businessmen, and the guerrilla war in Iraq is demonstrating how attacks on Western workers can affect nation building as well as energy supply.

Regional Self-Defense and The Role of the West and Western Power Projection

The overall military stability of the MENA region is heavily dependent on Western power projection capabilities, and particularly the US. The US has shown in the Iraq War just how well it can project conventional military power, although it has also shown just how many difficulties it can encounter in dealing with asymmetric warfare. While the fall of Saddam has removed a key threat to the region's military stability, threats like Iran remain. The US may be Israel's ally but it is also seen as a major restraining influence and an ally of moderate regimes – most of which have shown they can do a far better job of buying arms than create effective self-defense capabilities.

As a result, the present security structure of the MENA region is still dependent on de facto alliance between the moderate states in the Middle East and the West, and their access to help from Western power projection capabilities. The U.S. is the key to such power projection, but this makes it the target of many opposition movements and Islamic extremists as well. The high profile of U.S. forces in the Gulf has also interacted with the tensions caused by the Second Intifada to cause sufficient political backlash so that the U.S. is now a major target for terrorists and presents growing political problems for U.S. allies, like Egypt, Jordan, and Saudi Arabia.

European power projection forces cannot substitute for those of the U.S. The European members of NATO have never developed to the capability for large-scale power projection in the MENA region and is unlikely to do so. Iraq has deeply divided the US and Europe. Europe itself is deeply divided over the attention and role it should play in dealing with the problems in Algeria and North Africa, and the European Union's efforts to create power projection forces have so far been more political than real. Britain and France are the only NATO powers capable of meaningful power projection to the Gulf, but they have minimal strategic lift, and only about half the potential pool of forces they had in 1990.

The end result is that the US continues to play the critical role in defending the major energy exporters in the Gulf, and this is compounded by the fact that the US is the only power

that now can play a major role in securing the global lines of communication to the MENA region and the flow of tankers and other oil exports.

At the same time, major changes are taking place in the regional role of the US and other western states in projection power in the Middle East. US and other Western power projection will be made steadily more complicated by proliferation and the development of more dangerous forms of asymmetric warfare.

The Israeli-Palestinian War the Iraq War, and problems the US has had in dealing with allies like Saudi Arabia since “9/11,” have made it progressively harder for the US to maintain a presence and operate in the MENA region. The US still maintains major forces in the region and many countries depend upon the US, but US and regional military relations are troubled and uneasy. Europe talks about power projection capability, but it is not buying it or the systems to ensure broad interoperability with the US.

The wars in Afghanistan and Iraq have also reinforced the lessons of Lebanon and Somalia that the US is far from ready to fight asymmetric warfare and highly political conflicts in ways that effectively terminate wars and deal with the issues of peacemaking and nation building. The US has not shown it can properly characterize and target forces with weapons of mass destruction. Perhaps most important, the US has never planned to help regional states deal with internal security or save a regime from its own people. US and Western capabilities cannot play a military role in dealing with what may be the most serious threat to MENA stability and energy exports.

The U.S., its Western allies, and its allies in the region do not yet have a clear counterproliferation option or surplus funds to pay for such an option. They have no common strategy for dealing with terrorism and asymmetric warfare. Moreover, none of the moderate Arab states have power projection forces that can substitute for Western ones. Even Egypt and Syria have only tenuous power projection capabilities and little current willingness to use them.

Energy Vulnerability and Maritime Chokepoints

Oil moves in many different ways. Oil and gas pipelines connect North Africa to Europe, and may eventually connect Middle Eastern states to South Asia. During 2002, the EIA

estimates that some 1.9-2.2 MMBD (12%-14%) of the oil export from the Persian Gulf shipped via various pipelines, rather than by tanker through the Strait of Hormuz. Most of MENA oil, and gas however, directly or eventually moved by sea. For example, oil was exported out of maritime ports in the Gulf and Indian Ocean and Indian Ocean and through the Saudi East-West pipeline to the port of Yanbu on the Red Sea (about 1 MMBD); via pipeline from Iraq's Kirkuk oil region to the Turkish port of Ceyhan (about 0.5-0.8 MMBD); and by pipeline via Syria (around 0.2 MMD). Only comparatively small amounts to their ultimate destination moved by land, largely by truck to destinations like the Kurdish areas of northern Iraq, Turkey, Jordan, and Iran.⁷

It is easy to focus on the security of oil and gas fields, energy facilities, and pipelines in the MENA area and to forget that most energy exports ultimately move by sea. Moreover, Chapter I has indicated that Gulf exports alone will require something like 2.5 times the tanker traffic by 2025 that exists today, as well as vastly expanded ports and loading facilities. Much of this increase in tanker traffic will go to Asia and through the Indian Ocean and Pacific, but a substantial portion will go to Europe and the US.

The flow of oil exports can be attacked at any point during a tanker voyage. However, there are several key maritime chokepoints could have a critical impact on the flow of oil in the Middle East.⁸

- **The Strait of Hormuz** is the only shipping channel in and out of the Persian Gulf. Over 14 million barrels per day (b/d) of oil flow through this Strait to Japan, United States, Western Europe, and other countries. It is the world's most important oil chokepoint. At its narrowest, it consists of 2-mile wide channels for inbound and outbound tanker within the Omani side of the Strait, and a 2-mile wide buffer zone. The exits on both sides of the Strait are close to Iranian waters and air space. Iran and the UAE have also long quarreled over sovereignty over three islands on the Western side of the Strait that are near the main tanker channels. These islands include Abu Musa, Greater Tunb Island, and Lesser Tunb Island, all strategically located in the Strait of Hormuz. Iranian troops occupied the islands in 1992, and the Iranian Foreign Ministry claimed that the islands were "an inseparable part of Iran" in 1995. The UAE has sought mediation and Iran rejected proposal by the Gulf Cooperation Council (GCC) for the dispute to be resolved by the International Court of Justice in 1996. Iran also took action to demonstrate its control over the islands. It started up a power plant on Greater Tunb, opening an airport on Abu Musa, and announced plans for construction of a new port on Abu Musa. Iran did state its willingness to hold talks with the UAE on the dispute in September 2000 and reports that Iran had fortified the islands seem to be untrue. However, no talks have taken place, and the GCC issued a statement reiterating its support for the UAE's sovereignty over Abu Musa and the Tunbs on December 31, 2001. It declared Iran's claims on the islands as "null and void," and backed "all measures...by the UAE to regain sovereignty on its three islands peacefully."⁹

The 13.6 million bbl/d or so of oil that transit the Strait of Hormuz goes all over the world, eastwards to Asia (especially Japan, China, and India) and westwards (via the Suez Canal, the Sumed pipeline, or

around the Cape of Good Hope in South Africa) to Western Europe and the United States. The EIA reference case indicates that exports through the Strait must nearly double by 2020, reaching around 42 MMBD. This implies that up to three times more tankers will transit the Strait in 2020 than at present. Alternative routes cannot move anything close to current export levels, much less the much higher production levels forecast by DOE.

- **The Red Sea** is another potential set of chokepoints. Tankers moving west from Gulf towards the Suez Canal or Sumed pipeline must pass through the Bab al-Mandab. This strait is located between Djibouti and Eritrea in Africa, and Yemen on the Arabian Peninsula. It connects the Red Sea with the Gulf of Aden and the Arabian Sea. Any closure of the Bab al-Mandab would keep tankers from reaching the Suez Canal/Sumed Pipeline complex, diverting them around the southern tip of Africa. This would add greatly to transit time and cost, and effectively tie up spare tanker capacity.¹⁰

There has not been any major fighting in this area, but Yemen fought a brief battle with Eritrea over Greater Hanish Island, located just north of the Bab al-Mandab, in December 1995. The Bab al-Mandab can be bypassed by utilizing the East-West oil pipeline. However, southbound oil traffic, Closure addition, closure of the Bab al-Mandab would effectively block non-oil shipping from using the Suez Canal, except for limited trade within the Red Sea region.

- **The Suez/Sumed complex** is a chokepoint at the western end of the Red Sea. Oil passing through the Bab al-Mandab or shipping towards the West from Yemen or the Red Sea coast of Saudi Arabia must move by tanker through the Suez Canal or be shipped through the Sumed Pipeline complex in Egypt. Both of these routes connect the Red Sea and Gulf of Suez with the Mediterranean Sea. The EIA reports that over 3 MMBD of Gulf oil exports currently transit the Suez Canal/Sumed complex. Any closure of the Suez Canal and/or Sumed Pipeline would divert tankers around the southern tip of Africa (the Cape of Good Hope), sharply increasing transit time and the required tanker capacity.¹¹

Chokepoints, like the Strait of Hormuz, remain critical areas of risk where American power projection and alliances with friendly nations are critical to energy security. At the same time, the proliferation of long-range naval strike aircraft, anti-ship missiles, smart mines, submarines, and guided missile ships is extending the range at which threats can strike at the movement of energy exports.

These changes in military technology and in the flow of Gulf exports are changing the definition of “chokepoint.” One key example is the acquisition of long-range missiles and weapons of mass destruction by nations like Egypt, India, Iran, Iraq, Israel, Libya, and Syria. Another is Iran’s development of bases on islands near the Strait of Hormuz and the shipping channels in the Gulf, and its acquisition of advanced anti-ship missiles, submarines, long-range strike aircraft, and missile patrol boats. The same weapons and technologies allow any nation along the shipping lanes to Asia to create new “chokepoints” at ranges up to several hundred kilometers.

Oil Interruption and Embargos

These threats show that the risk of a serious interruption in Middle Eastern oil exports, and particularly Gulf Exports, cannot be ignored. As Table II.4 shows, there has been a long history of oil interruptions since 1951. Virtually all of these interruptions have taken place in the MENA region, and some have been serious.

The oil embargo of 1973-1974, for example, triggered a massive rise in oil prices that reshaped the energy costs of the global economy, and made dependence on energy imports a major strategic issue for the first time. The fall of the Shah in 1979, and the Iran-Iraq War that followed, created a global panic in the oil market and again dramatized strategic dependence on the Gulf. The period of 1979-1980 also marked the height of MENA energy export revenues in constant dollars. Iraq's invasion of Kuwait and the Gulf War of 1990-1991 marked another major rise in oil prices, although its affects were much less serious than the interruptions of 1973-1974 and 1979-1980.

Table II. 4**Global Oil Supply Disruptions Since 1951**

<u>Date of Net Oil Supply Disruption</u>	<u>Duration (Months of Net Supply Disruption)</u>	<u>Average Gross Supply Shortfall (MMBD)</u>	<u>Reason for Oil Supply Disruption</u>
3/51-10/54	44	0.7	Iranian oilfields nationalized May 1, following months of unrest and strikes in Abadan area.
11/56-3/57	4	2.0	Suez War
12/66-3/67	3	0.7	Syrian Transit Fee Dispute
6/67-8/67	2	2.0	Six Day War
5/70-1/71	9	1.3	Libyan price controversy; damage to Tapline
4/71-8/71	5	0.6	Algerian-French nationalization struggle
3/73-5/73	2	0.5	Unrest in Lebanon; damage to transit facilities
10/73-3/74	6	2.6	October Arab-Israeli War; Arab oil embargo
4/76-5/76	2	0.3	Civil war in Lebanon; disruption to Iraqi exports
5/77	1	0.7	Damage to Saudi oil field
11/78-4/79	6	3.5	Iranian revolution
10/80-12/80	3	3.3	Outbreak of Iran-Iraq War
8/90-10/90	3	4.6	Iraqi invasion of Kuwait/Desert Storm
4/99-3/00	12	3.3	OPEC (ex. Iraq) cuts production in effort to increase prices.

Source: adapted from work by the EIA.

The Importance of MENA Energy Exports

Conflicts and instability affecting other major energy exporters could also cause a serious interruption in the flow of global energy exports. These countries include Russia, Nigeria and Angola, and Venezuela. The MENA region, however, is the most critical region because it is both unstable and will remain the center of world oil beyond 2030. The region's importance as an energy exporter has been discussed in detail in Chapter I, and the threat posed by a new interruption in MENA energy exports can be summarized as follows:

- World crude oil flows averaged around 35 MMBD in the early 2000s.
- The Gulf has roughly 65% of all world oil reserves. The flow of exports from the Gulf averages over 15 MMBD versus 1.8 MMBD from North Africa, 2.7 MMBD from Latin America and 1.6 MMBD from Mexico.
- In 2002, Gulf countries had estimated net oil exports of 15.5 million bbl/d of oil.. Saudi Arabia exported the most oil of any Persian Gulf country in 2002, with an estimated 7.0 million bbl/d (45% of the total). Also in 2002, Iran had estimated net exports of around 2.3 million bbl/d (15%), followed by the United Arab Emirates (2.1 million bbl/d -- 13%), Kuwait (1.7 million bbl/d -- 11%), Iraq (1.6 million bbl/d -- 10%), Qatar (0.8 million bbl/d -- 5%), and Bahrain (0.01 million bbl/d -- 0.1%).¹²
- The peak for Persian Gulf oil exports as a percentage of world oil exports was in 1974, when they accounted for more than two-thirds of the oil traded in world markets. The Persian Gulf share of world oil exports has risen since the oil price collapse of the mid-1980s, but it is not expected to surpass the 1974 level until after 2020.
- US imports from the Gulf slowly rose from an annual average of 1.5 MMBD in 1988 to 2.1 MMBD in 1998, and ranged from 2.2-2.8 MMBD in 2001-2003. They rose from 8.7% of US demand in 1997 to 13.9% in 2002, and from 70% to 75% of US imports.¹³
- West European imports from the Gulf ranged from 15% to 29% of total demand during 1990-2002, and from 29% to 45% of total imports.
- Japanese imports from the Gulf ranged from 64% to 76% of total demand during 1990-2002, and from 65% to 76% of total imports.
- DOE projects the MENA region will provide well over 50% of world oil exports by 2020. The Energy Information Administration's International Energy Outlook 2002, projects that Gulf oil production is expected to rise from 22.4 MMBD in 2001 to 28.7 MMBD in 2010, 38.9 MMBD in 2020, and 45.2 MMBD in 2025. This would increase Persian Gulf oil production capacity to 36.2% of the world total by 2025, up from 28% in 2000.¹⁴
- Gulf exports are critical in terms of preserving a margin of surplus or swing production. The EIA estimates that they normally maintain around 90% of the world's excess oil production capacity.
- Total MENA production capacity was 23.9 MMBD of production capacity in 2000 (29.7%). The EIA estimates that it will be 34.9 MMBD in 2010, 46.4 MMBD in 2020 and 53.6 MMBD in 2020 (43.1%).¹⁵
- The Southern Gulf states (GCC) alone provided 17.1 MMBD worth of world production capacity in 2000 (21.3% of world capacity); and is estimated at 35.1 MMBD by 2025 (28.25%).¹⁶

- The IEA projects that Middle Eastern OPEC oil production will increase from 21.0 MMBD in 2000 to 26.5 MMBD in 2010, 37.8 MMBD in 2020, and 54.4 MMBD in 2030. Total Middle Eastern Oil production will increase from 24.1 MMBD in 2000 to 28.3 MMBD in 2010, 39.3 MMBD in 2020, and 52.3 MMBD in 2030¹⁷ It projects that Middle East oil exports will reach 46 MMBD by 2030.
- The EIA estimates that Gulf oil exports will rise from 14.8 MMBD in 2000 to 35.9 MMBD in 2025 – a rise of 143. They will rise from 35% of world exports to 38%.¹⁸
- The IEA projects that Middle Eastern refined oil product exports will increase to 7 MMBD by 2030.¹⁹
- The Gulf is a major gas exporter with 32.8% of world reserves.
- The IEA projects that Middle Eastern gas exports will increase from 23.1 BCM in 2000 to 364 BCM in 230. Flows to North America will increase from 17 BCM to 104, flows to Europe will rise from 0.4 BCM to 160, flows to South Asia will increase from nearly zero to 27 BCM, and flows to East Asia will increase from 21 BCM to 73 BCM.²⁰

The Problem of Guessing at Future Scenarios

There is no consensus as to what kind of interruptions might take place in the flow of MENA oil exports, in part because there is no current set of contingencies or threats that appears probably enough to merit detailed planning. The preceding analysis has shown that such interruptions could have a wide range of causes and take a wide range of forms. Future interruptions, however, could include a new oil embargo, civil war in a key MENA country, the impact of a local war, the result of a series of terrorist attacks, closing a major export route like the Strait of Hormuz.

A major new embargo now seems less likely. The MENA oil-exporting states have a steadily growing need for cash flow, and most have shown little solidarity with the Palestinians since Arafat supported Iraq in 1990. The world has also learned to adapt better to oil interruptions when they occur. The embargo of 1973-1974 led the world market to increase oil production in other areas, but world markets were not capable of tracking what was happening or effectively identifying and distributing the oil available. As a result, the seriousness of the crisis was caused as much by the world's inability to track supply in real time as by any shortfall in supply. These problems continued through the late 1970s, but tracking and reporting improved after the crisis following the fall of the Shah of Iran. Neither the "tanker war" between Iran and Britain and the U.S. in 1987-1998, or the Gulf War in 1990-1991, led to the same level of panic, price rises, and hoarding.

The most likely interruptions seem to be ones that are short or limited in scope, and many could be dealt with by production increases by other countries. The impact of the loss of

Iraq and Kuwait oil production during the Gulf War in 1990-1991, for example, was limited by increases in Saudi and other production. Increases in production by other exporters largely compensated for a political crisis that led to Venezuelan production cuts in 2002, and the same was true when Iraq ceased to export during the Iraq War of 2003. While each interruption did produce price rises, and had some impact on global economic growth, the impact was too limited to have a major impact on the global economy.

The steady increases in world demand for MENA energy exports projected through 2030 do mean, however, that the global economy will become steadily more vulnerable to major interruptions. The Gulf alone is projected to more than double its flow of exports during 2000-2025. Five Gulf countries – Saudi Arabia, the UAE, Iraq, Iran, and Kuwait – will become steadily more important producers and exporters. At the same time, the gap between the normal production of oil and total production capacity is expected to shrink steadily, leaving less and less surplus production capacity that MENA and other nations can bring on line in the event of a major interruption in exports from one or more Gulf states.

The cases that seem to merit most consideration--more because of the seriousness of their impact than their probability--are some form of war involving Iran that could at least temporarily close the Strait of Hormuz, a major attack on Saudi Arabia or a civil conflict that disrupted production, or some new war involving Iraq or a civil conflict.

- Chart II.14 shows that it is possible to make rough estimates of how the impact of interruption scenarios might change over time, based on the changes in estimated production capacity, although major differences exist in such estimates between sources and according to the economic conditions assumed.
- Chart II.15 provides similar data in a form where it is possible to see how a major embargo, the closing of Strait of Hormuz, loss of production from Saudi Arabia or another key Gulf country, or loss of Algerian or Libyan production might impact on world supply. The problem is that not only are such estimates uncertain, but there is no way to know market conditions and the level of surplus production capacity relative to demand, how much of a region or nation's output would actually be lost, or how long the interruption would take place.
- Chart II.16 shows the importance of the Gulf, North Africa, and entire MENA region in terms of current and projected world oil exports. While the particular numbers involved are as uncertain as the estimates of production capacity, it is obvious that a true MENA embargo or loss of most Gulf oil exports would have a massive impact on the world economy today and that this impact will grow steadily with time.
- These charts do not include gas exports, which will have growing importance over time.
- The risk of any interruption would be compounded by any problems that reduced the supply of nuclear power or use of coal for environmental reasons.

Charts II.14 to II.16 show how dangerous a major and lasting Arab embargo could be if Arab states would actually be willing to give up their oil export revenues. It is clear how critical the Gulf is to world production capacity, and it is clear just how much the world will come to depend on a steady and stable increase in Saudi production and exports. In fact, Russia is the only major exporter outside the MENA area where a major interruption could have a critical impact on the global economy, particularly because it is both a major oil and gas exporter.

At the same time, the next chapter shows that MENA states already desperately need the cash flow from their energy exports and this need will grow over time. The demographic and economic pressures on the region are so severe that no regime in an exporting country can ignore the consequences of an embargo and the factions in any civil fighting must consider the popular reaction to an attack on such facilities. Wars tend to do limited damage of limited duration, not produce catastrophic interruptions, and any belligerents in the region must consider the fact that US and outside intervention would almost certainly occur in the event of a major interruption, just as it did during the Iraq-Iraq War when the US “reflagged” tankers and defended Gulf shipping against Iran.

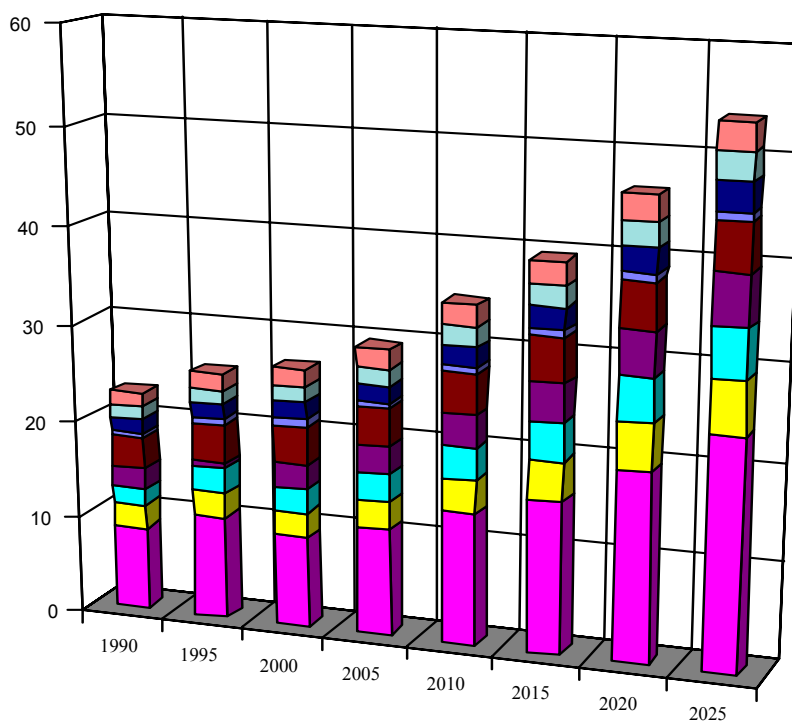
In short, there are so many different real-world ways in which an interruption could develop and play out in terms of its politics, the use of military force, the actual level of cuts in exports, in the duration of such cuts, in the way other exporters can compensate, and in terms of the global economic climate and level of demand that such scenario analysis can be little more than a matter of informed guesswork.

- Chart II.14 shows the relative size of each MENA countries oil export capacity during 2000-2025, and illustrates the maximum impact any combination of MENA states could have in an oil interruption scenario.
- Chart II.15 shows similar data, but organized to show the impact of an oil interruption in a single state.
- Chart II.16 shows how the flow of Gulf, North African, and total MENA exports relates to total world exports in 2001 and 2025, and provides a rough picture of the impact of “worst cases” like a total closing of the Gulf or comprehensive regional oil embargo.

Chart II.14

Trends in Middle Eastern Petroleum Production Capacity That Could Be Affected by a Future Oil Interruption Scenario By Country Relative to World Capacity: 1990-2025

(EIA Reference Case in MMBBD)



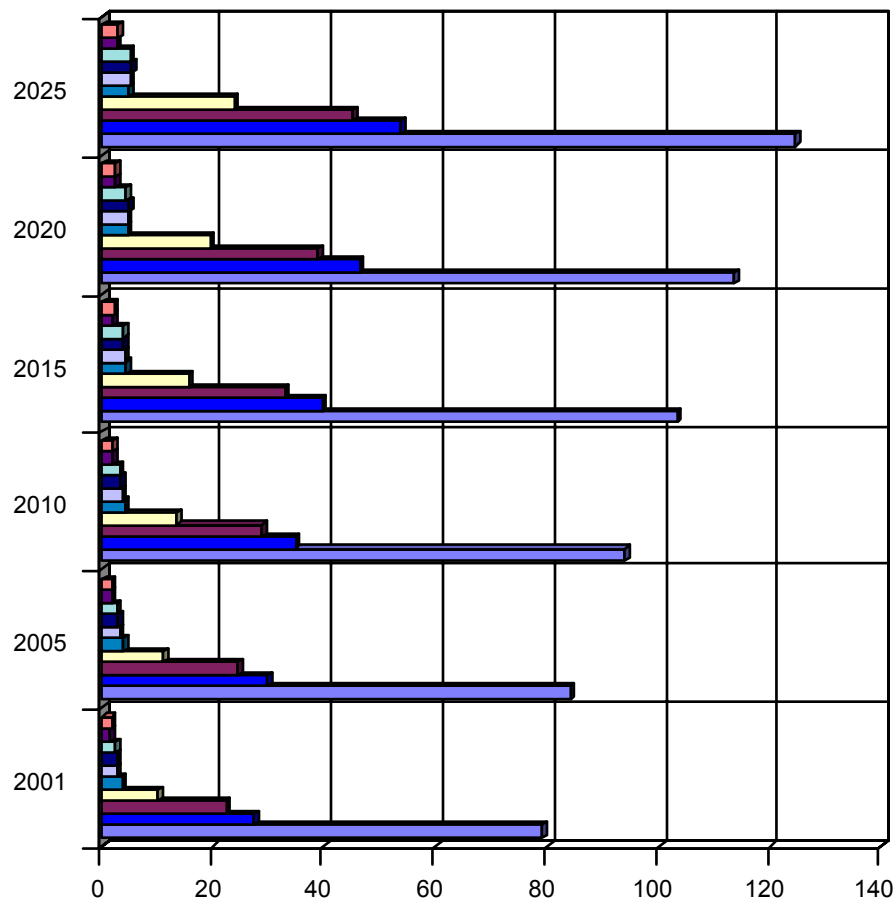
	1990	1995	2000	2005	2010	2015	2020	2025
Other	1.4	1.7	1.8	2	2.2	2.4	2.5	2.7
Algeria	1.3	1.4	1.6	1.7	2	2.1	2.4	2.8
Libya	1.5	1.6	1.7	1.7	2	2.2	2.6	2.9
Qatar	0.5	0.6	0.9	0.6	0.6	0.7	0.8	0.8
Iran	3.2	3.9	3.8	3.9	4.2	4.5	4.7	4.9
Iraq	2.2	0.6	2.6	2.8	3.3	3.9	4.5	5.1
Kuwait	1.7	2.6	2.5	2.8	3.3	3.9	4.5	5.1
UAE	2.5	2.6	2.5	2.9	3.4	4	4.8	5.4
Saudi	8.6	10.6	9.4	11.1	13.6	15.7	19.5	23.8

Total Gulf	18.7	-	22.4	24.5	28.7	33.0	38.9	45.2
Total ME	22.9	-	27.5	29.9	34.9	39.7	46.4	53.6
Total World	69.4	-	79.2	84.2	93.9	103.3	113.5	124.5
Total World	69.4	-	79.2	84.2	93.9	103.3	113.5	124.5
Gulf % of World	27.0	-	28.3	29.1	30.6	32.0	34.3	36.3
ME % of World	33.0	-	34.7	35.5	37.1	38.4	40.9	43.1

Source: Adapted by Anthony H. Cordesman from EIA, *International Energy Outlook, 1997*, DOE/EIA-0484 (97), April 1997, pp. 157-160; EIA, *International Energy Outlook, 2002*, DOE/EIA-0484 (2002), March 2002, Table D1; and EIA, *International Energy Outlook, 2003*, DOE/EIA-0484 (2003), March 2003, Table D1.

Chart II.15

Range of MENA Contribution to World Oil Production Capacity: 2001-2025
(EIA Reference Case in MMBD)

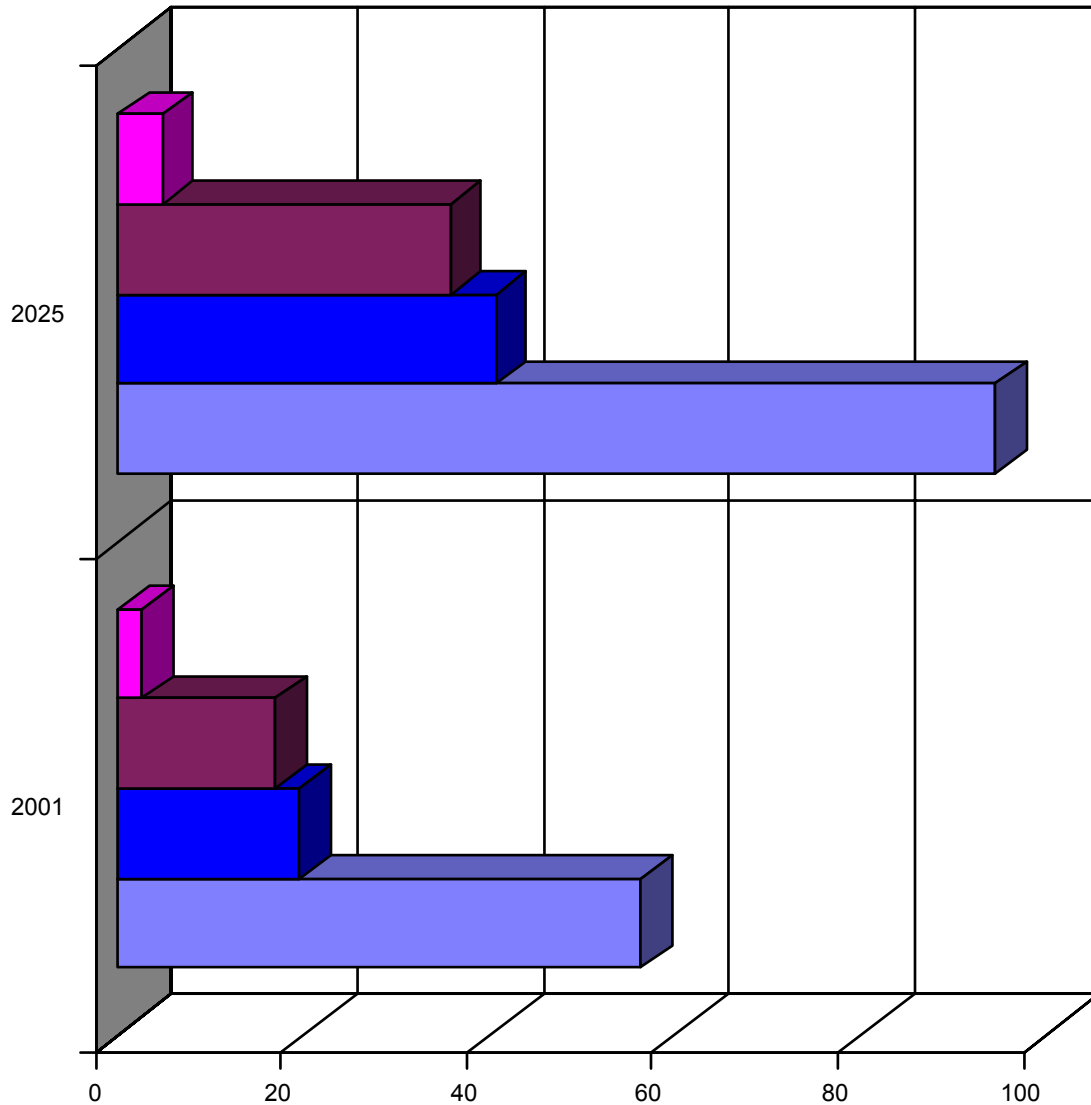


	2001	2005	2010	2015	2020	2025
Libya	1.7	1.7	2	2.2	2.6	2.9
Algeria	1.6	1.7	2	2.1	2.4	2.8
Kuwait	2.4	2.8	3.3	3.9	4.5	5.1
UAE	2.7	2.9	3.4	4	4.8	5.4
Iraq	2.8	3.2	3.6	4.2	4.6	5.2
Iran	3.7	3.9	4.2	4.5	4.7	4.9
Saudi	10.2	11.1	13.6	15.7	19.5	23.8
Gulf	22.4	24.5	28.7	33	38.9	45.2
MENA	27.5	29.7	34.9	39.7	46.4	53.6
World	79.2	84.2	93.9	103.3	113.5	124.5

Source: Adapted by Anthony H. Cordesman from EIA, *International Energy Outlook, 2003*, DOE/EIA-0484 (03), June 2003, pp. 235

Chart II.16.

Range of MENA Contribution to World Oil Exports: 2001-2025
(EIA Reference Case in MMBD)



	2001	2025
■ North Africa	2.6	4.8
■ Gulf	16.9	35.8
■ MENA	19.5	40.6
■ World	56.3	94.6

Source: Adapted by Anthony H. Cordesman from EIA, International Energy Outlook, 2003, DOE/EIA-0484 (03), June 2003, Table 14, p. 42

The Economic Impact of Energy Interruptions

There is no reliable way to measure the economic impact any given interruption in MENA energy exports would have, and such an impact would vary sharply according to scenario and duration. Under many conditions, an interruption might be limited enough -- and of such short duration -- that it would actually have less impact than the normal fluctuations in oil prices that grow out of market conditions.

For example, the EIA reports that the world oil price in nominal dollars per barrel fell from \$21.02 in the first quarter of 1997 to a low of \$10.86 in the first quarter of 1999. Then, in the second quarter of 1999, the world oil price began to rise dramatically, ultimately almost tripling to a high of \$29.11 in the third quarter of 2000.

The EIA's AEO2004 forecast indicates that the average crude oil price in the lower 48 will be \$23.61 per barrel in 2010 and \$26.72 per barrel in 2025 in the reference case. In the high world oil price case, the price increases to \$32.80 in 2010 and \$34.90 per barrel in 2025. In the low oil price case, this number declines to \$16.36 per barrel in 2010 then rises to \$16.49 per barrel in 2025.²¹

The path for the wellhead natural gas price was less volatile than for oil between 1997:1 and 2000:1, fluctuating between a high of \$2.63 per thousand cubic feet to a low of 1.76. At the start of the second quarter of 2000, however, the wellhead price of natural gas increased dramatically. From the first quarter to the second quarter of 2000, the price rose from \$2.26 to \$3.06 and by the fourth quarter to \$5.19 per thousand cubic feet.²²

The EIA has made a rough estimate of the impact of the alternative price and supply levels. During the two-year period from 1997:1 to 1999:1, falling energy prices boosted the US economy. If energy prices had remained at their 1997 levels instead, the growth rate of GDP might well have been reduced by 0.3 percentage points. The opposite case occurred in the years that followed: During the next two-year period from 1999:1 to 2001:1, energy prices first rose dramatically, then began to decline. If this rapid rise in energy prices had not occurred, there may have been as much as 0.7 percentage points of additional GDP growth. Over the entire four-year period, a steady energy price path could have potentially boosted GDP growth by 0.2 percentage points.

This price volatility may at first seem so massive that it must have dramatic effects, but its not atypical of the impact of “normal” market conditions in energy exports. In fact, any analysis of the past ups and downs in oil prices caused by market forces show that it would take a very serious interruption to have more serious effects. It is important to note, however, that the shifts in prices during 1997-2001 occurred over an extended period of time and avoided panic buying. It is almost impossible, however, to estimate the psychological impact of sudden interruptions on the market, and it is clear that major market-driven changes in energy prices – which would be similar to the impact of a major oil interruption – had a real but moderate impact on the US economy.

The economic impact of an interruption could also be reduced if the US made timely and effective use of its Strategic Petroleum Reserves (SPR) and the interruption was not serious enough to trigger the sharing of available oil imports called for under the security agreements the US and its allies signed in creating the International Energy Agency. The SPR currently has a storage capability of 700 million barrels, and, President George W. Bush ordered the SPR to be filled to its maximum capacity on November 13, 2001.

This fill is being carried out by continuing to use the Royalty-in-Kind program carried out jointly between the Department of Energy and the Department of the Interior. The royalty-in-kind program applies to oil owed to the U.S. government by producers who operate leases on the federally-owned Outer Continental Shelf. These producers are required to provide from 12.5 percent to 16.7 percent of the oil they produce to the U.S. government. The government can either acquire the oil itself or receive the equivalent dollar value. The SPR reached 600 million barrels in May 2003, about 53 days of inventory at current US consumption rates.²³

The EIA “Rules of Thumb” for Calculating the Impact of Energy Interruptions

The EIA has established some rough “rules of thumb” for estimating the impact of major interruptions. The EIA rules estimate that oil prices increase by \$3-5 per barrel for every one million barrel per day of oil disrupted, and that the growth rate of the U.S. Gross Domestic Product will be reduced by between 0.3-0.5 percentage points. In other words, if U.S. GDP is expected to increase and a 3.0 percent and a one million barrel per day oil supply disruption occurred, the U.S. GDP would be expected to grow by only 2.5-2.7 percent (a reduction of 0.3-0.5 percentage points).²⁴

As the EIA notes, these rules of thumb are subject to important qualifications:²⁵

- These estimates represent price pressure on the economy, but the actual pass through will be determined by a number of other factors, such as the financial and operating position of firms and industries comprising the economy.
- If the price of oil were \$30 per barrel, the price and GDP rules-of-thumb could be combined in the following way to estimate the impacts of a disruption. For every 1 million barrels per day of oil disrupted, the price rule-of-thumb suggests that oil prices could increase by \$3-\$5 per barrel, or by 10%-17%. The GDP rule-of-thumb suggests that if these price increases were sustained, the U.S. GDP growth rate could be reduced by 0.05-0.08 percentage points (likely first year impacts), with the U.S. GDP growth rate reduction ranging as high as 0.10-0.17 percentage points (likely second year impacts).
- The effects of an oil supply disruption are directly related to the size of the disruption. ...First, estimate how much oil was being produced in the disrupted countries that is no longer available. EIA defines this as the Gross Disruption Size. However, to better estimate price and economic impacts, an adjustment to the Gross Disruption Size is necessary. To better estimate the impacts of an oil supply disruption, subtract from the Gross Disruption size how much more oil unaffected countries are likely to produce to help offset the loss of oil to the market. As the initial supply disruption occurs, prices are likely to increase immediately. However, this higher price increases the incentive for other producing countries, where possible, to increase their oil production. . Once you have subtracted an assumed amount of excess production that will be utilized from the gross Disruption Size, your result is what EIA labels the Net Disruption Size. Using the Net Disruption Size in the rule-of-thumbs listed above should better estimate the impacts of the disruption. Other factors, such as the availability of oil inventories and the use of strategic oil inventories such as the Strategic Petroleum Reserve, can also affect the impacts of an oil supply disruption.
- The basic economic data used in formulating these EIA rules are now badly out of date, and have not been updated since at least 1997. As a result, they understate the real-world economic impact of any interruption even if the basic rules are valid. It should also be understood that these additional rules do not consider the psychological impact of a given crisis on world markets or the impact of any conflict that may cause them. At the same time, they are no weaker than far more sophisticated models because so many complex factors are involved, and so many uncertainties, that no method of modeling or estimation can have more than low credibility as a predictive tool.

The grim truth is that the nature and economic impact of any given energy interruption is likely to be known only as it develops, It is always possible to speculate using both the scenarios discussed earlier and the EIA rules of thumb, but the chances of their coinciding with reality are negligible, This does not, however, make the risks less real. The fact that no one can predict the impact of regional conflict and instability 30 years into the future, or even the nature and outcome of the most likely cases, has never prevented them from occurring.

¹ CIA, World Factbook, 2001.

² US State Department, Bureau of Verification and Compliance, World Military Expenditures and Arms Transfers, 1989-1999. Middle East does not include North African states other than Egypt.

³ Richard F. Grimmett, Conventional Arms Transfers to Developing Nations, 1993-2000, Congressional Research Service, RL31529, August 2001.

⁴ The New York Times, December 18, 2003.

⁵ There have also been cases of state-sponsored attacks. These include the Libyan bombings of Pan Am flight 103 over Scotland in 1988 and the bombing of UTA flight 772 over Chad in 1989. The bombing of Pan Am flight 103 killed 259 people on board and 11 people on the ground, and the bombing of UTA flight 772 killed 171 people on board.

⁶ For historical background on Bin Laden, see Kenneth Katzman, "Persian Gulf: Radical Islamic Movements," Washington, Congressional Research Service, 96-731-F, August 30, 1996.

⁷ EIA, "Persian Gulf Fact Sheet," April 2003, <http://www.eia.doe.gov/emeu/cabs/pgulf.html>.

⁸ EIA, "Persian Gulf Fact Sheet," April 2003, <http://www.eia.doe.gov/emeu/cabs/pgulf.html>.

⁹ This text is adapted from EIA reporting in "Persian Gulf Fact Sheet," April 2003, <http://www.eia.doe.gov/emeu/cabs/pgulf.html>.

¹⁰ This text is adapted from EIA reporting in "Persian Gulf Fact Sheet," April 2003, <http://www.eia.doe.gov/emeu/cabs/pgulf.html>.

¹¹ This text is adapted from EIA reporting in "Persian Gulf Fact Sheet," April 2003, <http://www.eia.doe.gov/emeu/cabs/pgulf.html>.

¹² EIA, "Persian Gulf Fact Sheet," April 2003, <http://www.eia.doe.gov/emeu/cabs/pgulf.html>.

¹³ EIA, "Persian Gulf Fact Sheet," April 2003, <http://www.eia.doe.gov/emeu/cabs/pgulf.html>.

¹⁴ EIA, International Energy Outlook, 2003, p. 235.

¹⁵ EIA, International Energy Outlook, 2003, p. 235.

¹⁶ EIA, International Energy Outlook, 2003, p. 235.

¹⁷ IEA, World Energy Outlook, 2002, p. 96.

¹⁸ EIA, International Energy Outlook, 2003, p. 42.

¹⁹ IEA, World Energy Outlook, 2002, pp. 108-109.

²⁰ IEA, World Energy Outlook, 2002, pp. 118-119.

²¹ EIA, Annual Energy Outlook 2004, p. 93.

²² This analysis is taken from EIA, "Energy Price Impact on the Economy," April 2001, http://www.eia.doe.gov/oiaf/economy/energy_price.html.

²³ DOE, "Strategic Petroleum Reserve Profiler, August, 2003, <http://www.fe.doe.gov/programs/reserves/spr/>

²⁴ EIA, "Rules of Thumb for Energy Interruptions," December 11, 1997 is virtually identical to "Rules of Thumb for Energy Interruptions," October 18, 2002, in spite of changes in oil flows, inflation, and world economic conditions. See <http://www.eia.doe.gov/emeu/security/rule.html>.

²⁵ EIA, "Rules of Thumb for Energy Interruptions," October 18, 2002, in spite of changes in oil flows, inflation, and world economic conditions. See <http://www.eia.doe.gov/emeu/security/rule.html>.