THE MUSLIM OIL AND GAS PERIPHERY

THE FUTURE OF HYDROCARBONS IN AFRICA, SOUTHEAST ASIA AND THE CASPIAN

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A THESIS

PRESENTED TO THE FACULTY

OF PRINCETON UNIVERSITY

IN CANDIDACY FOR THE DEGREE

OF MASTER OF ARTS

RECOMMENDED FOR ACCEPTANCE

BY THE PROGRAM IN

NEAR EASTERN STUDIES

DISTRIBUTION STATEMENT A
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ABSTRACT

This thesis is a study of the contemporary political, economic, and technical developments and future prospects of the Muslim hydrocarbon exporters of Africa, Southeast Asia, and the Caspian. The established Muslim oil and gas periphery of Africa and Southeast Asia has four members in the Organization of Petroleum Exporting Countries (OPEC) and is systemically increasing its production of natural gas. The newly independent states of the Caspian, all Muslim, have tremendous potential oil and gas reserves. I analyze US government and corporate policies regarding the countries and the major dilemmas of the Muslim hydrocarbon periphery.

The first chapter provides a selective overview of global energy source statistics; the policies, disposition and composition of the major hydrocarbon production and consumption players and communities; a selective background of OPEC and its impact on the globe; and a general portrait of how the Muslim periphery piece fits into the overall Muslim oil and gas puzzle. Chapter two analyzes the established Muslim oil and gas periphery of Africa and Southeast Asia asking the following questions: What are the major political, economic, and technical trends and dilemmas affecting these producer nations? And what are the United States' policies and relationships with these producers?

Chapter three asks the same questions as chapter two, but with regard to the newly independent states of the Caspian Sea. I probe the regional petroleum exploration and transportation dilemmas in some detail. Chapter four focuses on OPEC in the coming century, providing an analysis of how factors exogenous to the Muslim world, such as

Western advances in technology and increased consumption of gas, might impact the control OPEC and the Muslim oil center exert over petroleum in the future. Chapter four also examines how the potential of the Caspian states differs from that of the traditional Muslim oil periphery and how trends in the periphery could impact OPEC and the Muslim oil center in the future.

ACKNOWLEDGEMENTS

My studies at Princeton have been my most rewarding educational experience to date—the flexibility of this high quality program is its greatest asset.

My most profound gratitude to God for affording me this opportunity.

I wish to thank Professors Heath Lowry and Norman Itzkowitz for their advice and assistance on this thesis and in general. Professor Itzkowitz provided detailed comments on each chapter.

Mike Reynolds provided considerable insight and Internet based information on Caspian area political economy.

Kevin Massengill and Mike Todd supplemented Professor Itzkowitz's feedback with useful criticism of each chapter.

TABLE OF CONTENTS

LIST OF ABBREVIATIONS vii

LIST OF TABLES AND MAPS viii

INTRODUCTION 1

CHAPTER ONE GLOBAL ENERGY, OPEC, AND ISLAM . 4

CHAPTER TWO THE ESTABLISHED MUSLIM OIL AND GAS PERIPHERY: AFRICA AND SOUTHEAST ASIA . 26

CHAPTER THREE THE CASPIAN OIL GAME: HONEST POKER OR RUSSIAN ROULETTE? 49

CHAPTER FOUR WHITHER OPEC AND MUSLIM HYDROCARBONS? 84

CONCLUSION 101

WORKS CITED 104

LIST OF ABBREVIATIONS

BBC	Billion Barrels of Crude
BCM	Billion Cubic Meters
BOE	Barrels of Oil Equivalent
CIS	Commonwealth of Independent States
EU	European Union
FSU	Former Soviet Union
GCC	Gulf Cooperation Council
GDP/GNP	Gross Domestic/National Product
IEA	International Energy Agency
IRI	Islamic Republic of Iran
LNG	Liquefied Natural Gas
MBC	Million Barrels of Crude
MOGP	Muslim Oil and Gas Periphery
NCS	New Caspian State
OAPEC	Organization of Arab Petroleum Exporting Countries
OECD	Organization of Economic Cooperation and Development
OPEC	Organization of Petroleum Exporting Countries
P/D	Per Day
PRC	People's Republic of China
TCF	Trillion Cubic Feet
TCM	Trillion Cubic Meters

I have omitted some obvious abbreviations—US, UN, etc.—and abbreviations of oil and gas companies from the above list.

LIST OF TABLES AND MAPS

TABLE 1 OIL RESERVE PROJECTIONS . . . ix

TABLE 2 NATURAL GAS LEADERS x

TABLE 3 CONVERSION FACTORS xi

MAP OF CASPIAN OIL ROUTES xii

Notes on Tables

Table 1 lists the 20 countries, in order, that have the largest oil reserves as of 1995. The calculations in Table 1 use 1995 oil reserve and production statistics from pages 4 and 7 of *BP Statistical Review of World Energy 1996*. I estimate reserve projections in Table 1 for the years 2015, 2035, and 2055 by holding the 1995 oil production figure constant and steadily subtracting from the 1995 oil reserve totals (treating them as static—no additions, only depletions).

Table 2 lists the ten countries with the largest natural gas reserves and natural gas production. The source is *BP Statistical Review of World Energy 1996*, pages 20 and 23.

Table 3 provides conversion factors for oil and natural gas. The source is *BP Statistical Review of World Energy 1996*, page 41.

The Map of Caspian Oil Routes is a modified, enlarged version of a map displayed on page 59 of the 25 March, 1995 edition of *The Economist*.

TABLE 1 OIL RESERVE PROJECTIONS

	1995 Production/day mbc	1995 Reserves bbc	2015 Reserves bbc	2035 Reserves bbc	2055 Reserves bbc
Saudi Arabia	8.9	261	196	131	66
Iraq	2.8*	100	80	59	39
UAE	2.5	98	80	62	44
Kuwait	2.1	97	82	67	52
Iran	3.7	88	61	34	7
Venezuela	2.8	65	44	14	nil
Mexico	3.1	50	27	4	nil
Russia	7.8	49	nil	nil	nil
US	8.3	30	nil	nil	nil
Libya	1.4	30	20	10	nil
China	3.0	24	2	nil	nil
Nigeria	1.9	21	7	nil	nil
Algeria	1.3	9	nil	nil	nil
Norway	3.0	8	nil	nil	nil
Canada	2.4	7	nil	nil	nil
India	.8	5	nil	nil	nil
Angola	.6	5	1	nil	nil
Indonesia	1.6	5	nil	nil	nil
Kazahkstan	.4	5	2	nil	nil
Oman	.9	5	nil	nil	nil

*The Iraqi production/day total is from 1989 figures.

Mbc: millions of barrels of crude; bbc: billions of barrels of crude.

TABLE 2 NATURAL GAS LEADERS

Natural Gas Production 1995 (in billions of cubic meters)		Natural Gas Reserves as of 1995 (in trillions of cubic meters)	
Russia	555.4	Russia	48.1
US	538.5	Iran	21.0
Canada	145.8	Qatar	7.1
UK	71.5	UAE	5.8
Netherlands	66.3	Saudi Arabia	5.3
Algeria	60.6	US	4.6
Indonesia	58.5	Venezuela	4.0
Uzbekistan	45.3	Algeria	3.6
Saudi Arabia	39.6	Nigeria	3.1
Iran	35.3	Iraq	3.1

TABLE 3 CONVERSION FACTORS

CRUDE OIL

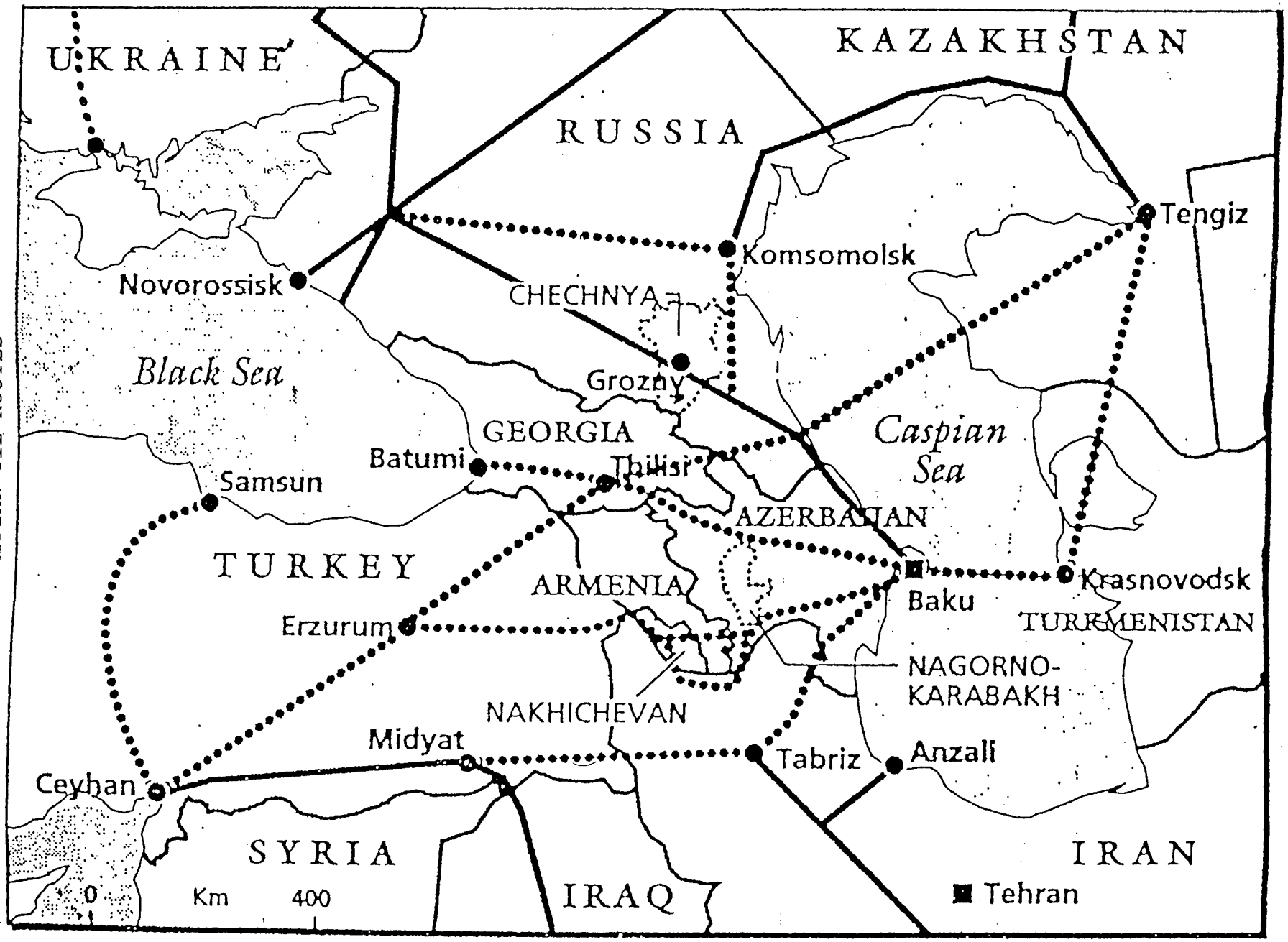
TO

FROM	Tonnes	Long tons	Barrels	US Gallons
Tonnes (metric)	1	0.984	7.33	308
Long tons	1.016	1	7.45	313
Barrels	0.136	0.134	1	42
US Gallons	0.00325	0.00319	0.0238	1

NATURAL GAS

TO

FROM	Billion cubic meters NG	Billion cubic feet NG	Million Tonnes crude oil	Million barrels of oil equiv.
1 billion cubic meters NG	1	35.3	0.90	6.29
1 billion cubic feet NG	0.028	1	0.026	0.18
1 million tonnes crude oil	1.111	39.2	1	7.33
1 million barrels of oil equiv.	0.16	5.61	0.14	1


Oil pipelines: existing possible new routes
UKRAINE
RUSSIA
KAZAKHSTAN
Tengiz
Komsomolsk
Novorossisk
CHECHNYA
Black Sea
Grozny
GEORGIA
Caspian Sea
Batumi
Tbilisi
Samsun
AZERBAIJAN
TURKEY
ARMENIA
Baku
Krasnovodsk
TURKMENISTAN
Erzurum
NAGORNO-KARABAKH
NAKHICHEVAN
Midyat
Tabriz
Anzali
Ceyhan
SYRIA
IRAN
IRAQ
Tehran
0 Km 400

INTRODUCTION

This thesis seeks to address the salient issues confronting the contemporary Muslim oil and natural gas periphery, i.e., those noteworthy Muslim hydrocarbon producers in Africa, SE (Southeast) Asia, and the Caspian. This paper will emphasize current issues and future prospects. My goal is to present this discussion in a global context given that oil, and increasingly natural gas, are fungible, international commodities. The intended audience for this paper is US and other Western government and business professionals with an interest in energy security and the Muslim world. I will specifically analyze US government and corporate policies and perspectives on the issues discussed.

My position on the importance of Muslim oil and gas, though much more nuanced, has not fundamentally changed due to my research. In 1990 and 1991, I participated in Desert Shield/Storm thinking that the primary purpose for my service in that precarious sand box was to protect the West's access to oil, not to fulfill pie in the sky ideals. Between 1991 and 1997, particularly during my first two semesters at Princeton, I investigated many issues in Muslim political economies that were touted as rivaling hydrocarbons in significance. There are indeed many problem areas which are crucial for Muslim nations to make progress in—water, agriculture, privatization, population growth, education, et al. Yet, my review of these issues did not persuade me that any one of them, short of comprehensive economic liberalization, will overshadow

the importance of oil in the future; rather, I am more convinced than ever that hydrocarbons are and will remain the economic engine of that half of the Muslim world that lies to the west of Afghanistan.

Much has been written about the Muslim oil and gas center, which I define as the Persian Gulf. In fact, it's difficult to find a work on global hydrocarbons that doesn't address the Persian Gulf—as one would expect since that region contains two thirds of the world's oil reserves and one third of its gas reserves. Why study the Muslim oil and gas periphery (hereafter referred to as MOGP)? The established MOGP of Africa and SE Asia has four members in OPEC and is systemically increasing its production of natural gas. The newly independent states of the Caspian, all Muslim, have tremendous potential oil and gas reserves. These topics are worthy of examination; hence, this paper.

The first chapter will provide a selective overview of global energy source statistics; the policies, disposition and composition of the major hydrocarbon production and consumption players and communities; a selective background of OPEC and its impact on the globe; and a general portrait of how the Muslim periphery piece fits into the overall Muslim oil and gas puzzle. Chapter two analyzes the established Muslim oil and gas periphery of Africa and SE Asia asking the following questions: What are the major political, economic, and technical trends and dilemmas affecting these producer nations? And what are the United States' policies and relationships with these producers?

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Western advances in technology and increased consumption of gas, might impact the control OPEC and the Muslim oil center exert over petroleum in the future. Chapter four also examines how the potential of the Caspian states differs from that of the traditional Muslim oil periphery and how trends in the periphery could impact OPEC and the Muslim oil center in the future.

Many of the controversies covered in this thesis are current and dynamic. Unless otherwise noted in the text, I have arbitrarily selected October, 1997, as the information cut off date for all topics of discussion. The majority of sources for this paper are from a variety of periodicals such as *Oil & Gas Journal*, *The Financial Times*, *The Economist*, etc. Many of the contemporary statistics I use are from *BP* (British Petroleum) *Statistical Review of World Energy* and various quarterly and annual country reports produced by the Economist Intelligence Unit. I derive much of the data for future estimates of oil and gas reserves and production from several IEA (International Energy Agency) publications.

CHAPTER ONE GLOBAL ENERGY, OPEC, & ISLAM

"Issawi's Law of Petroleum: Where there are Muslims, there is oil; the converse is not true."
—Charles Issawi, Bayard Dodge Professor, Emeritus, Princeton[1]

This chapter seeks to outline the global framework within which I will examine Muslim oil and gas. I believe that oil and natural gas producing regions cannot be myopically examined in isolation from the world at large. Fossil fuels are consumed on all continents and in all nations. The fungible nature of oil is widely recognized. I will address the increasingly fungible aspects of natural gas later in this chapter. In addition to highlighting the noteworthy consumers and producers of global energy resources, I will summarize OPEC's structure and describe the component parts of the Muslim oil world.

GLOBAL ENERGY RESOURCES

Although energy consumption involves a differing mix of sources in each country, carbon based sources account for 90% of the global total. The 10% non-fossil fuel output is overwhelmingly nuclear and hydroelectric. Discounting renewable sources which are less than one percent of global energy production, the current division of fuels is 39.6% for oil, 27.2% for coal, 23.2% for natural gas, 7.3% for nuclear energy, and

[1] Charles Issawi, *Issawi's Laws of Social Motion* (Princeton: The Darwin Press, Inc., 1991), 35.

2.7% for hydroelectric.[2] The IEA projects that world energy consumption will continue to climb and that fossil fuels will continue to provide about 90% of the energy mix.

Hydroelectric power utilization is currently close to peak levels. In the OECD, there simply aren't that many more virgin water sources that could be used for future hydroelectric plants. Several planned hydroelectric endeavors are drawing fire because they will cause demographic displacement and adversely impact their respective local, and in some cases, regional environments. The hydroelectric expansion that does occur will be largely outside the OECD.[3] Hydroelectric production overall will remain static as a share of global energy in the next generation.

Nuclear power is strongly opposed by many national and international environmental groups. The belief that nuclear power is *bad* and should be phased out is commonplace in the US. Indeed, no new construction of nuclear power plants has occurred in the US in the 1990's and nuclear power output will slowly, steadily decline as one plant after another is decommissioned.[4] Of OECD nations, only Japan is dramatically augmenting its nuclear power production.[5] Nuclear power is projected to decrease by 2010 as a share of world energy production.[6] Power production from renewable energy sources is growing rapidly, yet there have been no breakthroughs in renewables that have made them as cost efficient as fossil fuels for large scale energy

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[2] British Petroleum Company, *BP Statistical Review of World Energy 1996* (London: Group Media & Publications, 1996), 38.
[3] International Energy Agency, *World Energy Outlook 1995* (Paris: OECD/IEA, 1995), 43-45.
[4] Ross Kerber, "Nuclear Plants Face Huge Costs to Fix Problems," *The Wall Street Journal* (18 June, 1997), B1.
[5] International Energy Agency, *World Energy Outlook 1995*, 45.

production—the long awaited cold fusion miracle still seems very distant. Renewables are projected to increase by 2010 to a share of around 1 percent of world energy production.[7]

Of the three fossil fuels, coal is the least scarce. North America has enough coal to last 260 years; Europe, 472 years; Africa, 336 years; Asia and Australia, 196 years; the only continent with insignificant reserves is Latin America.[8] Unlike natural gas, coal cannot be efficiently converted to liquids. Coal burns at a much higher efficiency today than in previous generations, 40% today compared with 5% early this century;[9] however, burning coal produces more environmentally hazardous byproducts than burning oil. Coal will not make any future inroads into transportation fuels because of its solid state, physical residue, and pollutant byproducts. Countries outside the OECD and FSU are projected to substantially increase their coal consumption, especially in East Asia. The US does not have to worry about importing coal since it has larger coal reserves than any other nation, 23.3% of the global total.[10]

OIL

Today, there is approximately one trillion barrels of proven petroleum reserves in the world: *Proven* means confirmed reserves that are economically extractable using current technology. Two thirds of the world's reserves are located in five Persian Gulf

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[6] International Energy Agency, *World Energy Outlook 1996* (Paris: OECD/IEA, 1996), 25.
[7] Ibid.
[8] Siamack Shojai, *The New Global Oil Market: Understanding Issues in the World Economy* (Westport, CT: Praeger Publishers, 1995), 38.
[9] Ibid.

littoral nations, all of which are members of OPEC. OECD countries have only 104 billion barrels of oil. Any increase in non-OPEC and particularly non-Persian Gulf oil reserves enhances both the supply availability and price independence of petroleum.

In Table 1, I project proven oil reserves into the future in 20 year increments. This chart demonstrates the increased concentration of currently known reserves in the Persian Gulf and selected other nations, but the magnitude of unknown reservoirs and advances in exploration and production technology will undoubtedly lengthen oil production for most countries. Some like the US will exploit technology to stretch out production by dozens of years. In fact, estimated world reserves have actually increased from 650 bbc (billion barrels of crude) in the seventies to 1000 or more bbc in the nineties.[11] In chapter four I discuss the impact that elongated non-OPEC production will have on OPEC members.

Identifying future reservoirs is largely a function of capital investment in exploration. A 1982 IEA study assumed 2.4 trillion barrels of global resources.[12] Proven reserves signify much of the world's cheaply extracted oil. The key differences between the gigantic Persian Gulf assets and many future reservoirs will be the financial costs for exploration and production: Discovering and producing oil from a small offshore field in the Gulf of Mexico costs several times production from a known, super-giant Saudi field. Also, exploration and development take time; Mideast oil cannot be replaced overnight. OECD nations and industries are best positioned to partner with

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[10] British Petroleum Corporation, 30.
[11] International Energy Agency, *Mideast Oil and Gas* (Paris: OECD/IEA, 1995), 26.
[12] J. E. Hartshorn, *Oil Trade: Politics and Prospects* (Cambridge, UK: Cambridge U. Press, 1993), 245.

nations sitting on potential oil as the West possesses the financial resources and technical wherewithal to undertake increasingly sophisticated ventures.

NATURAL GAS

Worldwide gas production was insignificant as recently as 50 years ago. Today, there is 140 trillion cubic meters of proven natural gas in the world. If we convert that figure to barrels of oil equivalent (boe), we find there are 880 billion boe of proven natural gas.[13] This figure is close to the trillion barrels of proven global oil. Similarly, possible global natural gas is as plentiful as possible oil. Proven global gas reserves have actually tripled from 1970 to the present as more and more gas is discovered and evaluated as extractable.[14] The Middle East and Russia each have approximately one third of current proven global reserves. Unlike oil, the US produces 88% of what it consumes and imports the remainder from Canada.[15] Natural gas in the US is not nearly as mature an industry as oil; consequently, the US is expected to continue to produce most of the gas it consumes.

While oil and natural gas reserves are comparable, their environmental impact is not: Natural gas is roughly half as environmentally hazardous as oil, making it the only fossil fuel supported by environmentalists. Natural gas emits very little nitrogen oxide,

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[13] British Petroleum Company, 20.
[14] Shiva Pezeshki and Fereidun Fesharaki, "Asia-Pacific LNG market: Outlook to 2010," *OPEC Review* (Vol. XIX, no. 2; Summer 1995), 89.
[15] British Petroleum Company, 23, 26, 28.

zero sulfur, and about 20 to 30% less carbon dioxide than oil. Gas emits only half the carbon dioxide of coal.[16]

Liquefied natural gas (LNG) now accounts for over 90 billion cubic meters or one quarter of internationally traded gas.[17] LNG is exclusively transported by ship; it is not technically and economically feasible to transport LNG at the low temperatures that keep it a stable liquid in any smaller platform. LNG provides countries that have no indigenous gas resources and cannot be reached by pipeline, such as Japan, S. Korea and Taiwan, the means to diversify their energy consumption with an environmentally appealing fuel beyond the control of OPEC. LNG is also appealing to countries like Turkey that are looking to diversify their gas import sources. Anticipated growth of 7% each year for the next decade will increase LNG's share of global energy use to 2%. LNG is more economically competitive than piped gas at distances of 1,000-2,000 miles or greater.[18]

Natural gas conversion to synthetic liquid fuels has been a physical reality for some time, but the process hasn't been previously cost competitive. New developments including a planned full scale gas to liquids plant in Qatar presage a potential revolution in this arena. Robert Corzine of the Financial Times writes,

> Unlike oil, which can be easily shipped anywhere in the world, gas needs an expensive pipeline or liquefaction infrastructure to be viable. But advances in turning gas into very clean liquid fuels, such as virtually non-polluting diesel, could soon turn currently worthless discoveries into valued assets.[19]

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[16] Pezeshki, 89.
[17] British Petroleum Company, 28.
[18] Robert Brown and Roxanna Clary, "World economic growth pushing LNG use," *Oil & Gas Journal* (Vol. 95, no. 20; 2 June, 1997), 64.
[19] Robert Corzine, "FT Guide To: Oil Exploration," *The Financial Times* (2 June, 1997), 13.

These "worthless discoveries" that Corzine refers to are remote assets that cannot be piped to international markets—most of the gas resources in the southern hemisphere fall into this category. Continuous advances in gas to liquids technology could make these resources a fungible liquid alternative to oil in the future. Auto fuels already exist that are whole or partial derivatives of natural gas: Liquefied petroleum gas is the most widely used alternative fuel in the globe and compressed natural gas is used in around one million vehicles worldwide.[20]

DEMAND/CONSUMERS

There are many more importers of oil than exporters; hence, the consumer position on oil is explicitly diverse and complex. The West generally prefers the market determining prices to a regime beyond its control, but each country's energy policy is unique. The self-sufficiency imperative that has lost steam since the eighties oil slump encompasses four components: Diversification, conservation, increased efficiency, and domestic energy production. The mix of the self-sufficiency imperative varies dramatically: Japan has no oil, gas or coal reserves, but has a higher level of energy efficiency than the US or EU.[21] The wide and plentiful geographical distribution of coal directly places self-sufficiency and environmental interests in conflict.

Environmental lobbies vary within nations and from country to country in size, political influence, and policy emphasis. In general, environmentalists will increasingly

[20] Neil Wallis, "Clean fuels slow off the mark," *The Financial Times* (12 June, 1997), 7.
[21] Shojai, 28-29.

pressure government to promote alternative sources, such as the multi-phase initiatives in California to reduce emissions. But such initiatives will only dent US automobile consumption of petroleum: American cars use 40% of US oil which equates to 15% of the world's consumption.[22] As more and more US oil fired power plants are converted to gas or coal (over the past two decades both gas and coal have become cheaper relative to oil), the percentage of oil consumed on American highways will increase. Continued improvements in gasoline efficiency are presumable, but changes in culture and transportation infrastructure will have to occur before the US will equal other OECD countries in per capita auto fuel consumption.

The IEA predicts a steady rise in the global demand for oil from a current 68 million barrels of crude per day (mbc/d) to between 92 and 96 mbc/d by 2010.[23] The IEA's assessment is not unique: OPEC and the US Energy Information Administration predict substantial rises as well.[24] Alternative OPEC models predicting price shocks also forecast a net rise in demand, albeit a jagged one. While the IEA does consider increased conservation, energy efficiency and other impacting factors in its estimates, I question whether it places enough emphasis upon environmental interests. Natural gas is rapidly replacing oil in OECD power plants, for combined cycle gas plants are both cleaner and more economical than oil energy plants.[25] The business proponents of gas and environmental advocates might combine lobbying efforts to successfully market more research into gas to liquids technology in the near future. Further, the Persian Gulf OPEC

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[22] Ibid, 33.
[23] International Energy Agency, *Oil, Gas & Coal Supply Outlook* (Paris: OECD/IEA, 1995), 7.
[24] Hartshorn, 261, 262.

members do not view natural gas as a liability for they have one third of global gas reserves: for them gas as an oil substitute is a double edged sword.

It is possible that petroleum consumption in many OECD countries might remain stable or even decline in the future due to increased energy efficiency, conservation, and energy alternatives. However, even if this situation occurs, global oil consumption will probably rise at least modestly. Why? Markets are expanding in newly industrialized countries—the fastest growing demand for oil is in developing countries which have increasing populations.[26] East and South Asia stand out in the developing world as the areas that will have the highest rate and overall volume of demand. Mamdouh Salameh, an international oil economist and consultant for the World Bank, states:

> The 'center of gravity' of oil consumption is shifting to the Asia-Pacific region. In 1990, the region overtook western Europe's oil consumption by 435,000 barrels a day and, by 1995, the gap had widened to 3,945 million b/d. If the oil demand trend discernible in the region continues into the future, the Asia-Pacific will overtake North America (including Mexico) by 1998 to become the world's largest consumer of crude oil. Ensuring that the Asia-Pacific region has significant energy supplies will require the mobilization of trillions of dollars of investment along every element of the energy supply system.[27]

Even China with its extensive crude reserves has become a net importer with an appetite for oil that matches its rapidly growing GDP.[28]

These developing countries will use basic economics to justify their preference for cheap oil over environmentally cleaner, more expensive alternatives. One need only

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[25] Shojai, 36-37.
[26] Mohammed A. Al-Sahlawi, "The Future Role of Oil in the Future Energy Mix," *OPEC Review* (Vol. XVIII, no. 3; Autumn, 1994), 303.
[27] Mamdouh Salameh, "The geopolitics of oil in the Asia-Pacific region and its strategic implications," *OPEC Review* (Vol. XXI, no. 2; June 1997), 125.
[28] Subroto, "OPEC's Long Term Supply Outlook," *OPEC Review* (Vol. XVIII, no. 3; Autumn, 1994), 331.

examine recent and projected growth in demand for automobiles in Southeast Asia to comprehend the potential increased demand for oil. Gasoline demand in Thailand and S. Korea is already soaring at over 20 percent annually.[29] Domestic environmental interests in the developing world will not rival the influence of their western counterparts until per capita income has dramatically increased; some of the developing world will not reach the current per capita purchasing power of the US for several generations.

SUPPLY/PRODUCERS

If estimating future demand for energy resources is guess work, accurately predicting future supplies is almost impossible. Advances in technology will identify deposits in areas previously thought dry and permit extraction of known oil reservoirs that were previously unreachable or cost-prohibitive. Increased political openness and economic integration will facilitate exploration in areas hitherto closed to Western access, particularly the Commonwealth of Independent States (CIS). I prefer to divide the non-Muslim oil producing world into three categories: OECD, Russia and Venezuela, and everyone else. Russia and Venezuela have enormous hydrocarbon reserves that clearly set them apart from the rest of the world that is outside OECD and Islam.

Japan and South Korea have no oil reserves; hence, OECD production virtually equates to European and North American production. Europe and North America (not including Mexico) are the best oil mapped continents in the world. Other than further North Sea development, the greatest potential for the OECD remains in North America,

[29] Kent Calder, "Fueling the Rising Sun," *Harvard International Review* (Vol. XIX, no. 3; Summer 1997), 25.

developing virgin areas and renewing exploration in more familiar terrain with cutting edge technology. Environmental lobbies have successfully prevented many proposals for exploration off coastal areas and development in Alaska. The Alaskan National Wildlife Reserve with an estimated 6 bbc has been blocked from development by environmental legislation.[30] But areas that have been legally closed could be opened if demand strengthened and/or if policies to reverse the growing dependency on imports took higher precedence on America's agenda. Some countries like the US, the UK, and Norway will continue for many years to consider both petroleum producer and consumer perspectives. The West could stimulate domestic production by reducing and eliminating prohibitive taxes in favor of rents designed so that they do not inhibit exploration and production.[31]

Future advances in technology will permit access to currently known but inaccessible oil deposits throughout the globe. Advances in technology have permitted far greater production from the Alaska North Slope fields than was planned twenty years ago. Current extraction methods will only allow production of 6-9 bbc at the Tengiz field in Kazakhstan, but the field itself holds an estimated 25 bbc.[32] What will proven reserves at Tengiz be in 2020? Furthermore, enhanced technical capabilities will favor successful exploration that was not previously possible. Current developments in what was considered a mature oil region, the Gulf of Mexico, could temporarily reverse a ten year decline in US production. 3-D seismic sensing technology is one of the developments that led to the discovery of new wells producing 15 thousand barrels a day: This

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[30] Shojai, 35.
[31] M. A. Adelman, *The Genie out of the Bottle: World Oil since 1970* (Cambridge, MA: MIT Press, 1995), 328.
[32] Adelman, 320.

technology gives drillers data points that are 50 yards apart, compared with data points 880 yards apart provided by old processes. Increases in Gulf production, currently 16% of US output, could account for 25-30 percent by 2000.[33]

There is uncertainty estimating reserves in both directions. The OECD nation with the largest reserves, Mexico, might have substantially less than its proven 50 bbc. Questions exist as to whether the Mexican national oil company, PEMEX, consistently inflated estimates to bolster Mexico's international financial standing.[34] Regardless, Mexico will remain a noteworthy oil producer and is currently a close third behind the top two exporters to the US, #1 Venezuela and #2 Saudi Arabia (each exporting between 1.2 and 1.3 million b/d). Canada is fourth and the only other country to export more than a million b/d to the US.[35]

The Commonwealth of Independent States is the greatest wild card in the oil game. In fact, the CIS is so underexplored that its actual reserves could hypothetically rival the Persian Gulf.[36] Several other factors highlight the degree to which this card is *wild*: Tremendous political instability and multi-echeloned red-tape, pervasive environmental despoilage, and a wholly antiquated physical infrastructure coalesce into one of the riskiest but potentially highest yielding oil ventures in generations.[37] Current tenuous negotiations between several Western companies and members of the CIS

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[33] Martha Hamilton, "In the Gulf of Mexico, Drill Waters Run Deep," *Washington Post* (1 November, 1996), F2.
[34] Mamdouh G. Salameh, "Mexico's Future Oil Worries," *OPEC Review* (Vol. XVIII, no. 3; Autumn, 1994), 309, 311.
[35] Robert Beck, "US Oil, Natural Gas Demand Still Climbing," *Oil & Gas Journal* (Vol. 95, no. 4; 27 January, 1997), 54.
[36] Kate Gillespie and Clement Henry, *Oil in the New World Order* (Gainesville, FL: U. Press of Florida, 1995), 15.

collectively and individually on oil exploration, extraction, and transportation demonstrate the uncertainty and complexity of CIS petroleum.

Hydrocarbon reserves in the CIS are concentrated in Russia and the Muslim states of the Caspian. Russia has the largest proven natural gas reserves in the world with about 35% of the global total. Russian proven oil reserves are about as extensive as Mexico's at just under 50 bbc.[38] Unlike Mexico, Russia has vast potential additional oil and natural gas reserves. Exploration using Western technology in 21st century Siberia will turn up many unexpected hydrocarbon reserves—the questions are simply where and how much? Russia has sought to increase its gas exports to countries like Turkey and China. In June, 1997, Russia and China formulated two preliminary accords on hydrocarbons worth a combined total of $7 billion. The first agreement involves joint oil and gas development in Russian Siberia. The second accord provides for at least one gas pipeline to China's Yellow Sea coast near Shanghai, with plans for re-export to South Korea and Japan.[39]

Venezuela has the largest proven oil reserves outside the Persian Gulf.[40] In 1996, Venezuela surpassed Saudi Arabia to become the largest exporter of oil to the US. Venezuela is the farthest distance from the Persian Gulf of any OPEC member and has flagrantly violated OPEC quotas in recent years. Oil & Gas Journal reports that Venezuela in 1997 is exceeding its OPEC quota of 2.36 million b/d by almost 900,000 additional barrels.[41]

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[37] Ibid, 281.
[38] British Petroleum Company, 4, 20.
[39] Tony Walker, "Sino-Russian fuel deal close," *The Financial Times* (19 June, 1997), 1.
[40] British Petroleum Company, 4.
[41] "OPEC rolls over output quotas, vows restraint," *Oil & Gas Journal* (Vol. 95, no. 27; 7 July, 1997), 28.

The greatest hydrocarbon reserves in Venezuela are located North of the Orinoco river in the northern center of the country. This gooey Orinoco oil resembles liquid coal in density and composition; consequently, technology in the past hasn't been able to economically extract this black sludge and upgrade it to a useable grade. As Oil & Gas Journal reports, technology has improved:

> Interest in developing Orinoco heavy oil shows foreign operators expect such development to be economic under future market conditions. This vast area, with more than 1.2 trillion bbl of 6-13 gravity oil in place, is the world largest conventional liquid hydrocarbon accumulation.[42]

Venezuela has agreed to $13 billion in Orinoco deals with Conoco, Mobil, Arco, and Total. Two more prospective deals with Exxon and Coastal Corp. are worth an additional $4 billion.[43] Estimates of proven reserves of heavy crude in Orinoco vary: Only time and technology can say how many of these hundreds of billions of barrels will be produced.

Russia and Venezuela are the only mammoth hydrocarbon exporters outside Islam and the OECD; however, developments in technology and increased reliance on gas are making many new minor exporters. The Third World in the nineties has become generally more receptive to joint ventures with Western firms. In the energy arena such joint cooperation is crucial to identify and exploit small oil and gas deposits. Advances in offshore technology will benefit Angola and other littoral countries in West Africa. Substituting indigenous gas for imported oil will cut costs and increase energy self-sufficiency in many Latin American nations.

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[42] John Kennedy, "The Year in Review," *Oil & Gas Journal* (Vol. 95, no. 1; 6 January, 1997), 32.
[43] Toni Mack, "Watch out, Riyahd," *Forbes* (Vol. 159, no. 11; 2 June, 1997), 101.

China has started to partner with oil exporters as remote from Beijing as Baghdad and Lagos to ensure it will have sufficient imported oil for its growing economy, but there are major petroleum prospects within the PRC that have yet to be tapped. The largest potential finds lie in the Tarim basin located in the north-western corner of the country. One estimate puts potential reserves at Tarim at 147 bbc. The magnitude of this potential has swayed Beijing to allow some foreign oil interests to explore the basin.[44] The South China Sea is the second largest Chinese prospect with potentially tens of billions of barrels at stake.[45] Exploiting this region is complicated by the protracted Spratly Islands dispute.

OPEC

OPEC was founded in September, 1960 by Iraq, Iran, Kuwait, Saudi Arabia, and Venezuela. Today OPEC consists of those original members and seven others: Algeria, Gabon, Indonesia, Libya, Nigeria, the UAE, and Qatar. The only nation to leave OPEC, Ecuador, departed in 1992. While their charters are similar, there is no legal connection between OPEC and the Organization of Arab Petroleum Exporting Countries (OAPEC), formed in January, 1968.[46] While OAPEC's membership is open to all Arab petroleum exporters and it did have an influence in the first global oil crisis in 1973, OAPEC's intrinsic capability to influence the petroleum market is far less than OPEC's. Those Arab producers who are members of OAPEC but not OPEC are marginal exporters.

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[44] Salemeh, "The geopolitics of oil," 129.
[45] Ibid.
[46] Mary Ann Tetreault, *The Organization of Arab Petroleum Exporting Countries: History, Policies, and Prospects* (Westport, CT: Greenwood Press, 1981), 58.

Conversely, four of the five non-Arab members of OPEC—Iran, Venezuela, Nigeria, and Indonesia, listed in order of total exports—are among the largest exporters in the world (Gabon's output is comparatively minimal).

The largest national oil reserves in the world are found in Saudi Arabia which has approximately 260 billion barrels of crude oil (bbc) or 26% of global reserves. The second through fourth largest reserve holdings are located in Iraq, the UAE, and Kuwait, respectively, each with approximately 100bbc or 10% of global reserves. Estimates of Iran's reserves vary around 90bbc or 9% of global reserves, ranking it fifth in the world.[47] These five largest petroleum states are all members of OPEC and located in geographic proximity within the Persian Gulf. Cooperative ventures using Western financing and technology could prove additional reserves in the Persian Gulf large enough to extend supplies well into the 22nd century.[48]

In late 1973 and 1974, the world experienced the first major oil shock (not to say that there weren't many major national or regional oil crises previously). At the same time that one petroleum exporter after another was nationalizing assets in the early seventies, world demand for oil rapidly increased, eroding excess global supply. Thus, while several members of OPEC tried unsuccessfully to use oil as a political and economic weapon after the 1967 Arab/Israeli War, the situation was fundamentally different in 1973. On October 16, 1973, several OPEC members meeting in Kuwait City raised the price of oil by 70% to $5.11 per barrel.[49]

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[47] *Mideast Oil and Gas*, 26.
[48] Hartshorn, 239.
[49] Daniel Yergin, *The Prize: The Epic Quest for Oil, Money and Power* (New York: Simon and Schuster, 1991), 606.

The very next day at the same location, the Arab OPEC ministers put on their OAPEC hats and decided on voluntary volume cutbacks of 5 or 10% each and an embargo against selected countries they deemed friendly with Israel; these actions would be followed by an additional 5% cutback per month. Panic, lack of a forum for cooperation among consumers, and inefficient regulatory practices of countries like the US all helped balloon the crisis. As a result, the price of oil increased from $2.90 per barrel to $11.65 in only three months.[50]

The second oil shock occurred in 1979 as a result of the dissolution of the Shah's regime in Iran. Panic, hoarding, and financial exploitation by all parties involved in the petroleum business, contributed to skyrocketing oil prices. The price of oil tripled in a year and a half to $34. Fears accompanying the Iran/Iraq War helped maintain inflated prices.

The third oil crisis, unlike the first two, involved a collapse of the oil market. In 1985, Saudi Arabia, weary of its lost revenues in fulfilling the role of market guarantor and swing producer while other OPEC members were not so subtly exceeding their authorized export levels, flooded the market with oil. While such a crisis might seem like a boon for OECD countries, it actually threatened several aspects of Western energy programs. Consumer countries that were also major producers like the US and the UK worried that their domestic output and economic rents would be crippled by cheap Gulf oil. Even countries without domestic production capabilities like Japan were worried that cheap oil would unravel alternative energy and conservation programs, causing the Japanese economy to become as dependent and vulnerable to Gulf oil as it had been in

[50] Ibid, 607-625.

the seventies. After significant deliberation within and without OPEC, the price of oil, after plummeting to as low as $5, finally stabilized around $15-18.[51]

As in the past, the world's supply of oil in the future will certainly be affected by both the unilateral and consensual policy decisions of OPEC members. OPEC today exists as an organization where multiple adversaries ostensibly cooperate. Persian Gulf country relations have dramatically reduced the stability and cohesion of OPEC since the Iranian Revolution. There has been considerable enmity between Iran and the four Gulf states in OPEC whose overthrow the Iranian Republic repeatedly called for and surreptitiously promoted in the eighties. The UAE and Iran continue to spar over the island of Abu Musa. Diplomatic relations between Iran and the Gulf states have improved since the death of Khomeini, but ideological, Sunni/Shia, territorial, and ethnic differences will continue to color relations in the foreseeable future.

Even if either the current Iraqi or Iranian regime falls, relations between the two nations will be neutral at best due to the long term influence of the Iran/Iraq War. Relations between Iraq and the Gulf states could remain poor as long as Saddam survives. Kate Gillespie and Clement Henry, writing in *Oil in the New World Order,* summarizes the impact of the Persian Gulf on the oil market's uncertain future:

> But pricing and quantities of internationally traded crude petroleum rested on the shifting sands of Middle Eastern politics. The countries adjacent to the Persian Gulf held two-thirds of the world's proven reserves in 1992 and produced over half the world's internationally traded output. The costs of production in the Middle East were among the cheapest in the world, but the potential was relatively untapped, accounting for barely one-quarter of the world's total production. The market shares of the Persian Gulf producers seemed bound to rise with expected increases in world demand, and lower prices could further expand these countries' shares. International markets would become all the more

[51] Ibid, 748-764.

vulnerable to new turmoil in the Middle East—possibly accompanied by new Desert Storms.[52]

With the exception of Libya, relations of the non-Persian Gulf OPEC members with other members and with the world community in general are positive. The Persian Gulf will likely continue to be the center for instability and confrontation within OPEC.

OIL & ISLAM

In addition to the Persian Gulf members of OPEC, four of the five other significant members are Muslim—Algeria, Libya and Nigeria in Africa and Indonesia in SE Asia. Thus, while only seven of the twelve OPEC members are Arab countries, ten of twelve are Muslim (including Nigeria which is 50% Muslim).[53] Discounting Gabon's small production levels, OPEC is essentially an Islamic/Venezuela institution.

I don't think there is sufficient evidence to suggest that religion has played a role in OPEC that anywhere approaches the dominant role of simple economics. Arab nationalism and regional and domestic politics were more critical than Islam in compelling OPEC and OAPEC to act in the first oil crisis—the priority for non-Arab Muslim countries like Iran was not to support one side or another in the conflict, but to maximize profits. Due to the veracity of Issawi's Law of Petroleum, a strong correlation based on an historical accident, I believe Islam as a geographic phenomenon is a very useful means of analyzing global oil and gas. The Persian Gulf states have 66% or almost two thirds of global oil reserves. Muslim states in the periphery have about 6% of world

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[52] Gillespie and Henry, 1-2.

[53] Central Intelligence Agency, *The World Fact Book, 1995* (Washington, DC: CIA, Office of Public and Agency Information, 1995), 199, 202, 313.

proven reserves (this does not include the estimated reserves of the Caspian).[54] The non-Muslim world with over 80% of the earth's population has less than 30% of the globe's proven oil reserves.

Much has been written about the Muslim oil center, the Persian Gulf. Less documentation exists on the Muslim oil and gas periphery and its relationship to the Persian Gulf. Geography, Islam, and OPEC coalesce to bond the MOGP to the Muslim oil center. I have artificially divided the Muslim oil and gas periphery into two components: The established periphery of Africa and SE Asia and the new Muslim peripheral region of the Caspian. The four Muslim members of OPEC I mentioned above that do not border the Persian Gulf all lie within the traditional MOGP. The geography and politics of Muslim countries and their non-Muslim neighbors play greater roles in those countries' futures than religious unity through Islam: The controversies facing the Muslim Caspian states would not exist if those countries were located in Australia or the western hemisphere.

In addition to Issawi's Law, there is another interesting phenomenon regarding oil and Islam: In Muslim countries, there seems to be an inverse relationship between oil reserves and demographics. Of the four countries which each have over one hundred million Muslim citizens (including India), Indonesia has the largest oil reserves with 5 bbc. This figure is paltry compared to the reserves of lightly populated Kuwait or Saudi Arabia. The three new Muslim states of the Caspian, in which lie the greatest oil discoveries of contemporary times, have a combined population of around 30 million people. This strange demographic/oil correlation has reinforced the distortions of rentier

[54] British Petroleum Company, 4.

economics in MOGP states like Libya and Algeria (before its population explosion). This relationship between demographics and oil does not have a strong parallel in demographics and gas. The most heavily populated Persian Gulf country, Iran, actually has greater natural gas holdings than it does oil (Iran has the second largest gas reserves in the world).[55] As I will detail in chapter 2, gas has the potential to supersede oil in importance in every traditional MOGP country except the one with the smallest population, Libya.

There are two Muslim hydrocarbon producers which do not fall into my geographic center-periphery paradigm, Syria and Yemen. Both these nations lie on a North-South axis between the Persian Gulf and Africa. Neither of these two countries is a major player in the oil or gas industry. Syria produces about 600,000 barrels of oil a day, but its resource base is steadily diminishing.[56] Syrian production will progressively decline beginning in about five years.

Yemen's potential is the converse of Syria's. In the past, strife between North and South Yemen combined with domestic troubles in both countries to preclude significant investment by Western petroleum interests. Yemen's unification and achievement of a modicum of stability have stimulated foreign exploration and investment in virgin reservoirs of oil and gas, some only recently discovered using western cutting edge exploration technology. Oil production in Yemen has risen from zero in the eighties to almost 350 thousand barrels a day.[57] Total of France has signed a contract with Yemen to

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[55] Ibid, 20.
[56] Ibid, 7.
[57] Ibid.

produce 5 million tons/year of LNG by the year 2001.[58] Yemen is expected to become a noteworthy oil and gas exporter, but not on the scale of the average periphery producer examined in this thesis.

[58] "LNG Projects Make Progress in Oman and Yemen," *Oil & Gas Journal* (Vol. 95, no. 8; 24 February, 1997), 64.

CHAPTER TWO THE ESTABLISHED MUSLIM OIL & GAS PERIPHERY: AFRICA & SOUTHEAST ASIA

"The ultimate solution is to abolish the wage-system, emancipate man from his bondage, and return to the natural law which defined relationships before the emergence of classes, forms of government, and manmade laws."

"The purpose of the new socialist society is to create a society which is happy because it is free."

"Woman is female and man is male."
—Muammar Gaddafi[59]

Chapter two seeks to describe the oil and gas trends and dilemmas of the established or traditional MOGP of Africa and Southeast Asia. I will demonstrate the increased salience of gas in the six major hydrocarbon states of this traditional periphery: Egypt, Libya, Algeria, Nigeria, Indonesia, and Malaysia. This chapter will describe the varying degrees of efficiency in the hydrocarbon sectors of these states and how each state has dealt with related economic rents. I will broadly characterize US policies regarding these states and discuss US and other Western investment therein.

AFRICA

In this section I will start with the country closest to the Muslim oil center, Egypt, and move progressively west. There are only four African countries that appear in the gas reserves section of BP Statistical Review of World Energy and they happen to be the

Muslim states I am discussing: Egypt, Libya, Algeria, and Nigeria.[60] Many other Muslim African nations have moderate potential oil and gas reserves but not on the scale of the four above. Tunisia has growing oil and gas offshore potential and is jointly exploring with Libya their shared continental shelf. Two foreign corporations are exploring for hydrocarbons in north-central Morocco.[61] In addition to Tunisia's promising but still unknown offshore potential, Sudan and Chad currently seem to have the greatest potential oil reserves of the smaller African hydrocarbon states. Exxon is working with Shell and Elf Aquitaine of France on a venture to exploit the estimated 1 billion barrels of oil reserves in Doba in southern Chad. This complex project is still in the planning stage and would involve the construction of a 1,050 km pipeline through neighboring Cameroon to the Atlantic. Peak production at Doba is planned for 225,000 barrels a day.[62]

Petroleum industry sources estimate oil reserves in southern Sudan at anywhere from less than a billion barrels to more than 3 billion. Because Sudan is one of seven nations the US has accused of sponsoring terrorism, the US government currently prohibits American oil companies from involvement in Sudan.[63] The US seems to be alone in this regard: Sudan has signed oil related contracts with firms or representatives from Canada, China, Iran, Qatar, and Malaysia. Arakis Petroleum of Canada, China

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[59] George Tremlett, *Gadaffi: The Desert Mystic* (New York: Carroll & Graf Publishers, Inc., 1993), 219, 222, 225.
[60] British Petroleum Corporation, 20.
[61] "Cabre wins three Morocco permits," *Oil & Gas Journal* (Vol. 95, no. 19; 12 May, 1997), 35.
[62] Robert Corzine, "Bank role urged in Chad oil plan," *The Financial Times* (27 October, 1997), 4.

National Petroleum Corporation, and the Malaysian state oil company, Petronas, have formed a consortium to explore and produce oil in southern Sudan. This consortium is also obliged to build a pipeline stretching all the way from the Heglig and Unity oilfields through El Obeid and Khartoum to Port Sudan. The civil war in Sudan will undoubtedly continue to complicate and hamper oil development.[64]

While none of these minor Muslim African producers will single-handedly impact the future of global hydrocarbons, they collectively illustrate the growing quantity of gas reserves and non-OPEC oil reserves among nations that were yesteryear's hydrocarbon nobody's.

EGYPT

Ten years ago I would have neither included Egypt nor Malaysia among the major producers of the established MOGP. The other four countries in the traditional MOGP are OPEC members, Egypt and Malaysia are not. Today I include them for one reason: natural gas.

Egypt has never been a huge exporter of oil and will not become one in the future for several reasons: Egypt has proven oil reserves of only 4 billion barrels and its possible reserves are no more than a few billion additional barrels; Egyptians consume most of the country's production of around a million barrels/day; and the demand for automobiles is accompanying Egypt's skyrocketing population growth, causing an

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[63] Patrick Crow, "Signals on Sudan," *Oil & Gas Journal* (Vol. 95, no. 14; 7 April 7, 1997), 31.
[64] *Sudan: EIU Country Report, 2nd quarter 1997* (London: Economist Intelligence Unit, Limited, 1997), 20.

expected demand for more petrol in the future.[65] Egypt has been the beneficiary of oil transit rents from small tankers through the Suez Canal and larger tankers offloading and onloading from the recently upgraded Sumed pipeline (this Suez-Mediterranean pipeline stretches from Ain Sukna on the Gulf of Suez to Sidi Kreir on the Mediterranean; its capacity was recently expanded from 1.6 million barrels/day to 2.4 million): As long as Egypt's prices for transit remain cost competitive, these two rent gathering tools should continue to be lucrative for the foreseeable future.[66]

Egypt is becoming a greater hydrocarbon player because it's proven natural gas reserves are rapidly increasing at the same time that gas is gaining salience in the world energy market. Proven reserves of natural gas in Egypt tripled from 7 trillion cubic feet in 1985 to 22 trillion in 1995 and continue to climb with increased exploration.[67] The bulk of these new gas discoveries have been in or near the Nile delta region. Egypt is developing its gas for domestic energy use and for export. The 1988 water crisis exposed the vulnerability of Egypt's Nile dependent hydroelectric power. This crisis helped further the movement to natural gas power stations. Relying on natural gas for electric power is not only more reliable than hydroelectric power, but has the added benefit of substituting gas for oil fired power production. This development permits more oil to be available for use as exports or as transportation fuels.[68]

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[65] British Petroleum Company, 4.
[66] *Egypt: EIU Country Report, 2nd Quarter 1997* (London: Economist Intelligence Unit, Limited, 1997), 26.
[67] Ibid, 20.
[68] *Egypt: EIU Country Profile 1994-95* (London: Economist Intelligence Unit, Limited, 1995), 29.

The growing reserves of Nile Delta gas have made several potential export enterprises possible. Egypt is looking at prospective projects for LNG it could ship to Turkey or theoretically anywhere and for piped gas it could send to Turkey, Jordan, or Europe through Libya. Turkey currently represents the most likely gas customer due to its already large and growing gas consumption, proximity to Egypt, and motivation to diversify its gas import sources. Egypt has signed a memorandum of understanding with Amoco and Turkey's Botas for the purchase of 10 billion cubic meters/year of LNG from a planned terminal 20 km to the west of Port Said.[69] Citibank has been identified as the financial advisor for this project; total capital costs are estimated at $2-4 billion with projected annual revenues for Egypt of $500 million.[70]

There was substantial discussion in 1996 about constructing an undersea gas pipeline to Turkey and an undersea or Sinai overland pipeline to Israel. The dissolution of the Palestinian Peace Process in 1997 has stopped official negotiation between Egypt and Israel over any type of direct pipeline between them. One possibility described in *Oil & Gas Journal* is a pipeline connecting Egypt and Turkey with a spur extending off to Israel. This type of project could be marketed as an *Egyptian/Turkish venture* to the citizens of Egypt and other Arab countries whereas a direct pipeline between Egypt and Israel is far less politically palatable.[71]

Egypt has cordial relations with OECD countries and many Western oil companies do business in Egypt's hydrocarbon sector. Of the involved American firms,

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[69] "Egypt eyeing Mediterranean gas exports," *Oil & Gas Journal* (Vol. 95, no. 25; 23 June, 1997), 21.
[70] *Egypt: EIU Country Report, 1st Quarter 1997* (London: Economist Intelligence Unit, Limited, 1997), 24.

Amoco has the largest stake in both oil and natural gas. Amoco and the International Egyptian Oil Co. unit of Italy's Agip have registered most of the 21 different Nile Delta gas/condensate discoveries.[72] The US provides Egypt with billions of dollars in military hardware each year. Though relations between the US and Egypt have been warm for two decades, they have quietly clashed in recent years over how to deal with Egypt's enigmatic neighbor, Libya.

LIBYA

The quotes at the beginning of this chapter were excerpts from Colonel Gadaffi's *The Green Book* and exemplify the bizarre precepts he uses to guide, or rather, misguide Libya. Sparsely populated Libya without Gadaffi could well have been as prosperous as the Persian Gulf states. Even though Libya's oil reserves at 30 billion barrels are only a third of Kuwait's, Iraq's or the UAE's, Tripoli enjoys closer proximity to Europe and North America. Moreover, Libyan output is mostly sulfur-free, light sweet crude and, hence, more valued than the Gulf crudes. Libya's reserves are 50% larger than Nigeria's but it produces one third less oil, only 1.4 million barrels per day.[73] Europe accounts for 94% of Libyan exports with Germany and Italy drinking in the preponderance.[74] A generation ago in 1970, Libya produced over 3 million barrels per day. If Libya had positive or even working relations with the US and the UK, its oil production would

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[71] "Egypt eyeing Mediterranean gas exports," 21.
[72] David Knott, "Interest Grows In African Oil And Gas Opportunities," *Oil & Gas Journal* (Vol. 95, no. 19; 12 May, 1997), 42.
[73] British Petroleum Corporation, 4, 7.
[74] *Libya: EIU Country Profile 1995-96* (London: Economist Intelligence Unit, Limited, 1995), 22.

undoubtedly be much higher today. Despite their international constraints, Libyans still enjoy the highest per capita GDP of the Muslim African oil states (several times higher than Egypt and Nigeria)—all because of petroleum.[75]

Libya has significant possible reserves but has had much more difficulty than Egypt or Algeria in attracting Western investment for new exploration and development.[76] Though non-US oil companies continue to do business with Gadaffi's state, US and UN sanctions have isolated Tripoli militarily and measurably impacted the economy. Libyan state oil companies warn that without substantial investment in new capacity, production could fall to less than a million barrels per day by 2010.[77]

Sanctions have not deterred Egypt, Spain or Italy from cooperative hydrocarbon ventures with Gadaffi. Spain is increasing its consumption and joint production of Libyan oil, and Italy's Agip continues to move forward on a planned $5 billion deal to develop and pipe gas underwater 520 km from Libya to Sicily.[78] Libya has noteworthy gas reserves of 1.3 trillion cubic meters and has shipped LNG to Europe for many years, but this gas project would be its most ambitious to date.[79] Cairo and Tripoli are coordinating two arrangements whereby Egypt would pipe gas west connecting to

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[75] Central Intelligence Agency, 126, 248, 313.
[76] *Libya: EIU Country Profile 1997-98* (London: Economist Intelligence Unit, Limited, 1997), 29.
[77] *Libya: EIU Country Report 2nd quarter 1997* (London: Economist Intelligence Unit, Limited, 1997), 20.
[78] Ibid, 20.
[79] British Petroleum Company, 20.

Libya's northern coast grid system and augmenting Libya's exports to Europe, and Libya would in turn pipe oil east.[80]

The Bush Administration re-imposed sanctions on Libya in early 1991 and the UN followed suit in April, 1992. Most analysts assess that these sanctions have hurt the Libyan economy and oil industry, but have far from crippled it. US goods still manage to make their way indirectly into Libya through European states, even Britain.[81] In the last few years Tripoli has curbed its rhetoric and terrorist support and has tried to project an image of compromise regarding the requested trial of its intelligence agents for the 1988 Pan Am flight 103 incident. Gadaffi's waiting game and diplomatic maneuvers seem to be slowly paying off as members of the Organization of African Unity and the Arab League have started to clamor in the UN for repeal of the sanctions.[82] OECD nations have not been as outspoken about repealing them though they would prefer to expand trade with Libya. Since the US established criteria for secondary sanctions in 1996 and lumped Libya and Iran into the same category, EU countries (other than the UK) have taken a substantially less supportive role of sanctions in general.

The US's Iran Libya Sanctions Act of 1996 threatens to penalize any foreign company that invests more than $40 million annually in the two named countries. These potential sanctions do seem to at least have had a psychological effect—several non-US energy companies, such as Agip with its Libya/Sicily gas pipeline project, rushed to beat

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[80] "Egypt and Libya Agree To Launch Two Pipeline Projects For The Export Of Oil And Gas," *Middle East Economic Survey* (Vol. XL, no. 27; 7 July, 1997), A15.
[81] Raymond Bonner. "Libya Is Said to Evade Sanctions By Buying US Goods in Europe," *The New York Times* (4 October, 1997), 1.
[82] "Libya Says It Will Ignore Renewed Security Council Sanctions," *Middle East Economic Survey* (Vol. XL, no. 28; 14 July, 1997), A10.

the commencement deadline of this Act.[83] Yet this Act has alienated our European allies who are the primary remaining investors in the Libyan hydrocarbon sector. One has to wonder if the gains to be made in possibly further isolating Gadaffi are worth the harm these secondary measures could bring to the US's relationship with other OECD countries. Although the effectiveness of this Act is too new to evaluate empirically, I believe that the negative consequences of this Act outweigh the gains.

ALGERIA

Turning from Libya to Algeria, we exchange a foreign policy nightmare for a domestic one. During the civil war of the nineties, Algerians have watched their GDP progressively decline. Algeria has been plagued for a generation with out of control population growth and failed statist economic policies. Population continues to climb this decade, though the 60 to 120 thousand insurrection related deaths have dented the growth rate. The country has 28 percent unemployment and a severe shortage of housing. The government has barely been able to create 100,000 new jobs a year, but 200,000 young people enter the work force annually.[84]

The Algerian economy relies heavily on oil and gas, but it has become so distorted that it can no longer even afford the inefficient industrialization projects of the past. Hydrocarbon sales represented 96.6 percent of foreign earnings in 1991; 75 percent of those proceeds were used to service external debt with most of the remainder spent on

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[83] *Libya: EIU Country Report 3rd quarter 1996* (London: Economist Intelligence Unit, Limited, 1996), 15.
[84] Roula Khalaf, "Algeria to spend oil cash on jobs and houses," *The Financial Times* (22 August, 1997), 3.

foreign grown cereals.[85] The Army has cordoned off the oil production zone from the civilian population, and Algeria has been more aggressive in seeking to partner with foreign firms to discover and produce new assets; however, I believe that unless the future government in Algiers attacks its systemic, seemingly intractable political and economic dilemmas, no hydrocarbon windfall will be enough to pull Algeria out of the hole it has dug for itself. Paris has continued to maintain a closer and more important economic relationship with Algeria than has Washington DC. The US has been reticent throughout this decade in pronouncing judgment about the strife in Algeria—the so called specter of radical Islam has numbed the Beltway into silence about the hypocrisy and brutality of the Army backed regime.

Oil reserves in Algeria are just over nine billion barrels with production of 1.3 million barrels per day.[86] Although oil production has been static for several years, Sonatrach, the Algerian national oil and gas concern, is moving forward with many joint ventures that could increase oil output. Anadarko, a US company, leads a foreign consortium that is producing and continuing peripheral exploration of the Al Qubba field. *Middle East Economic Survey* reports that new exploratory data from this field suggest recoverable reserves close to two billion barrels.[87]

While recent oil production has been lackluster, the Economist Intelligence Unit reports that "natural gas production has increased and it is Algeria's gas export potential

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[85] Claire Spencer, *The Maghreb in the 1990's* (London: The International Institute for Strategic Studies, 1993), 38, 39.
[86] British Petroleum Company, 4, 7.
[87] "Anadarko Discovery Extends The Limits Of Al-Qubba Field," *Middle East Economic Survey* (Vol. XL, no. 29; 21 July, 1997), A6.

that determines its importance in the global energy situation."[88] Algeria has the largest proven gas reserves in Africa with 3.6 trillion cubic meters and has become the third largest supplier of gas to the EU behind Norway and Russia.[89] Already the second largest LNG producer in the world, Algeria has given the green light to many new foreign firm led ventures to expand piped gas exports to Europe. The first gas through the multinational 858 mile Gazudoc Maghreb Europe pipeline was pumped late in 1996 through Morocco and an offshore stretch across the Strait of Gibraltar to Spain. This pipeline has initial capacity of 8 billion cubic meters per year and a 600 km spur was added to provide gas to Portugal. Sonatrach plans to expand the capacity of this pipeline in stages to 19 billion cubic meters annually.[90]

A second line of the Trans-Mediterranean pipeline that pumps gas through Tunisia and across to Italy has been completed to effectively double capacity to 24 billion cubic meters annually.[91] The Italian power company, ENEL, signed a contract in April, 1997, with In Salah Gas, a joint BP and Sonatrach venture that is still in the planning stage. The In Salah gas fields contain an estimated 10 trillion cubic feet and will take $3.5 billion to develop.[92] In Salah is just one example of Algeria's successful joint development ventures, as compared with the last African country I will cover, Nigeria.

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[88] *Algeria: EIU Country Profile 1995-96* (London: Economist Intelligence Unit, Limited, 1995), 20.
[89] British Petroleum Company, 20.
[90] David Knott, "Interest Grows in African Oil And Gas Opportunities," 42.
[91] *Algeria: EIU Country Report, 1st quarter 1997* (London: Economist Intelligence Unit, Limited, 1997), 19.
[92] *Algeria: EIU Country Report, 2nd quarter 1997* (London: Economist Intelligence Unit, Limited, 1997), 18.

NIGERIA

If you take Algeria's problems and add a hundred million members of different, contesting tribes (half of whom are illiterate), you get Nigeria. The official population of Nigeria is about 100 million, but unofficial estimates run as high as 135 million.[93] Internal discord is nothing new to Lagos, where government repression and internal rebellion have been and remain active components of Nigerian political-economic life. Nigeria has substantial coal, oil and gas reserves, but production of coal and, until recently, gas has been limited.

Nigeria, unlike Algeria, did not spend most of its oil revenues developing industry. Nigeria has used oil revenues and subsidies to buy off domestic popular support for its military regimes. The World Bank assessed that in 1983 Nigeria had the second highest price distortions in the world. By the early nineties, the domestic oil subsidy was costing 9.4% of GDP.[94] In addition to oil subsidies costing the government higher revenues, one report, based on discrepancies between figures published by the Central Bank of Nigeria and those of oil industry sources, suggests that over $12 billion of unaccounted for oil sales between 1990 and 1994 was siphoned off for pet federal projects and shadier, less tangible purposes.[95]

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[93] Central Intelligence Agency, 313.
[94] Adeola Adenikinju, "Subsidizing domestic energy consumption: implications for the Nigerian economy," *OPEC Review* (Vol. XX, no. 3; September, 1996), 219.
[95] *Nigeria: EIU Country Profile 1996-97* (London: Economist Intelligence Unit, Limited, 1996), 22.

Nigeria has the second largest oil reserves in Africa with 21 billion barrels and is the continent's largest producer with 1.9 million barrels per day.[96] Possible reserves are extensive but will not be converted to recoverable assets unless Nigeria creates a more receptive environment for foreign oil interests (see below). Nigerian oil is of high quality: it has a light gravity and a low sulfur content. It is also located much closer to the western hemisphere than Mideast crude. The Economist Intelligence Unit comments, "the quality of Nigerian crudes helps to explain the reluctance of OECD governments to impose painful sanctions on Nigeria for its faltering progress towards the restoration of democracy."[97] Mobil, which has been in Nigeria since 1907, is beginning to see big dividends in an offshore field, Asasa, that it is developing with the Nigerian National Petroleum Corp. Since 1990 the proved and probable reserves from this find have climbed from three to six billion barrels. This joint venture plans to expand from 500,000 barrels per day in 1996 to 900,000 in 2000.[98]

Lagos in the nineties like its Muslim African peers has begun to emphasize exploiting its sizable proven gas reserves of 3.1 trillion cubic meters, the second largest in Africa.[99] The most ambitious prospect is the $4.5 billion Bonny LNG venture which Shell is leading with participation by Elf and Agip. This endeavor is scheduled to start shipping product to European customers in 1999. Bonny LNG should please environmentalists because one of its aims is to use natural gas that is currently flared.

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[96] British Petroleum Corporation, 4, 7.
[97] *Nigeria: EIU Country Profile 1995-96* (London: Economist Intelligence Unit, Limited, 1995), 21.
[98] "Teamwork, technology boost reserves, output off Nigeria," *Oil & Gas Journal* (Vol. 95, no. 28; 14 July, 1997), 69.
[99] British Petroleum Company, 20.

Another plan to utilize gas that is currently wasted through flaring is the West African Gas Pipeline that will serve markets in Ghana, Cote d'Ivoire, Togo, and Benin starting in 2000.[100] These projects, if successful, will substantially increase Nigeria's hydrocarbon earnings, but they are relatively small in comparison with the total gas exports of Algeria.

Although Nigeria has worked with many foreign oil companies throughout this century, recent Nigerian policies have far from maximized joint venture opportunities with foreign oil and gas concerns. According to *The Financial Times*, some oil companies have been deterred from exploiting several large new discoveries offshore because the Nigerian business climate is so poor.[101] The 1997 Corruption Perception Index rated Nigeria as the most corrupt state out of 52 nations surveyed.[102] Lagos has abrogated international hydrocarbon contracts and failed to provide physical security of foreign companies from direct and indirect effects of internal dissension. The Oil & Gas Journal reports:

> Nigeria continues to hold its reputation in the petroleum industry as a dangerous place to do business. Shell Petroleum Development Co. of Nigeria Ltd. was forced to shut down six oil producing stations in Nigeria's Delta state, when local people seized installations on Mar. 22 (1997). One hundred and twenty seven Shell staff and contractors, all Nigerians, were originally held captive. Six of these were injured, and office equipment at the stations was smashed. Next day the protest turned ugly, with one hostage injured seriously and another three hurt.[103]

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[100] John Kennedy, "Sub-Saharan Africa energy future brightening," *Oil & Gas Journal* (Vol. 95, no. 30; 28 July, 1997), 32.
[101] Barnaby Phillips and Robert Corzine, "African deep waters seen as new oil source," *The Financial Times* (21 August, 1997), 4.
[102] James Wolfensohn, "Corruption's costs and perceptions," *The Washington Times* (8 November, 1997), C3.
[103] "Shell Nigeria staff held as dispute turns ugly," *Oil & Gas Journal* (Vol. 95, no. 13; 31 March, 1997), 31.

Events like this one suffered by Shell do not encourage foreign companies to augment their capital investment positions in Nigeria. In June 1997, the Nigerian oil minister, Dan Etete, took the controversial and probably illegal action of firing the international board of directors for the LNG project at Bonny Island—Shell, Elf, and Agip were not amused. Later in the summer of 1997, a funding crisis threatened numerous joint projects as the regime indicated it would only fund $2 billion out of its $3.3 billion share of oil related financial requirements. Shell and Elf Aquitaine said they might have to cancel or scale down several exploration and development contracts unless Nigeria fulfilled its legal obligations.[104]

Despite the fact that Nigeria is a burgeoning African power and exports considerable oil to America, political relations with the US have been tenuous. Since the annulment of elections and the military coup of 1993, Washington has imposed three sets of sanctions on Nigeria (these sanctions are of questionable efficacy as they do not preclude the export of hydrocarbons to the US). The military regime has responded with vitriol and acts of intimidation to the American Ambassador to Nigeria, Walter Carrington's, attempts to promote human rights and democratic values: State security officials even broke up farewell parties for him.[105] My overall assessment is not optimistic: Nigeria is just as politically repressive and potentially unstable as Algeria, but is doing a poorer job to attract foreign capital for future projects. These crises torn African countries contrast sharply with those of Southeast Asia.

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[104] Robert Corzine, "Nigerian oil funding crisis deepens," *The Financial Times* (8 August, 1997), 4.
[105] Howard French, "US Envoy to Nigeria Is Given a Stormy Farewell," *The New York Times International* (26 September, 1997), A6.

SOUTHEAST ASIA

Unlike the African producers above who export hydrocarbons to countries as far apart as Turkey and the US, Indonesia and Malaysia exclusively export to East Asia. Jakarta and Kuala Lumpur, though repressive and far from full fledged democracies, are more stable politically and open economically than their African hydrocarbon counterparts. It is not within the scope of this paper to examine whether Asian culture or ethnicity are causal factors in Asia's greater economic success relative to Africa. I will mention one reason that these two Southeast Asian countries have not suffered the extensive oil rent economic distortions that have afflicted Africa: Indonesia and Malaysia simply don't have the per capita oil reserves and haven't had the per capita oil production of their African counterparts. They have enjoyed the benefits of export revenue, but not the huge windfalls of income that were mismanaged by all the African hydrocarbon producers.

Both Indonesia and Malaysia have positive relations with the US and the OECD. They also enjoy friendly relations with the Persian Gulf countries and, by Asian standards, are uniquely energy independent of them. Kent Calder, Director of Princeton University's Program on US-Japan Relations, comments:

> Over the next fifteen years, rising absolute levels of Asian demand, coupled with rising dependence on the Middle East, will triple the flow of oil eastward through the Straits of Malacca, from the Persian Gulf to Shanghai, Yokohama, and Pusan. The result will be a level of interdependence between the Middle East and Asia markedly greater than that prevailing between the Middle East and the Western industrialized world. Indeed, Japan's Institute for Energy Economics forecasts that by 2005 Asia will be importing around 16 mmbd from the Middle East—compared to only 6.5 mmbd for the United States and Europe combined. Atlantic nations will turn more heavily to Africa and Latin America as sources of energy

as Asia embraces the Middle East.[106]

Calder's projections for Asia's skyrocketing energy demand bode well for Southeast Asian producers. Asia will consume all the future oil that Jakarta and Kuala Lumpur can export. Southeast Asian natural gas will look more and more appetizing as an energy security hedge against Persian Gulf political gymnastics. Calder's statement also has global implications that I will comment on in Chapter 4.

Energy security is of particular concern to the Japanese, the greatest regional oil importers. Japan's Chiyoda Corp. is working with the Malaysian and Thai governments to build a 2 million barrel/day, $2 billion oil pipeline across peninsular Malaysia. This proposed pipeline would carry oil to Japan and other East Asian importers by serving as a substitute path for Persian Gulf crude transiting the Straits of Malacca. The pipeline is almost 200 km in length and will extend from Sai Buri, Thailand to Alor Setar, Malaysia.[107]

INDONESIA

Indonesia has notable coal, oil and gas and is the world's fourth largest coal exporter, though coal export earnings are modest compared to oil and gas. Estimates of Indonesia's oil reserves have actually declined by two thirds in recent years. *BP Statistical Review* published that proven reserves for Indonesia were at 14 billion barrels in 1975 but only 5 billion by 1995.[108] This decrease is due to two reasons: Indonesia

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[106] Calder, 25, 26.
[107] "Malaysia pipeline to carry 2 million b/d," *Oil & Gas Journal* (Vol. 95, no. 2; 13 January, 1997), 30.
[108] British Petroleum Company, 4.

probably overestimated its proven reserves, and it has been producing oil at a faster rate than it is identifying new reserves. Jakarta will have to become more receptive to investment by foreign oil companies if it is to obtain the billions of dollars in capital expenditures necessary to convert possible reserves to active proven assets. Indonesians consumed one third of their 1.5 million b/d of oil production in 1985. They now consume a majority of that figure.[109] Per capita production of oil is lower in Indonesia than in all the other members of the established MOGP. Kent Calder states that "Indonesia, long the largest oil exporter of the region, appears likely to become a net oil importer between 2000 and 2005."[110]

Indonesia's natural gas reserves roughly equal Malaysia's at 2 trillion cubic meters and climbing steadily—the two are tied for the largest reserves in Asia.[111] Indonesia is the largest LNG exporter in the world, sending most of its production to Japan with the remainder to S. Korea and Taiwan. LNG is now roughly equal to oil as a generator of foreign exchange and contributor to Indonesia's balance of payments. Liquified petroleum gas is not shipped in nearly the quantities as LNG but it is growing as an Indonesian export at an even faster rate. Jakarta has a long term contract to send 43,000 barrels of oil equivalent/day of butane and propane to Tokyo.[112]

Exploration is rapidly turning up new Indonesian gas reserves, but the largest deposits are far from Java where two thirds of Indonesians reside and most industry is centered. Jakarta, whose goal is to switch from oil to gas fired power generation, must

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[109] Ibid, 7, 10.
[110] Calder, 24.
[111] British Petroleum Corporation, 20.

devise innovative gas transportation plans to bring the remote island reserves to Java. There are many signs that Indonesia contains substantial possible gas reserves. Vast, unexplored regions of eastern Indonesia may have sizable gas reservoirs.[113] ARCO has discovered 13 trillion cubic feet of proven and probable reserves and 6.5 tcf of possible reserves in the Tangguh field off western Irian Jaya. Tangguh gas will support the first LNG project in eastern Indonesia, a joint venture of ARCO and Indonesia's national hydrocarbon concern, Pertamina.[114]

Some possible gas has been identified but is not yet commercially feasible—Exxon has a 50% share of the Natuna gas deposit's 46 trillion cubic feet of gas, the equivalent of four billion barrels of oil. Natuna also has three times as much carbon dioxide as gas, enough CO2 to dramatically alter the earth's atmosphere. This project is currently on hold until Exxon can figure out how to separate out the gas, pump back in the CO2, and still turn a profit.[115]

MALAYSIA

As noted earlier, Malaysia is important in the hydrocarbon sector for one reason—gas. Like Egypt, Malaysia is only a marginal exporter of oil and consumes about half of the 650,000 barrels/day it produces. Malaysia has 4.3 billion barrels of proven reserves

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[112] Philip Barnes, *Indonesia: The Political Economy of Energy* (Oxford: Oxford Univ. Press, 1995), 97, 107.
[113] Ibid, 118-120.
[114] "ARCO confirms giant Indonesian gas strike," *Oil & Gas Journal* (Vol. 95, no. 37; 15 September, 1997), 30, 31.
[115] Toni Mack, "The Tiger is on the prowl," *Forbes* (Vol. 159, no. 8; 21 April, 1997), 43,

and some potential reserves.[116] Kuala Lumpur's deliberate national depletion policy should maintain the 650,000 figure for many years. Oil consumption is only expected to increase slowly because gas is quickly replacing oil for power production at the same time that transportation fuel demand rises.[117] If Indonesia can't control its ascending domestic oil demand, Malaysia could be the only net oil exporter in Asia a decade from now.

What Malaysia lacks in oil reserves it makes up for in ambition. Robert Corzine, the petroleum analyst for the Financial times, says that Malaysia's Petronas is one of the two most aggressive state oil companies in the world (the other is China's National Petroleum Company). Corzine comments:

> Petronas wants to translate its political and religious connections into a broad-based international energy group, with much of its investment directed at Moslem and developing countries. Earlier this year Petronas defied US sanctions on Iran by joining with Total of France to develop two offshore Iranian oilfields. It is also active in North Africa, Syria and Sudan and is keen to enter Burma, another country which is becoming a no-go area for US companies.[118]

Malaysia's domestic energy production policies in no way conflict with the US, but Petronas' is clearly not refraining from conducting business with those nations on the US State Department's terrorism list. Rather, Petronas is actively courting those countries' hydrocarbon business. This situation could lead to future clashes between the US and Malaysia.

Malaysia is the second largest LNG exporter in Asia and the third largest in the world. Though Indonesia is currently a greater gas exporter than Malaysia, Jakarta has to

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[116] British Petroleum Corporation, 4.

[117] "Malaysian refining/marketing boom on tap," *Oil & Gas Journal* (Vol. 95, no. 20; 19 May, 1997), 37.

worry about supplying domestic energy to a population that is ten times that of Malaysia. As technology and increased demand strengthen the fungibility of gas, Malaysia will watch its exports expand to fulfill East Asia's insatiable appetite for energy. Malaysia's gas production is already growing fast, but it is discovering new gas much faster than it can produce it.

Exxon is working with Petronas Carigali to exploit 15 offshore gas fields with an estimated 12.5 trillion cubic feet; investment for this venture will total close to $5 billion.[119] Malaysia and Thailand are jointly exploring offshore for gas on the continental shelf of the South China Sea. Their joint efforts are apparently paying off as they recently reported identifying as much as 13 trillion cubic feet of new gas.[120] Royal Dutch Shell has built a commerically viable gas to liquids plant in Bintulu, Sarawak with a capacity for 12,500 b/d of middle distallates. Shell and others are using this revolutionary plant as a model for larger gas to liquids projects, proving that the time for the economical conversion of gas to synthetic petroleum has finally arrived.[121]

Malaysia has by far the best economy and per capita GNP of the MOGP. Malaysian oil rents have not historically been as large as those in other members of the MOGP; consequently, rentier economic diseases have not infected Malaysia like the African states. Malaysia's recent currency crisis and re-evaluation of planned infrastructure projects that were of questionable necessity could enhance the country's

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[118] Robert Corzine, "From minor to major," *The Financial Times* (19 August, 1997), 11.
[119] "New plan seeks to boost Malaysian gas output," *Oil & Gas Journal* (Vol. 95, no. 29; 21 July, 1997), 34.
[120] "Thai-Malay JDA exploration on brisk pace," *Oil & Gas Journal* (Vol. 95, no. 29; 21 July, 1997), 94.

long term economic transparency and stability. Malaysia is better positioned to plan the efficient use of increased future gas rents than the other Muslim periphery states.

CONCLUSION

US policies vary considerably throughout the established MOGP. While US policies on Libya do impact Egypt, they don't substantially affect the other members of the periphery. The wide geographical distribution of the established periphery, in contrast to the Caspian situation to be discussed in chapter 3, translates to less interconnectivity of foreign policy issues. OPEC is the one organization that has bound the hydrocarbon policies of these periphery nations together. The growing natural gas export potential of all these peripheral nations, particularly Egypt and Malaysia, two non-OPEC members, demonstrates a potential threat to OPEC's control of Muslim hydrocarbons. Indonesia, Algeria, and Malaysia represent, respectively, the top three LNG exporters in the world.

I chose to cover these states in the order—Egypt, Libya, Algeria, Nigeria, Indonesia, and Malaysia—because this sequence started from the state closest to the Muslim oil center and progressively moved further and further away. I thought that I might find a corresponding trend in the relationship of these states with OPEC and the Muslim oil center, i.e., that the states closer to the Persian Gulf have a closer and firmer relationship with the Muslim Oil Center than those furthest away. I found no evidence to

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[121] David Knott, "Gas-to-liquids projects gaining momentum as process list grows," *Oil & Gas Journal* (Vol. 95, no. 25; 23 June, 1997), 17.

substantiate this hypothesis. The three states closest to the Persian Gulf happen to also be Arab countries, but I pointed out the ineffectiveness of OAPEC in chapter 1.

CHAPTER THREE THE CASPIAN OIL GAME: HONEST POKER OR RUSSIAN ROULETTE?

"It's a question of the possession of Baku, Field Marshal. Unless we get the Baku oil, the war is lost."
—Adolf Hitler[122]

New oil and natural gas discoveries in the Caspian littoral states are of such a magnitude that they change long term world equations for those fossil fuels, both in economic terms of price and supply and in political and security terms of more globally accessible oil, a strategic resource. This chapter seeks to outline the participants and factors that are playing substantive roles in or related to Caspian area politics and the regional oil game. I will attempt to show that Russia remains the dominant regional player rather than Turkey or Iran, despite Western predictions to the contrary at the time of the Soviet Union's collapse. Moreover, US policies have enhanced Russia's position and constrained the options of both Russia's regional competitors and the newly independent states of the Caspian. In addition to discussing the two major controversies regarding petroleum—offshore exploration rights in the Caspian and transportation routes—I will highlight the critical developments in natural gas and the impact of Western finance.

[122] Yergin, 337.

BACKGROUND

The USSR in 1991 had proven reserves of 57 billion barrels of oil:[123] This figure in no way approximates that country's actual reserves because the Soviet Union, due to inefficiency and technological inadequacy, was probably the most petroleum under-mapped region on earth in relative terms. In fact, today's CIS is so under-explored that its possible reserves hypothetically could rival the Persian Gulf.[124] New petroleum discoveries of billions of barrels of oil in the CIS greatly augment non-OPEC reserve and production totals.

Caspian area states are no stranger to the oil game. Baku was one of the very first major petroleum producing regions in the 19th century and contributed to the fortunes of the Nobel and Rothschild families. In 1901 imperial Russia, Azeri production equaled approximately half the world's output.[125] Capturing the Caucasus and its oil riches was one of the key German war aims of both world wars. However, the Soviet Union after World War II came to rely more on Siberian oil and less on that of the strategically vulnerable Caspian region.[126] The USSR in 1988 was the world's largest oil producer, pumping more than 12 million barrels a day.[127] In the latter years of the Soviet Union both exploration and production in the Caspian area declined. Technical infrastructure throughout the region is wholly antiquated.

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[123] *Annual Statistical Bulletin: Organization of the Petroleum Exporting Countries, 1993* (Vienna: Secretariat, OPEC, 1994), 36.
[124] Gillespie and Henry, 15.
[125] George Lenczowski, "Caspian Oil and Gas: A New Source of Wealth," *Middle East Policy* (vol. V, no. 1; January, 1997), 113.
[126] Charles Clover and Robert Corzine, "Treasure under the sea," *The Financial Times* (1 May, 1997), 11.

CASPIAN AREA POLITICS & ECONOMICS

The future of the three newly independent Caspian littoral states—Azerbaijan, Kazakhstan, and Turkmenistan—has been the subject of much debate by theorists and policy makers in the West and in those countries in contention for influence in this newly accessible Turkic world. At the time of the dissolution of the Soviet empire, the conventional wisdom in the West overestimated both Turkey and Iran's capabilities in the Caspian region and tended to underestimate the continued influence of Russia.[128] Disconnects between these ill conceived assessments and reality largely result from the West, particularly the US, overemphasizing the ethnic and religious characteristics of these new states. Geography also played a role in the assessment of Tehran's capabilities: Iran shares borders with Azerbaijan and Turkmenistan and has a littoral border with Kazakhstan. Yet, one might wonder from a geographic perspective why Russia was so quickly discounted, for it clearly has the most extensive borders in Central Asia: A vast border of 6,846 km with Kazakhstan, a border with Azerbaijan, and a littoral border with Turkmenistan.[129]

It's certainly no secret that US policy on the new Caspian states (NCS's) has largely and consistently been influenced by a strong case of Islamic Republic of Iran (IRI) tunnel vision.[130] This policy and its corollaries seem to be quite unrealistic: Radical

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[127] Richard Matzke, "Tengiz experience example of oil revitalization advancing in FSU," *Oil & Gas Journal* (Vol. 95, no. 31; 4 August, 1997), 20.
[128] S. Frederick Starr, "Power Failure: American Policy in the Caspian," *The National Interest* (no. 47; Spring, 1997), 22-25.
[129] Central Intelligence Agency, 201, 223, 353.
[130] Starr, 25.

Islam doesn't have historical precedence to follow in this region. In fact, Islam itself, for these Turkic Muslims, is more of a shared sense of civilization and culture than a religion. Of these Turkic countries, only Azerbaijan is Shiite. Iranian behavior towards the Azeris cannot be merely viewed as attempts to proselytize them to follow the Islamic theocratic path. Iran's sizable Azeri minority (anywhere between 9 and 20+ million depending on what source you read) and related issues have a greater impact in molding Iranian policy towards Azerbaijan than any generic IRI promotion of radical Islam. In some respects, US fears of Iranian policy influencing the Caucasus have been 180 degrees off the mark: Iran's mercurial position on the conflict between Armenia and Azerbaijan—initial Iranian fears of Azeri nationalism and consequent support of Armenia were followed by a more moderate stance due to domestic IRI public opinion and large numbers of Azerbaijani refugees—indicates reactive, not proactive, Iranian policy regarding the former Soviet Union (FSU).[131] The Turkic states are all staunchly secularist and have for the most part crushed all Islamic opposition, moderate and fundamentalist.

Just as Western theorists overestimated the appeal of radical Islam to the new republics, so did they overreach in their pronouncements that Turkey's democratic archetype could be quickly adopted and assimilated by these states. Thomas Goltz, a freelance journalist reporting on the Caucasus and Central Asia, describes the environment of external pressures that constrain Azerbaijan's path towards democratization:

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[131] Philip Robins, "The Middle East and Central Asia," in *The New States of Central Asia and their Neighbors*, ed. Peter Ferdinand (New York: Council on Foreign Relations

> Since achieving independence in the wake of the August 1991 abortive coup in Moscow, the country has 'enjoyed' three presidents, multiple acting presidents, two successful putsches, a handful of attempted coups d'etat, and generally more instability than most Middle Eastern, Caribbean, or chronically putsch-prone Central and South American countries could pack into a full decade. The reason for this is that Azerbaijan lies smack-dab on the ancient triple fault line where (Orthodox) Christianity abuts on not one but both major forms of Islam (Shi'a and Sunni), and the modern fault line of cultural/economic/political influence between Russia, Turkey, Iran, and now the energy-hungry West. It is not a nice neighborhood in which to raise a healthy, independently-minded civil society.[132]

The Azeris and the other NCS's have no history of democratic institutions and even retain their former communist party bosses—Aliev, Nazarbaev, and Niyazov—as their presidents. The communist parties themselves remain authoritarian and have changed in name only.[133] Thus, the *Turkish model* was essentially rejected by these newly independent states who pursued policies more in line with the Chinese model of economic reform without real political democratization.[134]

When Russia arrived on the scene in late 1991, after a hiatus of almost 75 years, there were many black and white theories as to the foreign policy courses of action it would pursue regarding the Near Abroad. Actual events have demonstrated that Russia has followed a middle road between the more politically laissez-faire, equal partners type of scenario and the equally extreme outright annexation, crude empire reconstruction hypothesis. Russia has not stood by idly and allowed the new Caspian states to develop as they see fit, but neither has Russia invaded them. The US's policy priority is on

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Press, 1994), 58.

[132] Thomas Goltz, "Catch 907 in the Caucasus," *The National Interest* (no. 48; Summer, 1997), 38.

[133] James Sowerwine, "Nation-Building in Central Asia: The Turkish Connection," *Journal of South Asian and Middle Eastern Studies* (vol. XVIII, no. 4; Summer, 1995), 29, 30.

US/Russia relations or "Russia first." Some assess that this policy's corollary is US deference to Russia on Near Abroad issues as if the region were Russia's backyard, reinforcing Russia's ascendancy in the region.[135]

Russia has used a variety of political, economic and security pressures to influence decision making within its Turkic neighbors. Russia has deployed troops in every former Soviet state except Azerbaijan and the Baltic nations. Few doubt that Elchibey of Azerbaijan would have been so easily deposed without the assistance of Russia to the Armenians: Russian/Armenian military cooperation accelerated after Elchibey articulated a hard-line nationalist, pro-Turkey and anti-CIS stance. His successor, Heydar Aliev, former KGB general and Politburo member, turned out to be far less pliable in Moscow's hands than most observers expected. Aliev has been challenged by coups, at least one of which is thought to have involved Russia. Aliev himself believes that Russia sponsored the coup to pressure Azerbaijan on energy policy and peace process issues.[136]

Those in the West who believed that Turkey could suddenly replace Russia as the dominant economic force in the new Caspian states overlooked economic infrastructural ties with Moscow that go back generations. [137] Short and mid term economic growth depend as much on economic transition from the Soviet system as they do upon what we

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[134] Gareth M. Winrow, *Turkey in Post-Soviet Central Asia* (London: Royal Institute of International Affairs, 1995), 24, 53.
[135] Robert Olson, "The Kurdish Question and Chechnya: Turkey versus Russia," *Middle East Policy* (vol. IV, no. 3; March, 1996), 110.
[136] Stephen Blank, "Energy and Security in Transcaucasia," *Problems of Post-Communism* (vol. 42, no. 4; July-August, 1995), 14, 17.
[137] Philip Robins, 64.

think of as standard economic development.[138] Though the Bush administration and even Turkish officials themselves thought that Turkey could lead the transition and development of these newly independent economies, Turkish investment power in no way approximates the needs of the new Caspian states which must wholly overhaul their infrastructures. Turkey itself, with continued hyperinflation and structural inequities, serves as far less of an ideal economic model for its ethnic sister states.

CASPIAN OIL

Perhaps the greatest Western misconception regarding economic dimensions of the Caspian states' newly found independence was the underestimation of the value and role that Caspian Basin fossil fuels would play in regional politics and economics.[139] The long term resolution of the various exploration and transportation controversies is far from determined. We do know that the stakes are enormous: The greatest petroleum and natural gas discoveries of the nineties have been in these newly independent Caspian littoral nations and proven reserve estimates continue to climb on a monthly basis. All three new states have enough oil and/or natural gas to function as major exporters for decades.

Russia has many advantages over its rivals in what journalists have come to call the *Great Game II*: Russia is a major oil exporter and a Caspian littoral state controlling the Volga outlet; also, Russia has an extensive existing pipeline structure that provides

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[138] Richard Pomfret, *The Economies of Central Asia* (Princeton: Princeton University Press, 1995), 6.
[139] Stephen Blank, "Energy, economics and security in Central Asia: Russia and its rivals," *Central Asian Survey* (vol. 14, no. 3; 1995), 373-374.

the most logical routes for oil exports. Conversely, Turkey is not a petroleum producer and is a burgeoning energy importer; it has no contiguous border with the new Turkic states (other than 9 km with autonomous Nakichevan). The US embargo on Iran has been fairly effective in isolating it from the oil game on its northern border: US policies on Iran preclude US petroleum interests from cooperating in any way with Iranian ventures and have discouraged the oil companies of most other OECD nations from engaging Iran.

However, in isolating Iran from the Turkic fossil fuel producers, the US has inadvertently pushed these new states further into the hands of Russia which offers the only other direct lines of communication to transport fossil fuels. Such a situation could not please Russian Foreign Minister Primakov more: On 21 July, 1994, former Foreign Minister Kozyrev and Primakov (then KGB director) convinced Yeltsin to sign a secret directive, "On Protecting the Interests of the Russian Federation in the Caspian Sea," which strongly advocates that Russia should maintain its "sphere of influence" in the region.[140]

One recent estimate values *Caspian offshore proven reserves alone* at 60 billion barrels of crude oil (bbc) with up to 160 bbc as possible reserves.[141] Thus there could be more oil in the Caspian than we thought existed in all the USSR. Estimates vary wildly for all the NCS's regarding what are supposed to be *proven* reserves. And *possible* reserves run the gamut, from less than 100 bbc to well over 200 bbc for the new littoral states combined. The US State Department has sent a report to Congress stating that

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[140] Rosemarie Forsythe, *Adelphi Paper #300: The Politics of Oil in the Caucasus and Central Asia* (London: Oxford Univ. Press, 1996), 15.
[141] Fred Halliday, "The empires strike back? Russia, Iran, and the new republics," *The World Today*, (Vol. 51, no. 11; November 1995), 222.

possible Caspian reserves may total 178 bbc.[142] But Western oil sources in Almaty have stated that claims for the levels of reserves in the Caspian are essentially meaningless until drilling begins.[143]

Some assessments of Azerbaijan's combined offshore and land reserves use a figure of 40 bbc (the lion's share being offshore).[144] Most estimates judge Azerbaijan and Kazakhstan each as having roughly half of the majority of Caspian Sea reserves. If Kazakhstani offshore reserves do indeed prove to be as great as Azerbaijan's, then Kazakhstan has the most proven oil after Russia in the CIS because it's onshore reserves are between 20 and 27.3 bbc proven. The Tengiz field alone has 6-9 bbc proven, the largest oil discovery in the world since the 1970's,[145] and Chevron has already spent $1.5 billion to develop it: This venture is now referred to as Tengizchevroil. Over 80% of Kazakhstan's oil deposits are located in western Kazakhstan in or near the Caspian Sea. Kazakhstan has experienced many delays in its various oil projects; consequently, though petroleum exports have expanded in the last two years, it is still producing at 1992 levels and remains a net oil importer.[146]

Turkmenistan's possible oil reserves number in the billions but are less than half the estimates for Azerbaijan and Kazakhstan. Turkmenistan's neighbor, Uzbekistan, is not a Caspian littoral state, but it is worthy of mention that it has substantial oil and gas

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[142] "Caspian Sea Oil and Pipelines," *Turkestan Newsletter* (Vol. 97-1:09; 13 June 1997), 7.
[143] *Kazakstan: EIU Country Report, 4th quarter 1997* (London: Economist Intelligence Unit, Limited, 1996), 27.
[144] Lenczowski, 113.
[145] Forsythe, 37.
[146] *Kazakstan: EIU Country Profile, 1996-1997* (London: Economist Intelligence Unit, Limited, 1996), 31.

reserves. The scale of Uzbekistan's fossil fuels does not match its Turkic Caspian neighbors, but it could function as a noteworthy exporter and as a transit state for future Kazakh and Turkmen energy sources.

OIL EXPLORATION & TRANSPORTATION DILEMMAS

As in the original Great Game, it is politics, not economics or common sense business considerations, that plays the salient role in the two petroleum battlefields of the Great Game II. The first war front is the exploration controversy. The majority of the oil deposits in the Caspian Sea are in the territories of the Turkic states; therefore, Russia has vehemently defended the old Soviet definition of the Caspian as a lake and consequently common property of all littoral nations. These arcane *lake* or *sea* legal interpretations might seem comical and innocuous at first glance, but the ensuing ramifications of retaining the old lake definition agreed upon in 1921 and 1940 Soviet/Iranian treaties are quite serious: It would mean that ventures could only go forward if all littoral parties agreed and that financial proceeds would have to be split evenly among those states.

Azerbaijan, Kazakhstan, and Turkmenistan argue that it is a sea (it's worth noting that it is the largest inland sea in the world at more than 1200 km in length); therefore, each NCS would have the right to develop its respective zone. Iran initially showed flexibility on this issue, but sided with Russia in 1995 when Azerbaijan, due to US pressure, excluded Iran from an Azeri led consortium.[147] The Russian position on this issue has not been entirely monolithic: LUKoil and members of the Russian plutocracy have been more inclined to compromise with varying international consortia than the

military and the foreign ministry who have taken a much more rigid line.[148] Azerbaijan has been the most aggressive of the Turkic states in pursuing a complete division of the Caspian into national zones.

In a meeting in Ashgabat on 12 November, 1996, Russia started marketing a compromise deal: the establishment of a 45 mile deep national zone for each of the littoral states for oil and gas development; the center of the sea would be common property as in the original Russian/Iranian treaty. Russia has also implied that Azerbaijani oil and gas fields already in the center of this proposed geographic arrangement would be recognized as Azeri territory.

Turkmenistan, which has stayed reasonably neutral in the dispute, has played all angles of the offshore oil game: Just before the November Ashgabat meeting, the Niyazov regime signed an accord with Russia and Iran to prospect and develop Caspian oil jointly. In early 1997, Turkmenistan questioned Baku's right to the Chirag fields where an international consortium is drilling and challenged that Chirag fell under Turkmen sovereignty. However, in a February, 1997, meeting with Nazarbaev, Niyazov reaffirmed that the Caspian should be temporarily divided into national sectors to avoid disputes while the legal status of the sea is being resolved. Nazarbaev has pursued a diplomatic approach and would like to negotiate a new convention amenable to its best long term economic interests without incurring the wrath of Russia.[149]

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[147] "Pipe dreams in Central Asia," *The Economist* (4 May, 1996), 38.
[148] Stephen Blank, "Energy and Security in Transcaucasia," 13, 14.
[149] *Kazakstan: EIU Country Report, 1st quarter 1997* (London: Economist Intelligence Unit, Limited, 1997), 36, 37.

The second battlefield of this new Great Game encompasses transportation routes.[150] Each of the NCS's share a common feature: They have no direct access to international waterways and consequently must transport their oil and gas through neighboring states. Iran is a logical alternative to Russia but little progress has been made in realistically financing Iranian options due to a US unilateral embargo on almost all transactions with the IRI. Consequently, Kazakhstan and Turkmenistan currently have little choice but to utilize the Russian fossil fuel transportation network. Kazakhstan has shipped small quantities of oil across the Caspian to Baku for further transport from there: This route does offer Kazakhstan and Turkmenistan an alternative to Russia, though it is more expensive than simply shipping oil directly through pipelines and is only a stopgap measure for some dribbles of *early oil*.

For Azeri oil, the short term alternatives for early oil that have both been approved encompass one route across Chechnya to the Russian port of Novorossisk on the Black Sea and a second across Georgia to Supsa, also a Black Sea port. The Russian route runs directly through Grozny and there are obvious concerns that it could be vulnerable to domestic strife or a violent retrenchment in Chechen/Russian relations. Early oil came on line in the Chechnya route in November, 1997 and is scheduled to begin moving in the Supsa route in 1998.[151] The Russian route experienced many Chechnya related controversies and delays.

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[150] "Caspian Oil. Of pipedreams and hubblebubbles," *The Economist* (25 March, 1997), 59.

[151] "Azerbaijan celebrates first 'early oil,'" *Radio Free Europe/Radio Liberty Newsline* (No. 159, Part I; November 13, 1996), 4, 5.

In fact, after several threats by Russia in the summer of 1997 to circumvent Chechnya, Boris Nemtsov, Russian First Deputy Prime Minister, announced on 12 September, 1997, that Russia would build a 283 km pipeline that would indeed bypass Chechnya. Nemtsov commented that the bypass would run from Khasavyurt, Dagestan to Terskaya, North Ossetia and cost $220 million; it will take a year to build but will have a throughput capacity large enough to handle quantities of mainstream oil.[152] However, Dagestan—with forty different nationalities, Islamic fundamentalism, and bombings by the dozen—is not an ideally stable substitute for Chechnya. Although Russia and Chechnya finally came to agreement on the route through Grozny, the Dagestan option remains a possibility for additional oil or as a shaky alternative should politics disrupt the oil flow through the Chechen route.

Turkey offered to assist in the financing of the Baku-Supsa line but overplayed its position by demanding that this financing be contingent on the long term oil route passing through its territory. Australian, British, French, and German firms have been the winners of tenders worth $190 million for the various construction, pump station, telecommunications and rehabilitation projects that will take the pipeline from the Azeri border to Supsa. Turkey has objected that these Black Sea short term proposals—and particularly the longer term counterpart(s) yet to be selected—translate into numerous oil tankers with their implicit environmental hazards moving through the crowded Bosporous.[153]

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[152] "Russia to Build Oil Pipeline Bypassing Chechnya," *Radio Free Europe/Radio Liberty Newsline* (No. 117, Part I, 15 September 1997), 3.
[153] Richard Gillespie, *Mediterranean Politics, Volume I* (London: Fairleigh Dickinson Univ. Press, 1994), 134.

The longer term possible routes for Azeri *future oil* are made up of variations of three major alternatives (not including one exclusively through Iran): One route through Turkey to Ceyhan in the Mediterranean or two others that roughly approximate the short term routes through Georgia and Russia to Black Sea ports. Turkey's Ceyhan is backed by the support of the US and could cross into Turkish territory from either Georgia or Armenia, the former seeming more likely than the latter given present political considerations over Nagorno-Karabakh and related issues; though highly doubtful, this option could hypothetically transit Iran and Nakichevan.[154] The US position on transportation routes is clouded by its support of Armenia in the Karabakh conflict: Section 907 of the US Freedom Support Act of 1992 has excluded Azerbaijan from receiving any type of American aid.[155]

Multinational corporations have cause for worry about the stability of more than just Azerbaijan, for both the potential transit states of Armenia and Georgia are thoroughly embroiled in bloody regional power politics. Further, both Armenia and Georgia have Russian troops on their soil (there are none in Azerbaijan), though Georgia was forced to accept them and Shevardnadze is using every political means to compel their withdrawal. Haydar Aliev has suggested he is willing to consider the Armenian route if Yerevan agreed to return Azerbaijani territory that the Armenians captured and control in addition to Nagorno-Karabakh.[156]

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[154] "Caspian Oil. Of pipedreams and hubblebubbles," 59, 60.
[155] Lenczowski, 114.
[156] "Azerbaijan President May Consider Pipeline Via Armenia," *Reuters*, (Baku: 2 May, 1997), 1

The Russian long term version contains the same political and security concerns regarding Chechnya as the short term route. Even if a route through Russia circumvented Chechnya, it would still be vulnerable to sabotage from Chechen fighters. Moreover, any Russian route would be subject to Moscow's political whims and threats to cut off pipeline flow or block pick up at Novorossisk. Turkey has argued that the facilities and weather at Ceyhan are much more conducive to optimal oil tanking operations than at Novorossisk. The Turks have also pointed out that a Russian proposed bypass to the Bosporous, the construction of a pipeline from the Black Sea Bulgarian port of Burgas to the Mediterranean Greek port of Alexandroupolis, is so cost ineffective and operationally complex as to border on the incredulous: Oil would have to be loaded onto tankers twice and large ships would encounter difficulties navigating near the numerous small islands in the Aegean.[157] For all these reasons, the Russian route looks the least likely of the three primary options.

The long term Georgia option also has variations: Ukraine is floating the idea of tankers simply carrying oil from Supsa to Odessa in lieu of passing through the Bosporous. A new South-North pipeline would be constructed that would carry the oil from Odessa across Ukraine to connect with the Russian/Ukrainian Druzhba (friendship) pipeline that transports oil directly to northern Europe; estimated costs for the new pipeline and port facilities at Odessa run from as low as $900 million to figures considerably higher.[158] Some oil as part of an experimental trial has already been

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[157] Gareth Winrow, "Turkey's role in Asian pipeline politics," *Jane's Intelligence Review* (vol. 9, no. 2; February, 1997), 75.
[158] "Loan To Boost Oil Pipeline Options," *Radio Free Europe/Radio Liberty*, (Washington DC: 7 April, 1997), 2.

transported from Azerbaijan via Georgia to Ukrainian Black Sea ports. Ukraine is participating in the construction of a Turkish pipeline that will connect Turkey's Black Sea port of Samsun with Ceyhan. Such a pipeline could be used in the transport of either early or future oil. It could also transport Mideast oil to the Black Sea and Ukrainian ports reducing Ukraine's dependence on Russian petroleum.

The long term pipeline for Azeri oil must be large enough to handle 700,000 to 800,000 barrels per day by the time the Azerbaijan International Operating Consortium (AIOC) reaches peak production in around 2010. Azerbaijan is reviewing the transportation route options that were submitted by AIOC in June, 1997, but is not expected to make a final decision until late 1998 or 1999. President Aliev, however, was quoted on 6 May 1996 by Interfax as saying, "I have always favored Turkey deep down, and therefore I will do all I can to ensure the oil pipeline passes through Turkey."[159]

In May, 1997, reports surfaced that Azerbaijan and several oil companies were gingerly exploring a possible oil swap with Iran. It is not clear whether an oil swap would violate the US's Iran and Libya Sanctions Act. The Economist Intelligence Unit states that the proposal "is for up to 250,000 barrels/day to be pumped south from the Caspian to Tabriz, in northern Iran. In exchange Iran would supply oil of an equivalent value from its fields in the south-west of the country, to enable Azerbaijan to tap Japanese and Asian markets.[160]

Oil from Kazakhstan has far fewer transport options than Azeri oil. Chevron and its Tengiz partners have sent small quantities of Kazakh early oil through almost any

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[159] "Azerbaijan's Aliev Backs Turkey Oil Route," *Reuters*, (Moscow: 7 May, 1997), 1.

available means: Tankers have transported oil across the Caspian to Azerbaijan where it was loaded onto trains for further transport across Georgia to the Black Sea; some oil has even been railed to Finland.[161] The Caspian Pipeline Consortium (CPC) is an entity consisting of Kazakhstan, Russia, Oman and eight corporations led by Chevron and LUKoil. The CPC is building a 1.2 million barrel-a-day pipeline from Tengiz to Novorossisk. The introduction of LUKoil to this consortium in 1996 helped overcome Russian political obstacles to the CPC project.[162] In December, 1996, the CPC was split into two different legal entities for tax reasons, CPC Russia and CPC Kazakhstan.

Russian interests—the Russian state, LUKoil, and Rosneft—now own 44%, or a plurality, of the CPC. Transneft, the Russian state oil pipeline monopoly, is also seeking a stake despite the fact that it is the designated operator of the pipeline and owning an equity interest would create a conflict of interest. The initial construction plan for CPC was scheduled for two phases: First from Tikhoretsk to Novorossisk, then from Tengiz to Kropotkin and continuing on to Tikhoretsk. The entire pipeline might now be built in one phase to minimize costs. A one phase approach would have an additional benefit for the non-Russian participants: In the two phase plan Russia could renege or conduct other political maneuvers after considerable pipeline construction would have been finished on its soil, but before the second Kazakh phase would have begun.[163]

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[160] *Azerbaijan: EIU Country Report, 2nd quarter 1997* (London: Economist Intelligence Unit, Limited, 1997), 20.
[161] "Extracting oil from the Caspian. Great game, awful risks," *The Economist* (February 15, 1997), 64.
[162] Clover, 11.
[163] *Kazakstan: EIU Country Report, 1st quarter 1997*, 34, 35.

Kazakoil has sent 70,000 tons of oil to Iran this year and plans to ship 2-6 million tons to Iran annually for the next ten years: This swap contract involves shipping oil to refineries in Tehran and Tabriz; in return, Kazakhstan gains the revenues from Iranian oil shipped from Kharg island minus a handling fee for Iran. The US is understandably upset with this swap arrangement but cannot prevent it as the oil in question is from Kazakh state producers. Washington could use political pressure to minimize this swap deal and has effectively precluded any serious coordination between Almaty and Tehran on a prospective transportation pipeline.

Turkey has proposed that Kazakh oil, and Tengiz oil specifically, should use a variant of the Turkish Ceyhan route as a supplement to CPC, using its Bosporous limitations argument as justification. Even provided AIOC uses a non-Black Sea route for long term oil, Ceyhan or Iran, there is a major question regarding how CPC oil would get to international markets. Richard Dion, Director of Economic Research for the Center for American-Eurasian Studies and Relations, comments on Tengiz and CPC petroleum:

> In order to handle this large influx of oil, a new loading facility is being built at Novorossisk (Novorossisk 2). At this stage, port capacity does not appear to be a problem; however, the Bosporous Strait that divides Istanbul will *never* be able to handle that quantity of oil. Currently handling close to 50,000 ships/year, the Bosporous is already bulging at the seams, and it just takes one accident to severely damage an already challenged environment, particularly in a densely populated city. Indeed, a recent accident in mid-February is evidence of this.[164]

Turkish officials for some time have noised the option of a Caspian undersea pipeline for Kazakh oil,[165] and on 10 June, 1997, Kazakhstan and Azerbaijan agreed to

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[164] Richard Dion, "How oil, gas investment prospects compare for Azerbaijan, Kazakhstan," *Oil & Gas Journal* (vol. 95, no. 30; 28 July, 1997), 28.

construct such a 2,500 km project. This pipeline, at an estimated cost of $2.5 billion, will extend from western Kazakhstan to the Turkmen port of Turkmenbashi and then across the Caspian to Baku. The pipeline's planned initial capacity is 200,000 b/d with a long term capacity of 2 mb/d divided between Azeri, Kazakh, and Turkmen production. This pipeline option's distance, factoring in that Baku is only an intermediate destination for the oil, is almost cost prohibitive and would involve even more transit state political problems than AIOC's predicament.[166]

Kazakhstan and Turkmenistan signed an agreement on 14 May, 1997, with Iran for an oil export pipeline from Central Asia to the Persian Gulf, though plans to finance the venture are quite sketchy. Kazakhstan, Turkmenistan, and Uzbekistan are jointly coordinating with Afghanistan and Pakistan over an oil pipeline that could connect the Central Asian producers with the Pakistani coast.[167] Kazakhstan also intends to start shipping oil to China in late 1997; preliminary coordination has been done assessing a pipeline route across China to the Pacific—here too costs would be exorbitant.

NATURAL GAS

Developments in natural gas play a crucial and growing role in the regional political economy. Turkmenistan has the third largest natural gas reserves in the world and Kazakhstan the fifth. Both estimates are constantly being revised upwards. If these assets can be transported to the commodity markets in a way that is not subject to a

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[165] Gareth Winrow, "Turkey's role in Asian pipeline politics," 76.
[166] *Kazakhstan: EIU Country Report, 3rd quarter 1997* (London: Economist Intelligence Unit, Limited, 1997), 34.

political veto by a regional power that also functions as a transit state, namely Russia (and to a lesser extent Iran), the long term impact will greatly enhance the global free flow of gas and simultaneously provide great revenues to the exporters.

With estimated reserves of between 15-21 trillion cubic meters,[168] the metaphor that Turkmenistan is floating on a sea of natural gas should be taken quite literally. These estimates mean that Turkmenistan has more natural gas than all the states of the CIS, excluding Russia, combined. Turkmenistan continues to export gas to former Soviet states such as Ukraine using the same pipeline network it did when it was a communist republic, but it has lost considerable revenue due to the barter arrangement it has with these trading partners: The actual price of gas is substantially lower under this trading regime than world market price. To compound these losses, its FSU trading partners were in arrears equal to 40% of the value of the gas exports as of the end of 1993[169] and have continued these trends of bartering and payment arrears in the mid-nineties.

Turkmenistan faces the same types of transportation dilemmas with its gas that the other NCS's face with oil. Until recently, US intransigence had blocked the construction of a major gas pipeline that would transport Turkmen gas through Iran to Turkey and continue on to Europe: The US had effectively precluded both US multinationals and the World Bank from extending credit to Iran for the project.[170]

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[167] *Turkmenistan: EIU Country Report, 3rd quarter 1997* (London: Economist Intelligence Unit, Limited, 1997), *48, 49.*
[168] Ibid, 74.
[169] The World Bank, *Turkmenistan: A World Bank Country Study* (Washington DC: Office of the Publisher, World Bank, 1994), 156.
[170] Henri J. Barkey, "Iran and Turkey," in *Regional Power Rivalries in the New Eurasia: Russia, Turkey, and Iran*, ed. Alvin Rubinstein and Oles Smolensky (New York: M.E. Sharpe, 1995), 163.

Further, Washington had threatened to impose an embargo on BOTAS, the Turkish Pipeline Corporation, if it proceeded with the deal. Turkey and Turkmenistan nonetheless continued planning for the sections of the pipeline that would be on their territories in the hopes that somehow Iran would obtain financing for the connecting leg in the future.

In July, 1997, the US articulated a major departure from its broad policy of embargoing and isolating Iran by lifting its opposition to the pipeline.[171] This development has certainly improved the gas export perspective of Turkmenistan, but it is too early to predict whether it is the exception to the rule or the beginning of major modifications in the US' Iranian policy. In fact, in the fall of 1997, the US State Department seemed to reverse its position, saying it had never officially given the green light for the project.[172] If the pipeline is eventually constructed, it would help moderate Turkey's growing consumption of Russian natural gas: Diversification of Turkey's natural gas import sources is crucial since Ankara intends to rely on gas for 38% of its energy needs in 2010, up from 13% now.[173]

BOTAS has considered construction of a Turkmenistan gas pipeline that would cross underneath the Caspian. Despite US support for this undersea option, Russian objections have thus far neutralized it. In spite of these setbacks, in February, 1996, Turkey and Turkmenistan optimistically signed a memorandum of understanding setting

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[171] Charles Clover, "Superpowers Circle Caspian," *The Financial Times* (8 August, 1997), 4.
[172] Ugur Akinci, "US backpedals on Turkmen-Iran-Turkish gas deal," *Turkestan Newsletter* (Vol. 97-1:68; 20 October, 1997), 5, 6.
[173] Hugh Pope, "Turkey to Double Pipeline Capacity for Russian Gas," *The Wall Street Journal* (29 April, 1997), A19.

a target of delivering 10 billion cubic meters of Turkmen natural gas to Anatolia by 2010. The likelihood of meeting this 10 billion target using the undersea route currently seems remote.[174]

Long term planning and coordination has also begun for transportation of Turkmenistan natural gas through Afghanistan to Pakistan and even a pipeline that would stretch across China—but these plans are many years farther away than what is possible now using Russia or in the mid term using Iran. The proposed Afghan route would run 1,395 km from Dauletabad, Turkmenistan to Sui field in Pakistan.[175]

Turkmenistan is superior to Kazakhstan in both quantity and caliber of its gas resources: A large part of Kazakh gas is believed to be of the sour high sulfur variety, which costs relatively more to produce and treat.[176] Kazakhstan does have immense gas reserves and could be a major gas exporter in the distant future. Yet, Kazakhstani proven reserves of 1.8 trillion cubic meters and estimated undiscovered reserves of 6.2 trn cu meters are less than half the proven and estimated undiscovered reserves of Turkmenistan, and Kazakhstan's domestic energy requirements to support 20 million citizens are much higher. In addition to 5 bbc, the Karachaganak field in northwestern Kazakhstan has over 1 trn cu meters in gas reserves and provides 70% of current gas production. There are 380 bn cu meters of gas reserves in the Tengiz field.[177] Azerbaijan's natural gas reserves are primarily oil deposit associated holdings which are significant but probably not to the degree they could make Azerbaijan a player in the

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[174] Gareth Winrow, "Turkey's role in Asian pipeline politics," 77.
[175] *Turkmenistan: EIU Country Report, 1st quarter 1997* (London: Economist Intelligence Unit, Limited, 1997), 46.
[176] Pomfret, 183.

natural gas exporter big leagues. A larger gas player is Uzbekistan which, due to its geographic remoteness from the Black Sea and the Mediterranean, has focused on possible routes East to Pakistan and India via Afghanistan.

OIL & GAS FINANCE AND INDUSTRY

Western oil companies play an indispensable role in the Caspian oil game. They alone possess the capital to finance large scale exploration using three dimensional seismic technology that can identify petroleum reservoirs even in areas where the Soviets previously surveyed without success. Direct foreign investment in the NCS's collectively nearly equals that in Russia.[178] The petroleum companies have already contracted to provide billions of US dollars to finance production and transportation infrastructure, but these contracts and the financing for them have been quite varied.

Some oil firms have opted for a cautious approach and signed deals which allow them to postpone spending on oil rigs and other production infrastructure until after the transportation controversies have been put to rest. Many firms have embarked on joint ventures with Russian oil companies, particularly LUKoil, in the hope that a stake in the outcome might co-opt Russian oil interests and their government contacts into a role supportive of the newly independent states regarding exploration and transportation. Some companies like Chevron have taken larger risks and expended significant capital on oil field development before the necessary pipelines have been constructed.

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[177] *Kazakstan: EIU country profile, 1996-97*, 31.

The Azerbaijan International Operating Consortium signed an $8 billion deal in 1994 to conduct the largest venture on the Azeri side of the Caspian, developing approximately 4 bbc in the offshore fields of Azeri, Chirag, and Guneshli. The Consortium includes the following eleven companies: Amoco (17%), British Petroleum (17%), Unocal (US, 11 percent), Socar (Azeri, 10%), LUKoil (10%), Pennzoil (9.8%), Statoil (Norwegian, 8.5%), TPAO (Turkish, 6.75%), Exxon (5%), McDermott (US, 2.5%), Ramco (UK, 2%), and Delta (Saudi Arabian, 0.5%). LUKoil, Pennzoil, Italy's Agip, and Socar are all participants in a second consortia that will spend $1.7 billion to develop approximately one bbc in the offshore Karabagh field North of the AIOC fields.[179]

Many new deals were negotiated and concluded in Azerbaijan in 1996 and 1997. British Petroleum and Norway's Statoil closed an agreement in the summer of 1996 to develop the Shah Deniz field believed to contain as much as 2.1 bbc and considerable gas. In January, 1997, Total and Elf of France joined in an offshore deal covering the Lankaran Deniz and Talish Deniz fields worth a reported $2 billion;[180] Iran joined this venture in May, 1997, with a 10% stake. A month later the Azeri parliament ratified a deal among Unocal, Amoco, Itohu, Delta, and Socar to develop the offshore Dan Ulduzu and Ashrafi fields which together contain more than one bbc. Itohu, the Japan National Oil Company, and two other Japanese companies signed a deal with Baku in March,

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[178] Richard Pipes, "Is Russia Still and Enemy?," *Foreign Affairs* (Vol. 76, no. 5; September/October 1997), 74.
[179] Lenczowski, 113.
[180] "Extracting oil from the Caspian. Great game, awful risks," 64.

1997, to develop three fields in the southern part of Azerbaijan's Caspian sector: This deal is the first between the Azeris and an all Japanese consortium.[181]

Also in 1997, Exxon and Socar have reached a tentative agreement and are negotiating for a more specific production sharing contract regarding the D-3, D-9, and D-38 oilfields that collectively cover an 800 sq. km area located approximately 100 km from the Shahdeniz project. Although offshore oil accounts for 72% of Azeri production, a figure projected to increase much more as onshore output declines, Unocal has begun negotiations for two onshore fields, Karabakhli and Kursangi, together containing more than one bbc.[182]

Chevron launched the first major Western sponsored oil project in Kazakhstan and currently has 45% equity in the Tengizchevroil (TCO) venture. Under the original plan Chevron was to invest $20bn over the 40 year period of the concession. In addition to the CPC transportation nightmare, Tengizchevroil has had unexpected technical costs: TCO has been forced to build a $102 million plant to remove mercaptans from Tengiz crude. Mercaptans are sulfurous compounds that Transneft says are too corrosive for its (reputedly poorly maintained) pipelines—one wonders about this argument given that the Soviets never objected to the same Kazakh mercaptans. Prior to LUKoil joining TCO, Russian officials seemed to take every conceivable opportunity to block the transport of agreed upon quantities of Tengiz early oil through Transneft pipelines.

After spending nearly a decade in negotiation and coordination, Chevron might well wonder if it was shortchanged when two newcomers, Mobil and LUKoil, recently

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[181] "Azerbaijan, Japan Nearing Oil Contract," *Monitor: A daily briefing on the Post-Soviet States* (17 March, 1997), 5.

obtained 25% and 5% equity holdings, respectively. As painful as selling LUKoil 5% in order to co-opt Russia must have been for Chevron, watching one of its major global competitors, Mobil, quickly enter the deal and purchase 25% from Almaty must have been much more traumatic. LUKoil is pursuing an additional 5% out of Almaty's 25%.[183] At the 25% equity rate, Kazakhstan would still gain 72% of the venture's profits given its position in the original contract as the state player.

As in Tengiz, Kazakhstan will probably gain participation for their new national oil company, Kazakoil, in the project some claim could have as many as six Tengizes, the Kashagan offshore formation. Appraisals of Kashagan vary: Some forecast 25 billion barrels, while the most optimistic estimates suggest 70 bbc. Agip, British Gas, British Petroleum, Statoil, Mobil, Royal Dutch/Shell, Total of France, and LUKoil are all participants in the Caspishelf Consortium that is developing Kashagan. Amoco, Exxon, LUKoil, and the Japan National Oil Company are all reported to seek inclusion in Kashagan prospects.[184]

British Gas and Italy's Agip are spending $60 million or more a year to maintain several huge oil and gas fields in Kazakhstan's Karachaganak region. When the export routes controversy has been settled, they will invest $6 billion over the life of the project. Gasprom, the Russian state gas monopoly, has secured a 15% stake in this Karachaganak deal; British Gas and Agip hold 42.5% apiece; Texaco is negotiating for a 20% stake.[185]

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[182] *Azerbaijan: EIU Country Report, 2nd quarter 1997*, 18, 19.
[183] *Kazakstan: EIU Country Report, 1st quarter 1997*, 33, 34.
[184] Clover and Corzine, 11.
[185] *Kazakstan: EIU Country Profile, 1996-1997*, 31.

Mobil signed a joint deal with three Kazakh partners covering 4.4 million acres of Tulpar blocks in the Karachaganak area. Elf Acquitaine has signed a contract to explore a large area in central Kazakhstan. Union Texas Petroleum Holdings Inc. and Oman Oil Ltd. have formed a joint exploration and development venture to explore two large areas North of Tengiz covering 16,000 square km. An affiliate of Indonesia's Medco Energy bid $4.3 billion and won a 20 year contract for a 60 percent tender in Kazakhstan's Mangistaumunaigaz petroleum company which owns oil deposits totaling 1.4 bbc.[186]

China National Petroleum Company (CNPC) beat Texaco, Amoco and Yuzhny Most of Russia to win a 60% stake in the Aktyubinskmunaigaz production association, based in western Kazakhstan. CNPC will invest $4 billion over 20 years in this association that has 3.5 bbc. CNPC had an advantage over the other bidders in offering to build a pipeline from western Kazakhstan to the Xinjiang province in north-western China. CNPC will spend $3.5 billion to construct this 3,000 km pipeline.[187]

Turkmenistan has a population of less than four million and it's gas exports—natural gas is believed to account for 70% of GNP—have enabled it to be the only Central Asian economy after independence to achieve a strong balance of payments.[188] Nonetheless, Turkmenistan in no way has the capital resources on a scale to fully develop and export its identified reserves, let alone its enormous estimated reserves.[189] Given Turkmenistan's isolated geographic position bordering the pariah adversary of the United

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[186] "Indonesian Company Wins Bid For Kazak Oil Giant," *Monitor: A daily briefing on the Post-Soviet States* (13 May, 1997), 2.
[187] *Kazakhstan: EIU Country Report, 3rd quarter 1997,* 33.
[188] Pomfret, 119, 124.
[189] World Bank, 148, 149.

States, radical Iran, some firms have been coordinating rather exotic schemes to export Turkmen natural gas and oil.

Unocal and Delta are negotiating with the Taliban over possible gas and oil pipelines that would carry Kazakh and Turkmen fossil fuels through Afghanistan to Pakistan. These two companies signed a deal with Ashgabat in October, 1995, to construct a $3 billion (recently re-evaluated as $2.7 billion) gas pipeline that would follow such a route; they have also submitted a plan for a $5 billion oil pipeline that would traverse the same territory.[190] Mobil and Britain's Monument Oil and Gas signed an agreement in early 1997 to produce petroleum from a region on Turkmenistan's west coast 8,000 square miles in size.[191] Petronas has signed an offshore contract with Turkmenistan to develop three fields with collective possible reserves of several billion barrels.

The newly independent Caspian states will also need assistance with most downstream operations: They were exporters of crude but importers from other Soviet states of refined products. Uzbekistan has a greater capacity for refining than it does for production, but the other states suffer from many problems and inadequacies in their refining capabilities. The majority of Kazakhstan's refineries are in the eastern part of the country instead of near domestic oil wells near the Caspian. To compound this geographic problem, Kazakh refineries were designed to process Siberian crude, not the lighter grade of crude produced indigenously; thus, giving Russia one more tool of

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[190] Lenczowski, 117.
[191] "Extracting oil from the Caspian. Great game, awful risks," 64.

leverage it can use against Kazakhstan.[192] Nazarbaev's regime announced plans in 1993 to increase refining capacity at Atyrau by 33%, Chimkent by 50%, and Pavlodar by 100%, but these projects will be wholly financed and contingent upon oil export revenues. The US company, CCL, has won a tender for a three year concession to run the Pavlodar refinery. French, German, Iranian, and Japanese firms are financing production of a variety of upstream plants in Turkmenistan, mostly in the city of Turkmenbashi on the Caspian, to the tune of almost $900 million.

US POLICIES

Western two dimensional thinking has often times pervaded assessments of the newly independent Caspian states' future. The most egregious errors regarding their roles and relationships in regional politics were made immediately after they achieved independence and before Russia began its specific policies regarding the Near Abroad.[193] Many of the more one sided conclusions of the early nineties have been moderated more recently. Members of the Clinton Administration are improving their understanding of the importance of Caspian Basin fossil fuels, the regional political dynamics associated with them, and their potential role in global energy security.[194] The involvement of Roger Tamraz, a Lebanese-American promoting an oil transportation route to AIOC, in the

[192] Pomfret, 35.
[193] Robins, 63.
[194] Starr, 20.

present Clinton-Gore campaign finance scandal has unintentionally concentrated the attention of both Congress and the Administration on Caspian transportation routes.[195]

Turkey will play a growing role in the Caspian area Turkic societies and could possibly exert the most influential geo-political position in them a generation from now, but that is much longer than many Western pundits predicted five years ago. US policies for the Caspian area that have containment of Islam and the IRI as their primary rationale are likely to be counterproductive and cause resentment on the part of the newly independent states; further, this approach to the region fails to fulfill US strategic interests of maximizing progress towards the achievement of economic transition and long term stability and security.[196]

What should the US do? S. Frederick Starr in his article, "Power failure in the Caspian," outlines several possible policy changes for the US: Modify the US embargo—desist in opposing pipelines through Iran and stop taking punitive actions against countries and corporations that finance and construct them; eliminate foreign policy bias in favor of Armenia by repealing the Azerbaijani sanctions that Congress appended to the Freedom Support Act of 1992; and modify the US's "Russia first" policy by promoting genuine, complete independence for the NCS's and opposing Russian energy based irredentism.[197]

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[195] David Ottaway and Dan Morgan, "For DNC Donor, 'Resistance' Was Overcome," *The Washington Post* (9 September 1997), A4.
[196] Rajan Menon and Henri Barkey, "The transformation of Central Asia: Implications for Regional and International Security," *Survival: The IISS Quarterly* (Vol. 34, no. 4; Winter, 1992-93), 85, 86.
[197] Starr, 31.

Section 907 of the Freedom Support Act of 1992 only exists due to the influence of the US Armenian lobby, which encompasses well organized groups like the Armenian Assembly of America and the Armenian National Committee. There is no substantive Azeri-American community, so US oil companies have been the primary lobby in mounting a counter-effort to undo section 907. These corporations have been successful in watering down the impact of 907 and might succeed in overturning it in 1998. Considering the extant military conditions between Armenia and Azerbaijan—Armenians occupy both Karabakh and a substantial percent of other Azeri territory and have an Army clearly superior to the Azeris—a neutral observer would probably conclude that Armenia has the upper hand in the conflict. Given this fact, the *blockade* of Armenia that is cited as the basis of 907 seems to be almost superfluous in comparison. If Jones puts a menacing tank in Smith's front yard, should you then penalize Smith because he refuses to sell Jones food? To add insult to injury, the US Armenian lobby has succeeded in ensuring that Armenia is second only to Israel in per capita American aid overseas.[198]

Unlike Azerbaijan, some of Iran's policies present a threat to US interests. Most experts cite Iran's support of international terrorism and its program to acquire weapons of mass destruction as two clear challenges to the US.[199] The intersection of these two dangers, e.g., international terrorists with nuclear munitions, poses a grave danger to both the Mideast and modern Islam's *Great Satan*, the US. Yet, the US's Iranian policy is based on a non-prioritized congeries of so called Iranian affronts or threats, some of which do not seem to merit economic sanctions.

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[198] Goltz, 42, 43.

Iran's so called conventional weapons build up is rather paltry compared to US capabilities—despite the rhetoric from the US's Department of Defense and Central Command, the acquisition of three aging submarines does not a blue water navy make. Iran's opposition to the Palestinian peace process does not warrant sanctions of any kind. Iran has the right as a nation-state to express indignation if it believes the peace process to be unsound and unjust. If the US can prove continuing Iranian support for terrorist acts within Israel, such acts would underscore the above stated US policy of opposing Iranian support for international terrorism. Using Tehran's ambiguous opposition to Israeli-Palestinian rapprochement as a key justification for its containment does not seems to pass the common sense test.[200] Israel itself is ambivalent about the peace process.

China is a nuclear, authoritarian power, has exported missiles and weapons of mass destruction technology, brutally suppresses Tibetans and other minorities, has a conventional military capability that dwarfs Iran, and is a growing potential threat to Asia. Why do we have no sanctions against the Chinese but insist on implementing them against the IRI for reasons that could easily apply to both countries? I am not trying to suggest that the PRC and the IRI make a splendid comparative study in US policy-making, but I think on a surface level the comparison demonstrates the inconsistency of US policies and their heavy bias against Iran.

In the eighties, Iran's status as the founder of modern Islamic fundamentalism magnetically attracted the globe's various radical Islamic movements to the Iranian prototype, but the nineties have seen many of these movements falter, die out, or

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[199] Zbigniew Brzezinski, Brent Scowcroft, and Richard Murphy, "Differentiated Containment," *Foreign Affairs* (Vol. 76, no. 3; May/June 1997), 26-28.

disassociate themselves with Tehran.[201] And Iran itself has chosen warmer relations with many Muslim regimes it previously tried to overthrow. Iran has cordial relations with Russia, China, India, Indonesia, Brazil, and most countries in Africa and Asia. Relations between Iran and European nations, despite some road bumps, are generally businesslike.[202] Iran's bark remains loud, but its bite is more pragmatic and less radical. Khatami's recent election shows that Iran's democratic institutions are better developed than most of the Muslim nations with which the US has open and free economic relations.[203]

The US's unilateral policies against Iran really only hurt US companies—they help other OECD nations by eliminating US competition and allowing corporations from Europe and East Asia to better leverage capital. The measures in the 1996 Iran Libya Sanctions Act are as dysfunctional with regards to Iran as they are to Libya, as discussed in chapter two. This 1996 Act does not extend to projects outside of Iranian territory; hence, US companies have been excluded from two recent Azeri projects because Azerbaijan wanted an Iranian participant: Due to US policy, BP, Elf, and Total will benefit from participation in these two ventures at the expense of US corporations.[204] In the fall of 1997, Total, Gazprom, and Petronas jointly signed a $2 billion gas exploration

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[200] Ibid, 27.
[201] Ibid.
[202] Jahangir Amuzegar, "Adjusting to Sanctions," *Foreign Affairs* (Vol. 76, no. 3; May/June 1997), 34.
[203] Gary Sick, "Iran: What Does The Surprise Result Of The Presidential Election Portend," *Middle East Economic Survey* (Vol. XL, no. 22; 2 June, 1997), A1-A3.
[204] John Lichtblau, "US Caspian area foreign policy in conflict with resource plans," *Oil & Gas Journal* (Vol. 95, no. 32; 11 August, 1997), 20,21.

and development deal with Iran that explicitly violates the 1996 Act.[205] The US is using many official and backchannel means to derail this venture, but I think that Washington will have to back down if the deal moves forward. If the US took actions against the three companies, the harm those actions would do to US' relations with the EU, Russia, and Malaysia would substantially outweigh any detriment to the Iranian economy.

Just as Iran and Libya are not identical cases, lumping Tehran in the same category as Saddam's regime as the Clinton Administration's dual containment policy does has frustrated US allies and annoyed most of the Muslim world. Graham Fuller and Ian Lesser comment on the status of dual containment:

> The critical weakness of the United States' policy toward Iraq and Iran is its parallel treatment of two disparate regimes that present sharply different problems calling for different solutions. Dual containment is a geopolitical dead end—at best a holding pattern until more auspicious times. Its legal rigidities, necessary for enforcing complex sanctions against the two targeting nations, perpetuate the confrontation. Most of Washington's allies believe the United States has demonized Iran and refuse to do the same.[206]

Substituting targeted policies for our blanket containment of Iran would be more effective and would also help re-energize the flagging international community's support for isolating Iraq.

The US must divorce its policies from the continuing psychological anguish it feels because of the 1979-1980 hostage crisis; over one third of Iranians living today were born after that tragic event and it is time the US recognized that Iran has changed. Our containment of Iraq is based on UN resolutions enacted this decade; whereas, our

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[205] Bruce Clark, "US renews threat against investors in Iran," *The Financial Times* (31 October, 1997), 6.
[206] Graham Fuller and Ian Lesser, "Persian Gulf Myths," *Foreign Affairs* (Vol. 76, no. 3; May/June 1997), 47.

unilateral containment of Iran is based on blurry Iranian transgressions and a US perspective that, in psychoanalytical parlance, is still fixated on 444 days of American impotence during the Carter Administration. Iran's potential entry into the nuclear club does pose a grave challenge; Israel certainly feels imperiled by this prospect. But the US will not be able to unilaterally prevent Iran from acquiring the bomb. Only a focused modification of US policies using a multilateral approach can genuinely have the potential to influence Iran's position on terrorism and nuclear arms.

The US in particular and the West in general should provide firm support for a calm, legal solution to the Caspian Sea exploration conflict in defiance of Russia's strong arm tactics. Well publicized US promotion of technical assistance and finance for an improved energy infrastructure (after overturning section 907) would go far to even the playing field between the NCS's and Russia. Greater US promotion of transportation routes through Georgia and Turkey would undoubtedly aid in slowing the Russian energy juggernaut, but the one action the US could take that would have the greatest beneficial impact on the NCS's would be to alter its Iranian policy. If the US continues to thwart these newly independent states from doing business with the IRI, the most obvious geographic alternative to Russia for commerce, then Moscow will likely retain the upper hand in its pursuit of energy hegemony in the Caspian.

CHAPTER FOUR WHITHER OPEC & MUSLIM HYDROCARBONS?

"The Second Law of Petrodynamics: The more oil you take out of the ground, the more you find in it."
—J. C. Hurewitz, Professor of Political Science, Columbia Univ.[207]

Chapter Four discusses hydrocarbons in the 21st century, concentrating on the one organization that dominates Muslim oil, OPEC. This chapter will then outline a commonly accepted theory that oil and energy dominance will become increasingly concentrated among Persian Gulf actors. I begin to tear down that conventional *resource scarcity* position by analyzing how factors exogenous to the Muslim world, such as Western advances in technology and increased consumption of gas, might impact the control OPEC and the Muslim oil center exert over the future global petroleum market. Chapter Four will then examine how the potential of the Caspian states differs from that of the traditional Muslim oil periphery and describe how trends in the periphery impact OPEC and further nullify the *resource scarcity* hypothesis. I will conclude this chapter by making some predictions about the future of OPEC and potential alternatives to the cartel.

OPEC'S FUTURE

23 years ago the Organization of Petroleum Exporting Countries engineered the first global oil crisis. OPEC's capabilities today are modest in comparison; many experts

assess OPEC's current policies as progressively ineffectual.[208] What will the organization's impact be in the future? Will OPEC even exist in the future?

Kate Gillespie and Clement Henry in *Oil in the New World Order* assert that OPEC is third in a series of four oil regimes following the break up of Standard Oil in 1911: In order, the Texas Railroad Commission, the Seven Sisters (Exxon, Shell, British Petroleum, Mobil, Chevron, Texaco, and Gulf), OPEC, and a current, transitional Saudi-American regime.[209] The present level of cooperation between Saudi Arabia, the largest exporter, and the US, the largest consumer, has certainly helped stabilize oil prices and supplies, but how long will this close relationship last? And what will replace it? These two countries haven't always worked in concert—if they had, then the first oil shock could probably have been avoided. OPEC has never and could never implement an effective program against the US without the support of Saudi Arabia which dramatically leads the organization in every major quantifiable capacity: reserves, production, excess production capacity, etc.

Although relations between the US and the Saudi kingdom remain cordial, they have certainly receded from their high water mark during the Gulf War, a conflict in which the US proved that it would not tolerate genuine threats to its oil supply. As conservative as King Fahd's regime is, it nonetheless faces significant pressure from the

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[207] Issawi, 244.
[208] Eliyahu Kanovsky, *The Economic Consequences of the Persian Gulf War: Accelerating OPEC's Demise* (Washington, DC: The Washington Institute for Near East Policy, 1992), xvi.
[209] Gillespie and Henry, 3.

religious right.[210] This pressure might find a release valve in Crown Prince Abdullah who seems more sympathetic to the fundamentalists. A major confrontation between the two nations, barring an outright overthrow of the monarchy, seems unlikely. US defense contractors have largely equipped the Saudi military, logistically cementing the ties of US/Saudi armed forces. Moreover, Saudi Arabia and the US both want stable oil prices and supplies which maximize long term benefits to both economies and safeguard US interests in the stability of its more vulnerable OECD trade partners, the EU and Japan.

Stability aids OPEC—the price devastating third oil shock occurred in part because the West undertook many measures to enhance self-sufficiency after the first two shocks. It is a point of fact that the growth of these self-sufficiency measures has generally declined commensurate with the price of oil since the mid-1980's. While OPEC's promotion of oil as a cleaner alternative to coal has fallen on deaf ears, it does now understand that stable, moderate prices are an inhibitor to the development of new or more expensive alternative sources of energy. Saudi Arabia's former oil minister, Yamani, spent years trying to convey this point to his peers to no avail.[211]

If OPEC survives, its situation throughout the coming generation will be a continuation of the two level game played within and without the organization since the 1960's. *Two level game* is a political science term for a paradigm where participants must face challenges both internally (in this case within OPEC, the first level of the game) and externally (outside OPEC, the second level). The OPEC two level game will experience modifications due to changing positions of cartel members vis a vis each other

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[210] Paul Tempest, *The Politics of Mideast Oil: The Deliberations of the Royaumont Group* (London: Graham and Trotman, Limited, 1993), 248.

in addition to the variables characterized earlier. Three of the OPEC members with relatively low reserve holdings will most likely observe their oil exports and corresponding influence dwindle to nothing, specifically Gabon, Indonesia, and Qatar. OPEC will consist of the Persian Gulf actors, Algeria, Libya, Nigeria, and Venezuela: Of the nine, only Venezuela is non-Muslim and democratic.

Deborah Spar in *The Cooperative Edge* comments on one of the key attributes of viable cartels: "Concentration of production remains a powerful and parsimonious predictor of cartels: the fewer the producers, the more likely they are to come together in some sort of price fixing or market allocation scheme."[212] Extending this logic, a smaller, more cohesive OPEC might have the opportunity to reassert more influence. But it would need to overcome obstacles in both parts of the two level game.

In the internal game, cartel members routinely violate the two principle controls the organization sets: price and supply. Defection by multiple members wholly neutralizes the effects of these controls. Such defections have routinely occurred in the last two decades. Gillespie and Henry state, "to be successful, an oligopoly must resolve dilemmas of common interest such as the one depicted in game theory by the famous Prisoner's Dilemma. Rational profit-maximizing actors cannot resolve their dilemma if they have short time horizons."[213] A smaller number of members would increase the solidarity of the cartel and offer an opportunity to better enforce adherence to set controls. An increased concentration of resources would permit more influence on the market.

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[211] Yergin, 672, 703-706, 713-714, 720-721.
[212] Deborah L. Spar, *The Cooperative Edge: The Internal Politics of International Cartels* (Ithica, NY: Cornell U. Press, 1994), 5.
[213] Gillespie and Henry, 2-3.

The external game will most likely be harder for OPEC to play before it gets easier. The 21st century will probably see environmental concerns intensify in the West, probably stimulating a greater investment in some forms of renewable energy. The advancement and spread of technology have spurred many new national and corporate players to enter or increase their stake in the oil game. OPEC's loss of control over prices to the spot market and other financial instruments cannot be overcome in the near future due to the abundance of producers. But OPEC does have an opportunity to turn future impediments into assets: It could seek a policy of inclusion regarding specific current and future producers.

The Soviet Union had no relations with OPEC and some of its constituent states, but Russia has asserted a greater presence and level of political, economic, and technical cooperation with the Persian Gulf.[214] It does seem that the CIS with its uncertain reserves would be the greatest prize OPEC could add to its membership, though I have seen no evidence of open discussions between elements of the two about this subject. Granted, such an addition would incur the internal game costs associated with increased membership. If Russia expresses no interest in colluding on oil, OPEC might attempt to entice the Caspian states. Adding countries like Azerbaijan and Kazakhstan to the cartel would strengthen both its reserves and its Islamic character.

CONVENTIONAL WISDOM ON PERSIAN GULF OIL

Many contemporary pundits predict that oil will be increasingly concentrated among the Persian Gulf producers of OPEC. They assert that the US and other non-

OPEC producers will steadily produce a lower percentage of global petroleum as OPEC's output commensurately climbs. Experts from government and the private sector have been predicting that the West and the US specifically would run out of oil for quite some time. Dennis O'Brien, President of the International Association of Energy Economics, reminds us that,

> The United States, which supplied 70 percent of the world's oil supply in the period 1919-1920, was the world's largest exporter of petroleum products. But estimates that the United States had only 12 percent of world reserves led the US Geological Survey to predict that the United States would run out of oil by the mid-1920's and would then be heavily dependent on foreign imports.[215]

Although the prediction of the US Geologic Survey was wholly inaccurate, the theory behind that prediction, that reserves are fixed and will be steadily depleted at the rate of production, was refined and well publicized through Harold Hotelling's 1931 paper, "The Economics of Exhaustible Resources." The fundamental argument of this paper was that fixed and finite oil stocks in the ground cause the future price of oil to be an inclining curve. Hotelling's *resource scarcity* theory has continued to be the basis for many similar predictions generation after generation.[216]

The oil shocks focused the predictions of these pundits on assumed relationships between OPEC reserves and production and non-OPEC reserves and production. Everyone agrees that OPEC has a majority of the world's proven reserves but is producing a minority of global output. The conventional argument today is a modification of Hotelling's theory that proclaims that the inverse relationship of those

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[214] Tempest, 112-117.
[215] Dennis O'Brien, "Mightier than the Sword: Energy Markets and Global Security," *Harvard International Review* (Vol. XIX, no. 3; Summer 1997), 9.

outside OPEC with minority reserves outputting more than OPEC will accelerate OPEC's concentration of petroleum reserves and production over time. This *resource scarcity* position remains quite mainstream—even the International Energy Agency projects that as global oil demand steadily rises, the large majority of increased world production will come from the Mideast.[217] The US Energy Information Administration estimates that OPEC's share of the global oil market will rise from 42% today to 52% by 2010.[218]

TECHNOLOGY AND OTHER FACTORS AFFECTING OPEC

Reality is so far from Hotelling's theory as to make it seem ludicrous. Global proven oil reserves have actually increased from less than 700 billion barrels fifteen years ago to more than 1000 bbc today—the current figure doesn't even include the probable reserves of the Caspian. M. A. Adelman of the Massachusetts Institute of Technology is probably the most prominent scholar in the ranks of those who decry the *resource scarcity* position. Adelman discredits the theories of Hotelling's successors by showing that instead of fixed stocks of resources, there are only flows of additional reserves.[219]

Augmenting existing proven reserves is largely a function of the dollar amount invested in expanded exploration and improved extraction techniques. Although the human race initially consumes the larger, lighter, more easily accessible crude reservoirs, the inexorable march of technology makes one generation of previously considered

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[216] Sarah Emerson, "Resource Plenty: Why fears of an Oil Crisis are Misinformed," *Harvard International Review* (Vol. XIX, no. 3; Summer 1997), 12.
[217] *Middle East Oil And Gas*, 21.
[218] David Greene, "Economic Scarcity: Forget Geology, Beware Monopoly," *Harvard International Review* (Vol. XIX, no. 5, Summer 1997), 18.
[219] Emerson, 13.

uneconomical reservoirs after another commercially viable. Writing in *Oil & Gas Journal*, Adelman declares:

> For many years now, nearly every forecast has been: an early peak, then in 3-5 years decline in virtually every place but the Persian Gulf. Instead, oil output has actually grown—especially in areas outside the Organization of Petroleum Exporting Countries with the least resources. Repeatedly, the forecasts are revised with a higher and later peak. International Energy Agency reported last year: "The Peak Recedes again." Consistent undershooting means an inherent bias. A "repeating surprise" should be an oxymoron. These estimates of declining reserves and production are incurably wrong because they treat as a quantity what is really a dynamic process driven by growing knowledge. To know the limit to oil reserves and output, we must first predict future earth science and technology. This is impossible. Repeated attempts to do it have generated repeated bad estimates.[220]

The *resource scarcity* hypothesis only works if additions to reserves cease, which can only occur if the price of oil exceeds the costs of exploration and production. Continuous advances in technology and increases in knowledge perpetually push costs down.[221] The *resource scarcity* advocates are betting against knowledge and technical innovation. I believe that their bet is a loser.

Increases in technology and knowledge combine to locate new oil and extract more from known reservoirs. The world has a proven reserve to current production ratio of 43 years.[222] Enhanced oil recovery technologies increase the recovery to resource ratio and have helped slow the decline in US domestic production. One estimate claims that increasing the recovery rate by 1% equates to getting an extra two or three years of

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[220] M. A. Adelman and Michael Lynch. "Fixed View Of Resource Limits Creates Undue Pessimism," *Oil & Gas Journal* (Vol. 95, no. 14; 7 April, 1997), 56.
[221] Emerson, 13.
[222] British Petroleum Company, 4.

consumption.[223] The trend in inclining proven reserves derives from both new discoveries and re-evaluations of uneconomical reserves as commercially extractable based on evolving technologies. Norwegian officials predict that their overall rate of recovery will rise from 41 percent to 50 percent in the next few years with some fields yielding as much as 70 percent.[224]

Thanks to technical innovation, offshore oil exploration and production has boomed throughout the world. Jon Thompson, president of Exxon Exploration Company, says that offshore hydrocarbon liquids production in the 1990's has increased by 5 million barrels per day to 22.5 million barrels per day, about one third of global production. Thompson forecasts that offshore output will increase by an additional 5 million b/d by 2000.[225] The largest fixed platforms can only drill down 1,000 feet, but the floating platforms that have gained increased usage since the 1980's can drill a full mile in the ocean. Moreover, these floating platforms, unlike fixed systems, can be moved and used on a new field after depleting an old one.[226] The Troll West field offshore of Norway was previously considered unexploitable: It now looks to produce a billion bbc.[227]

Greater knowledge about the mechanics of oil supply and demand has enabled governments to better promote oil exploration and production. Before the 1973 oil crisis,

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[223] Norman Smith and George Robinson, "Technology Pushes Reserves 'Crunch' Date Back In Time," *Oil & Gas Journal* (Vol. 95, no. 14; 7 April, 1997), 43.
[224] Robert Corzine, "Technology fuels booming output," *The Financial Times* (10 September, 1997), II1.
[225] Richard Wheatley and Barbara Saunders, "1997 OTC highlights 50 years of offshore technological progress," *Oil & Gas Journal* (Vol. 95, no. 19; 12 May, 1997), 23.
[226] Robert Hurtado, "Market Place: The rising tide of oil strikes lifts a floating-platform maker," *The New York Times* (21 August, 1997), D8.

oil in most OECD countries was a heavily regulated sector. The US's oil policies were miserable failures even after 1973: Both consumption and production were regulated until the 1980's, distorting prices and contributing to stagflation. Deregulation since the 1980's has made the US oil industry much more efficient and, working in tandem with the development of oil commodity markets, resulted in lower prices and transparent supply and demand. Sarah Emerson states that the three factors that are causing a production renaissance in mature OECD oil producers are improved technology, regulatory reform, and innovative financing (which is currently easier due to increased knowledge and regulatory reform). She states that the UK's dramatic revision of the Petroleum Revenue Tax has "made small, remote, and high cost fields financially viable investments."[228]

Increased technology and knowledge will continue to affect fuels other than petroleum, directly impacting demand for oil. Today's combined cycle natural gas power plants are more cost efficient than both their gas forbears and contemporary oil fired plants. The trend in greater reliance on natural gas in general in the OECD is spreading to the rest of the world. Oil in the OECD today is mostly considered to be a transportation commodity. In 2020 it will be largely considered a transportation commodity throughout the globe, and this prediction assumes no significant breakthrough in transportation fuels technology. Some vehicles already run on compressed natural gas, a few on electricity. As investment in alternatives to standard gasoline engines rises, so

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[227] Smith and Robinson, 48.
[228] Emerson, 15.

does the potential for a new engine standard that could threaten oil's position in transportation fuels.

In addition to technology and knowledge, many aspects of consumer nations' policies combine to fracture OPEC's potential. The West and the oil market reward the producing members who defect on oil prices and supplies. Any member that does not defect is punished with reduced revenues and resultant domestic political pressure: OPEC countries have become as economically dependent on oil revenues as importing states are reliant on oil. The West will most likely discourage the expansion of the suppliers' cartel to new petroleum contenders like the Caspian states.

The OECD has developed countermeasures to neutralize any threats of a resurgent OPEC. The US Department of Energy is upgrading the Strategic Petroleum Reserve so that it can last until after 2020: The Reserve has 750 mbc and can drawdown and distribute 4.3 mbc/d.[229] The establishment of the International Energy Agency provides a forum for coherent, structured coordination of energy policy and crisis management. This institution proved quite useful during the 1980 oil panic.[230] The fact that oil prices during the Gulf War, after climbing considerably, fell at just the threat of using the Strategic Petroleum Reserve exemplifies the stability and high degree of security in contemporary global energy markets. In the 1970's oil was used as a weapon by exporter

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[229] Department of Energy, *Strategic Petroleum Reserve Quarterly Report, AUG 15, 1994* (Oak Ridge, TN: Office of Scientific and Technical Information, 1994), 3, 7.
[230] Robert Keohane, *After Hegemony: Cooperation and Discord in the World Political Economy* (Princeton: Princeton U. Press, 1984), 234-237.

nations. In the Gulf War the US, the world's greatest importer, embargoed the nation with the second largest oil reserves, Iraq.[231]

THE MOGP & OPEC

The potential of the MOGP varies considerably between the Caspian states and the older producers. Incremental increases in natural gas production will dominate the future of the Muslim hydrocarbon producers of Africa and Southeast Asia, whereas the Caspian producers represent a sea change in global hydrocarbon production: Out of an historical accident, the fall of the Soviet empire, emerges the second largest hydrocarbon region. The increased gas production of the traditional MOGP states represents a noteworthy yet nonetheless marginal threat to OPEC and the Muslim oil center. The economic (OPEC membership), political, cultural-religious, and ethnic ties that have loosely connected the traditional MOGP to the Persian Gulf will continue into the future.

The Caspian states have no such history of ties to the Persian Gulf. These Turkic states obviously don't have ties to OAPEC. The NCS's are comfortable with a secular world outlook and are not likely to change that perspective. Unlike Algeria and Egypt, the NCS's are more worried about Russian ethnic or energy based irredentism than radical Islam. These states see the West for several reasons as saviors and idols rather than imperialists and ex-colonialists as most other Muslim states view them. The NCS's are developing political, economic, and technical relationships with Western powers that are far more cooperative than many of their Muslim oil peers'. Whereas the Gulf states view joint ventures with OECD countries as a threat to sovereignty, the NCS's see them

[231] O'Brien, 62.

as precisely the converse: Cooperative ventures and multiple export routes guarantee Western support and financial stability and minimize Russian threats to sovereignty.

Increased natural gas production in Africa and Southeast Asia are indicative of global moves toward greater gas supply and demand and are thorns in the side of the *resource scarcity* position. Caspian hydrocarbon potential could be viewed as a spear in the chest of the *resource scarcity* argument: Not only are Caspian hydrocarbons abundant, but they are located in large reservoirs and will be relatively cheap to produce. The Caspian could be the main competitor for rising Asian oil demand that OPEC hoped to supply.

WHITHER OPEC & MUSLIM HYDROCARBONS?

There are so many forces that will impact on the future of hydrocarbons—technology, environmental concerns, politics, further exploration, alternative energy sources, etc.—the sheer volume of variables let alone the scale and impact of each one make predictions difficult. Several disparate models exist that predict oil consumption and prices throughout the next several decades: None assess that the world will stop using petroleum or the converse, that petroleum will be the only energy source.[232] Who will provide future hydrocarbons to whom?

Gillespie and Henry outline two alternative regimes that could replace the temporary arrangement, a Saudi-American regime, that they believe currently dominates oil. The first alternative consists of an international cartel combining national oil

[232] Ibrahim A. H. Ismail, "Oil Supply Outlook in OPEC and non-OPEC Regions," *OPEC Review* (Vol. XVIII, no. 3; Autumn, 1994), 385.

companies and the strongest of the remaining Seven Sisters, say Shell and Exxon. Such an organization could enjoy control of downstream and upstream operations for the first time since the Seven Sisters. The second alternative would be based on regional trade: The US would trade oil within the western hemisphere; Europe and Japan would make arrangements with the Middle East and/or the CIS. This regional scenario would include other energy resources, particularly the growing natural gas market.[233]

I doubt the likelihood that a regime will replace OPEC that fosters the degree of hegemony over oil that the Seven Sisters or OPEC enjoyed in their heydays. The first regime option that Gillespie and Henry discuss, even if it could attain a workable vertically integrated structure, would face tremendous competition from a broad, mature horizontal marketplace. The regional regime hypothesis seems in many ways to be a step backward for contemporary commodity markets which can maximize efficiency due to their global character.

I think the regional regime alternative does reflect a valid, growing trend based on simple economics—it's cheaper to buy oil that's produced 2,000 miles away than 10,000. There is no reason to believe that the new leader in oil exports to the US, Venezuela, will ignore its potential profits by freezing its export growth, let alone reducing output to its OPEC quota. Likewise, it makes more economic sense for increased hydrocarbon output from Africa to go to European consumers than travel several thousand miles further to Japan. Given that most future oil demand growth will be in Asia, I believe that the

[233] Gillespie and Henry, 13,14.

Persian Gulf dominated cartel's most vulnerable future targets will be the nations of the Far East.[234]

The Persian Gulf is more geographically suited to provide increased oil supplies to Asia than many other exporters, but a completely regional hydrocarbon regime would be politically volatile: Would the US maintain its security commitments to the Persian Gulf if it wasn't accessing any of the petroleum it was protecting? Factoring in the costs of US military vigilance in the Gulf makes Arabian light by far the most expensive oil imported in America, yet the fact that the oil market is global helps Washington politically justify the extra expenditures to its domestic audience. In the regional regime scenario, who would have lead a coalition against Saddam Hussein? Japan? I doubt it.

What is OPEC's future? Will it survive the internal battles and political upheavals, the competition from external suppliers and new reservoir discoveries, the pressures from consumer and environmental interests, and future regimes competing to replace it? OPEC has enough institutional momentum that I will cautiously predict it will survive as an organization well into the future. The real question is how much control, if any, will it exert over oil?

Throughout the next generation OPEC could regain some influence over petroleum if it could systemically prevent defection from its supply quotas and price controls. When Iraq fully comes on line, the Muslim oil center will both experience more fragility and more potential: The price of its oil will decline, but it will regain a surge capacity it could theoretically use to flood the market and cripple competition. However, as worldwide demand climbs, OPEC will have to make enormous capital investments to

[234] Calder, 24.

maintain any substantial excess production capacity: Cartel member budget deficits will mandate protracted borrowing to pay for such capital investments, further binding Persian Gulf producers to the OECD.[235]

The market still listens to OPEC's decisions, but it doesn't place much value on them since the cartel's deeds do not match its words. I believe that a progressively integrated international oil market, alone or in conjunction with a weakened version of Gillespie and Henry's vertically integrated regime, will most likely dominate petroleum for the early years of the 21st century. The spot, options, and futures markets and derivative securities for petroleum products might react to significant developments in OPEC as they would to any factor affecting oil, but they, not OPEC, will continue to set oil's price. US/Saudi collaborative support for the free flow of oil, despite Muslim radicals' efforts to drive a wedge between Islam's holiest land and *the Great Satan,* will likely be more permanent than Gillespie and Henry estimate.

OPEC's greatest potential lies dozens of years from now. If current consumption growth rates continue, the West is lax in its promotion of self-sufficiency and integration, there are no technical breakthroughs in alternative energy sources, the cartel's share of global reserves broadens, and its members adopt moderate, conformist policies—a lot of conditions—then OPEC would have the opportunity to set the point of price/supply convergence that results in long term profit maximization. Of course, even if OPEC gains such an opportunity, it might squander it: Greed and political expediency favoring short term price shocks might very well capsize sound economics. I conclude that OPEC

[235] Ismail, 385.

in the distant future will not be monolithic; if the cartel is not pragmatic and disciplined, it might well become a footnote of history.

CONCLUSION

Both components of the MOGP will have an impact on future global oil and gas, but the degree of impact could vary sharply. The economic and technical progress occurring in the traditional Muslim periphery of Africa and Southeast Asia largely reflects the changes in the overall global hydrocarbon industry. On the other hand, the Caspian states represent a fundamental change to the business dynamics of global oil and gas: If and when—I think when, not if, is the key question word—the possible 200 billion barrels of oil and 25 trillion cubic meters of gas become proven, it would significantly alter global reserves, and, more importantly, increase non-OPEC reserves by almost 90 percent.[236]

US policies on the MOGP reflect the dynamism of their component parts. America's relationships with the Muslim exporters of Africa and Southeast Asia are bilateral and segregate from one another. The only exception, before 1996, was the US's Libya policy where Egyptian commerce was significantly affected by US and UN sanctions. The 1996 Iran Libya Sanctions Act, scaring no one and offending many, has probably been the most senseless US Libya policy to date.

This Act's impact upon the Caspian states with regards to Iran has been even greater than on Egypt regarding Libya. The shortest and most economical route to move Caspian oil to international waters is through Iran, but US intransigence is the single reason such routes can't be constructed. The 1996 Iran Libya Sanctions Act exemplifies

the same obtuse, rubberstamp thinking that is embodied in the US' dual containment policy: Just as Iran poses a very different threat to regional stability and US interests than Iraq, so does Iran, now nominally a democratic government, differ sharply in its policies from Libya. Though the US' relationships with the Caspian states are cordial and productive, section 907 notwithstanding, Washington's policies towards Tehran are adversely affecting the newly independent states of the Caspian as much or more than Iran. Until the US conquers its unwarranted fear of revolutionary Iran and a Khomenii now long dead and focuses its policies on the two legitimate Iranian threats to US interests, sponsorship of terrorism and acquisition of nuclear munitions, the Turkic hydrocarbon producers will have to try and survive using other export routes.

US policies on the Muslim oil center are also far from ideal. Collectively, the Persian Gulf and North African producers are crawling in democracy's direction at a pace slower than any other region. One of the post-Cold War US interests that Washington has repeatedly articulated is the promotion of democracy and human rights abroad, but the US has been reticent about promoting this interest in OPEC's Gulf monarchies for fear of alienating oil supply sources. Some believe that espousing democracy should not be a vital US interest and that we have no business telling traditional Muslim polities what forms of governments and political and legal values they should adopt. I do not advocate an American style democracy for the Gulf states which have no history of liberal institutions, but my opinion is that it is in the interest of the US and other OECD countries to promote those democratic values that integrate best with their free market counterparts. Regardless of what stated US interests are or should be, I believe that those

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[236] British Petroleum Company, 4.

interests should be promoted uniformly. It is hypocritical and counterproductive for America to judge and penalize some nations like Iran and Nigeria for human rights violations or a paucity of freedom and democratic institutions while simultaneously turning a blind eye to the GCC.

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