

United States Senate Committee on Foreign Relations

**Subcommittee on International Economic Policy,
Export and Trade Promotion**

Hearing on Global Energy Security Issues

Testimony of

Dr. Daniel Yergin

Chairman

Cambridge Energy Research Associates

April 8, 2003

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(CERA)

I. Introduction

I am very pleased and honored to be invited by the Subcommittee to discuss Global Energy Security. Energy security is a subject that has much engaged me for over 25 years. It constitutes one of the major themes of *The Prize: the Epic Quest for Oil, Money, and Power*.¹

A year ago this hearing might have been more theoretical, about “what-ifs.” Events over the last several months have, of course, made it front and center, and demonstrated anew the importance of oil to our security and our economy. The issue of oil in the Persian Gulf is foremost now. But we have also seen the significant disruptions in non-Gulf countries, Venezuela and Nigeria. The disruptions in Venezuela removed more oil from the world market than the cessation of Iraqi exports and did much to push up oil prices and deplete US inventories. Barring further disruptions, we should see oil prices continue to ease as demand decreases with the end of the winter in the northern hemisphere and as large volumes of stepped-up production from other countries reaches our shores.

But the issue of energy security will remain one of continuing importance. Energy security is not a new concern. It has recurrently been an issue since the rise of industrial society more than a century ago. The beginnings may well have been when Winston Churchill, as First Lord of the Admiralty, converted the Royal Navy from coal to oil on the eve of the First World War. As a result, the Royal Navy moved from Welsh coal as the source of its propulsion to Persian—Iranian—oil. Confronted by this new risk, Churchill articulated a principle of energy security that is no less apt in the first decade of the twenty-first century: “Safety and certainty in oil lie in variety and variety alone.”

Over the century since Churchill’s decision, energy security has persistently come to the fore. It was a very critical dimension in World War II. In the decades after World War II, there were five Middle East crises that either disrupted or threatened to disrupt the world oil supply system. We are now in the sixth.

The previous crisis was a little more than a decade ago, with the Gulf Crisis of 1990–91. At that time, the imminent threat was that the breadbasket of world oil production—the Persian

1. Daniel Yergin, *The Prize: the Epic Quest for Oil, Money, and Power* (Touchstone, 1993).

Gulf—would fall under the sway of Saddam Hussein, enabling his regime to translate oil into political, economic, and military power—and into weapons of mass destruction.

A decade later, Iraqi oil is no longer entering the world market. In looking back, it is clear that, with the end of the Cold War and the resolution of the Gulf Crisis, we passed into a decade of exaggerated confidence about security. That includes energy security.

My objectives in today’s hearing, in response to the Subcommittee’s specific questions, are threefold:

- First, to provide the Subcommittee with a clear framework for understanding the national energy position.
- Second, to identify key axioms for thinking about energy security.
- Third, to relate international relations in various regions—including Russia and West Africa—to the future of oil supply and to try to answer the question, “How important is Persian Gulf oil in a global context?”

The reasons energy security is so salient—and why these hearings are taking place—is clear:

- *War in Iraq—turmoil and crisis in the Middle East.* This extends beyond Iraq to terrorism, al Qaeda, demographic pressures, the Israeli-Palestinian conflict, and generational change.
- *Rise in US oil imports.* A quarter century ago, at the time of the 1973 oil crisis, the United States imported 36 percent of its oil. Today it is over 50 percent.
- *Market pressures.* Energy price spikes in 2000–01 and 2002–03 have—in this post–“new economy” world—reminded people of the importance of energy, which slipped away during the now-defunct era of the “new economy.”
- *Vulnerability.* To all this, add a new concern in addition to the traditional concerns about the flow of oil: the security of energy infrastructure, part of the overall focus in the United States on “homeland security.”

II. The US Energy Position

America’s \$10.5 trillion economy rests on an energy foundation. Some 93 percent of that foundation is provided by oil, natural gas, coal and nuclear power. (Oil—at about 20 million barrels per day (mbd)—alone provides 40 percent of the total. Natural gas is 22 percent). Another 2.6 percent is hydropower; and biomass also provides 3.5 percent. Wind, though growing, and solar provide a little over one tenth of 1 percent—the equivalent of about 75,000 barrels per day (bd). It is noteworthy that the United States consumes about a quarter of the world’s oil, while its GDP is about a third of total world GDP.

Imported oil meets over 50 percent of US total oil consumption (see Table 1). Seventy percent of America’s oil either is produced in the United States or comes from our neighbors in the Western Hemisphere. Another 20 percent comes from West Africa and the North Sea.

Table 1
“The Top Five”
US Oil Imports, November 2002
(million barrels per day)

Canada	2.07
Venezuela	1.60
Nigeria	1.59
Mexico	1.53
Saudi Arabia	1.50

Source: USDOE, Monthly Energy Review.

The simple reason that US oil imports are going up is that US demand has for many years been increasing more rapidly than production, which is increasing only modestly.

The prospect of rising oil imports has caused concern in the United States ever since the United States became a net importer in the late 1940s. After all, the United States provided six out of seven of all barrels of oil used by the Allies in the Second World War. For 30 years, “energy independence” has been a recurrent cry. Yet, during these years, the United States has become more integrated into the world economy in many ways that have contributed to higher standards of living and higher employment. This integration emerged as one of the major themes of our new PBS series, *Commanding Heights: The Battle for the World Economy*.² Some of the indicators are: US foreign trade doubled during the 1990s and is now equivalent to 25 percent of GDP, compared to 10 percent a couple of decades ago. Americans made 200 million overseas phone calls in 1980. By the end of the 1990s, that number was over 5 billion. One out of seven US manufacturing workers is employed by a non-US owned firm.

Oil, however, is a strategic economy. The issue is not whether the United States should import oil, but, rather, how to avoid being in a position that makes it vulnerable to disruption. Unless one is able to imagine some draconian regulations or a series of technological breakthroughs that are not now apparent, the practical question does not revolve around substantial reductions in imports, but rather about stabilizing them.

But how to do that? There is no single answer or formula.

Conservation has a significant role. The United States already has made a good deal of progress. Today, the amount of oil used per unit of GDP is only half of what it was in the 1970s.

Stabilizing or increasing oil production is also important. Technology has meant extraordinary strides in the capabilities and efficiency of oil production within a strong environmental framework. The deepwater Gulf of Mexico is the major reason that the US production is increasing—slightly offsetting the strong declines elsewhere. But the ability to continue to increase production will depend, more than anything else, on policy decisions made on access to resources.

2. *Commanding Heights: The Battle for the World Economy*, PBS, Beginning May 15 at 10 pm.

A major technological revolution is unfolding today – what we at Cambridge Energy call “DOFF” -- the “digital oil field of the future.” This brings together a panoply of information and control technologies, remote sensing mechanisms, “intelligent drilling,” and highly-accurate measurement tools to make exploration and production far more exact and targeted. The consequence will be to substantially lower costs. As a result, physical supplies that were previously too expensive or too difficult to reach will now become economically feasible. The impact of DOFF will be enormous. For example, in our recent major multiclient study on the subject, we show that in the next five to ten years the digital oil field could expand world oil reserves by 125 billion barrels -- more than the entire currently-proved reserves of Iraq.³

New technologies, particularly in the transportation sector, will be important, although this will only unfold over time, as the US vehicle fleet cannot quickly turn over. While there is much discussion about the fuel cell, it does not seem imminent as a competitive technology in transportation. It appears that the biggest medium-term impact will come from hybrid vehicles—part internal combustion, part battery-driven.⁴

III. Principles of Energy Security

Being that the United States will be a large oil importer—the world’s largest—for some years to come, what are key principles for thinking about energy security? Based upon the experience of the United States over the last 30 years, I would offer the following common-sense observations:

1. Recognize that there is really only one oil market. The United States is part of a global oil market, an extraordinarily huge logistical system that moves 77 million barrels of oil around the world every day. US security resides in the stability of the overall market.
2. Churchill’s maxim of 90 years ago still holds true: diversification of supplies is one of the key guarantors of security and this has been an important element of United States policy since the 1970s. The recent sudden losses of production from Venezuela, Iraq, and, partially, from Nigeria underscore this point.
3. Emergency stocks, such as the US Strategic Petroleum Reserve, are a front-line defense against disruption. But their value should not be devalued and undercut by turning them into market-management schemes that confuse temporary hikes—seasonally induced or the result of regulatory-induced balkanization of the gasoline market—with a serious disruption. At the same time, spare capacity maintained by key producing countries is a major defense against disruption, as was demonstrated in 1990.
4. The oil market is far more flexible than it was in earlier decades. Intervention and controls can be highly counterproductive, hindering the system from readjusting. As tough as it is, resisting the temptation to micromanage markets can be one of the most significant contributions of public policy. After all, the famous gas lines of the 1970s were largely homemade—the result of controls that prevented moving gasoline to where it was needed from places where it was not needed.
5. Pursue cooperative energy relations with other importing nations, whether they be the other industrial nations, the new “globalizers” like China and India that will be the

3. *Digital Oil Field of the Future*, CERA Multiclient study, 2003.

4. *The Hydrogen Economy, How Far and How Fast?*, CERA Private Report.

most rapidly growing importers of oil, or the poor nations. These can be pursued on a multilateral basis, as with the International Energy Agency, or bilaterally.

6. Government can allay the panic that creates self-fulfilling prophecy through quality information and by facilitating the exchange of information within the industry that makes possible more rapid adjustment.
7. Most oil exporting nations recognize the mutuality of interest and are deeply interested in “security of demand”—stable commercial relations with their customers, whose purchases often provide a significant part of their national revenues. Thus, the United States needs to maintain strong dialogues and a spirit of cooperation on a consistent basis with the exporting nations.
8. A healthy, technologically driven, domestic energy industry is part of energy security. So is a commitment to research and development and innovation across a broad spectrum that takes into account current and future environmental considerations.

IV. Today’s Oil Supply—and Tomorrow’s

Table 2 provides the basic outline of share of world oil production and world oil reserves. As is evident, the Middle East is the largest regional source of oil. But one of the most noteworthy features since the 1970s is the significant growth in non-OPEC production. As a result, the Persian Gulf’s share of production has declined from 40 percent to under 30 percent. Most noteworthy is the 35 percent decline in output in Iran over the last 25 years and the 20 percent decline in capacity in Iraq between 1990 and 2002.

Reserves are a different story. A far larger share of world oil reserves is concentrated in the Persian Gulf region. The percentage share is typically given as 66 percent. But that is no longer up-to-date. It is now 56 percent.

Table 2
World Oil—Regional Shares
(percent of total))

	%	%
	World	World
	<u>Liquids Production</u>	<u>Reserves</u>
North America	18.5	17.7
United States	10.4	1.8
Canada	3.3	14.8
Mexico	4.9	1.0
Middle East	29.2	56.5
Saudi Arabia	11.6	21.5
Iran	4.8	7.4
Iraq	2.9	9.3
Kuwait	2.7	8.0
United Arab Em.	3.2	8.0
Africa	11.1	7.6
Asia Pacific	10.6	3.2
Latin America	8.8	8.1
Europe	9.1	1.6
Eurasia	12.5	6.4
Russia	6.8	
Other	4.0	

Source: Cambridge Energy Research Associates, Accenture, and Sun Microsystems, *Global Oil Trends 2003*

Although almost completely overlooked, something very important has just happened to supply. This past year saw—after several years of discussion—the first major increase in world oil reserves since the mid-1980s, when all the major Persian Gulf countries announced that they were increasing their proven reserves by what proved, in aggregate, to be more than 50 percent.

The new increase is some 175 billion barrels. This is a great deal of oil—50 percent more than Iraq’s proven reserves and two thirds those of Saudi Arabia’s. These new reserves, however, are not in the Middle East, but in Canada. Advances in the technology for handling the oil sand deposits in the province of Alberta have, by cutting costs almost in half, moved this enormous volume of potential supply into the economically-recoverable “proven reserves” column. For the first time since the famous geologist Everette DeGolyer reported to President Roosevelt in 1943 that the “center of gravity of world oil production” was shifting to the Persian Gulf, there has been a significant decline in the Persian Gulf’s share of total world oil reserves, from 66 to 56 percent.

The point here is that world oil supplies are not some finite constant sum. Rather, the picture is dynamic and changing. The reserve picture will continue to shift. It is altogether possible that if and when a “new” Iraq sorts out its arrangements and reintegrates into the world economy, new exploration will substantially increase its reserves, pushing up once again the Persian Gulf’s share of the total.

That the Gulf’s reserves, among the cheapest to produce in the world, are of central importance to the health of the world economy can hardly be doubted. They are critical both to the developed and the developing world. Altogether, the region provides more than a quarter of the rest of the world’s total oil.

Yet, at the same time, these resources also exist in a much larger and more diverse network of global oil production and supply. Losing sight of that is to lose sight of the context. Some of today’s rhetoric would have one believe that Iraq is uniquely important to world oil supply. That simply is not true. It amounts to less than 3 percent of total world supply, and technology is making available new supplies in ways that most people do not realize.

One other observation: it is continually said that Iraq has the second largest proven reserves in the world (although there is some question about the word “proven” in the case of Iraq, given how relatively under-explored it is). But Iraq is no longer the second largest; it has the third, after Canada. Also, it is helpful to note that Iraq’s reserves are more or less in the same range as neighboring countries—Kuwait, Iran, and the United Arab Emirates.

CERA sees significant growth in world oil supplies over this decade—measured in terms of additions to capacity, on the order of a 20-25 percent-plus increase. (See Graphic “World Liquid Productive Capacity”). Some of the most noteworthy growth will occur in Eurasia (Russia and the Caspian), West Africa, and Latin America—as well as Canada. The deepwater US Gulf of Mexico is also very important.

The largest growth, at least at this point, looks to be in the Middle East. On present estimates, Middle East capacity is expected to increase by about 7 million barrels per day—more growth than in any other region. But Russia and the Caspian will be very close.

The overall growth in world productive capacity will be required to meet rising demand from developing countries, led by China and India. (China’s oil consumption has doubled since 1990, and today China is the world’s third largest oil consumer—and is rapidly moving up on Japan.)

But the prospects for future oil supplies are not fixed. They will be determined by economics, politics, public policy, and technology. Whatever the part of the world one is talking about, one critical factor will be the stability and reasonableness of the investment framework and its

openness to foreign investment. The second thing that needs to be taken into account is time frame. There is no fast-forward button to push. An ineluctable “law of long lead times” seems to govern when it comes to major oil and gas development. Projects unfold over five or ten or fifteen years. At every stage, the investors are managing risks. This reinforces the need to shape investment environments that meet the needs of both host governments and international companies over time.

These observations should be kept in mind when discussing the speed with which the Iraqi oil industry will be restored and expanded.

What might be expected from some of the major regions? To begin with, Canada will become a much more significant producer—moving from 3 mbd in 2003 to 4.5 mbd in 2010—led by the oil sands from Alberta and, to a lesser extent, from eastern Canada’s offshore.

V. Russia and the Caspian

Russia and the Caspian have taken on new significance for the world oil market over the last year. Waves of optimism and pessimism about the potential contribution of the Former Soviet Union have swept over the world oil market in the last decade. At one point, there was expectation that the Caspian region might be a new “el dorado,” a new Persian Gulf. At other points, there was focus on the decline of output from the Russian Federation.

There has been a striking shift in the picture of Caspian oil and gas reserves in the last decade. Ten years ago, Caspian hydrocarbon reserves were visualized as consisting very largely of oil, concentrated mainly in the southern third of the basin. Now, after a decade of intense exploration, it has emerged that most of the oil is located in the northern third of the basin, while the hydrocarbons located in the southern third appear to consist mainly of gas.

That has put a very different face on the commercial challenges of developing the Caspian Basin, and on the geopolitical implications. The proximity of the oil of the northern Caspian to the Russia transportation system makes Russia a prime candidate as an export route. As for the gas of the southern Caspian, it is still unclear whether the primary market will turn out to be Russia or Turkey—or indeed to what degree a substantial share of the Caspian gas will remain stranded.

In our work, we have identified several factors that have come together to strengthen the confidence about potential sizable growth from this area.⁵

- The Russian oil industry is going through considerable modernization, as it shifts from an industry that was the remnant of old Soviet ministries toward that of independent oil companies seeking to operate at world standards. New technology, new organization, and new attitudes are turning around the production outlook. Observers are noting a shift in the outlook of the industry toward an emphasis on efficiency and cost reduction. Transportation bottlenecks are in the process of being reduced, although they are still significant. The results can be seen in the sharp increase in production last year and this year, as well as an increasing appreciation in the scale of reserves.
- However, it is worth noting that most of the increase in Russian oil production in the last four-and-a-half years is due to the Russian oil companies themselves. With the significant exception of the offshore development of Sakhalin, most of the Russian production increase comes from West Siberia, long the traditional core of the Soviet oil

5. *Miracle in the Oil Fields? The New Growth in Russian Oil Production: Drivers and Implications*, CERA Private Report

industry. So far the only significant Western players have been the leading service companies.

- The August 1998 financial crash in Russia was a great shock to Western investors. Russia has had several years of solid economic growth since, however, combined with continuing market reform. This strengthens the confidence of Western investors and creates a more solid basis for economic and political cooperation. After years of frustration and disappointment, Russia is now a higher priority for significant investment on the part of Western companies that want to diversify their resources. As time goes on, world capital markets may well attribute higher value to Russian oil reserves than they do today.
- A new strategic relationship has been emerging between the United States and Russia. This provides a context for a growing energy relationship. And, in turn, the energy relationship is a significant dimension of the overall relation. It is too soon to assess the significance and impact on the energy picture from the strains between the two countries produced by the Iraq war. But the Russian government has been careful to draw a clear line between its disapproval of US policy in Iraq and its continued strong support for economic partnership with the United States.⁶

Key for future development will be the development of new pipelines that break the transportation bottleneck. There may be a decision as early as May on which route east for Russian oil—whether to a port in the Russian Far East or whether to a terminus in China. There is also the possibility that a northern pipeline will be built to the ice-free port of Murmank—where Lend-Lease goods were shipped during the Second World War. Such a system would enable Russia to become a significant petroleum exporter to the United States. The distances to the East Coast would be shorter than that for a tanker from the Persian Gulf.

As it is, the transportation bottlenecks are in the process of being resolved with new pipelines out of the Caspian region, which is facilitating the build-up of production from those countries.

What does this add up to in terms of additional oil production? Based upon what is known today, we see strong oil growth coming out of Russia and the Caspian—from 7.8 million barrels per day in 2000 to 14.2 million barrels per day in 2010—almost a 60 percent increase. In addition, Russia has an enormous role as the “Saudi Arabia of natural gas,” supplying large volumes to Western Europe and, in the years ahead, to growing economies of East Asia and even possibly to the United States, in the form of liquefied natural gas (LNG).

Of course, there could be further surprises that throw either Russia or the Caspian off the new track. But it certainly has much stronger foundations than in the past. The growth of oil supplies from Russia and the Caspian can be one of the most important new contributions to stability in world oil markets—especially in the face of non-OPEC declines elsewhere. The United States has many reasons to pursue continued strengthening and broadening of our political and economic relations with Russia. By developing further those relations in general, and working with the Russian government to facilitate energy development, the US government can make a significant contribution to energy security.

VI. West Africa: At the Threshold

The upstream oil and gas industry in West Africa is at a threshold. After several years of steady but unspectacular gains in oil output, West Africa is on the cusp of becoming a leader in

6. *Changing Course? Iraq and the New US-Russian Relationship*, CERA Global Alert

global oil production growth. West Africa's potential is manifested by large deepwater oil discoveries in recent years offshore Angola, Nigeria, and Equatorial Guinea. Most new oilfield developments are offshore, but not exclusively. Once the Chad-Cameroon pipeline is completed, a billion barrels of hitherto untapped oil reserves in southern Chad will begin to be exported to the global market. Many American oil companies hope to participate in West Africa's growth.

How significant is West Africa's potential? West African oil production capacity could increase from 4.6 mbd in 2002 to 7.8 mbd in 2010—an increase of 70 percent. Based on CERA's projections, almost one out of five barrels of global capacity growth could come from West Africa between 2002 and 2010. This growth could strengthen the diversification of United States oil imports and thus improve US energy security. The US is a natural market for West African oil.

Angola and Nigeria account for the lion's share of regional production capacity—roughly 80 percent in 2002—but some of the smaller producers are likely to record significant gains to 2010. Equatorial Guinea, which produced no oil until the mid-1990s, could see production more than double from 0.22 mbd in 2002 to 0.4 mbd in 2010. Chad could see its production grow from nothing to roughly 0.25 mbd in the next several years. Oil has been discovered in Niger, but lack of an export pipeline is one of the factors preventing its reserves from being developed. Oil has yet to be discovered in the waters offshore São Tomé & Príncipe, but it is attracting strong interest from oil companies as it makes preparations to license acreage.

West Africa's potential is clear, but political and market factors could lead to reality falling short of potential. We've seen over the past few weeks what turmoil can mean in terms of output. Violence in the swamps of the Niger Delta—Nigeria's main oil producing region—led to the sudden shut-in of approximately 800,000 bd of oil production capacity as of late March 2003. The volume of currently shut-in production is approximately 30 percent of Nigeria's total liquid production capacity. Production disruptions occur frequently in the Delta, but the current volume of shut-in capacity is exceptional and is an unfortunate highlight of Nigeria's political situation.

One certainty is that West Africa has tremendous upstream growth prospects. If West Africa is to realize its potential for production growth, three risks need to be successfully managed. A new CERA study on West African oil and gas to 2020 identifies these risks:⁷

OPEC quota/government policy. In all West African producers, government policy—such as domestic content rules—could lead to slower-than-expected growth.

- **Marketing natural gas.** Could the lack of market outlets for associated gas production create indefinite delays for new oilfield developments? If the gas associated with an oil development can't be reinjected or marketed, it could threaten new oilfield development. Developing outlets for gas production—LNG, domestic/regional markets, gas-to-liquids—is essential for West Africa to realize its growth potential. Gas could even spur real regional economic integration. A much-discussed natural gas pipeline from Nigeria to Ghana would, if it is built, represent a true milestone in regional integration.
- **Political environment.** Political instability—unexpected changes of government or civil unrest or even war—could complicate exploration and development by injecting delays and increasing uncertainty about who in government makes the rules. Moreover, lack of political stability could result in simmering conflicts over control of oil revenue that would preclude the use of such revenue as an engine of economic growth and higher living standards.

7. *West African Oil & Gas to 2020: Opportunity, Potential and Risk*, CERA Multiclient Study

The US government and international financial institutions could work together with West African governments and oil companies to diminish some of the risks that could lead to West Africa falling short of its potential for production growth. Such policies could be focused on

- **Helping to strengthen state institutions.** Weak government institutions in West Africa often prevent oil revenue from being used as a catalyst of sustainable economic growth and rising living standards.
- **Improving political relations with West African countries.** Strong ties between US and West African governments can help expand oil company investments. Strong ties would benefit other endeavors as well, such as security cooperation.
- **Developing domestic and regional gas markets.** Given the large scale of natural gas reserves in West Africa—Nigeria’s gas reserves match those for oil—gas could serve as the foundation for expansion of the region’s modest industrial base. Abundant gas reserves also offer the possibility of rapid expansion of power generation capacity. Development of regional gas markets, such as the proposed Nigeria to Ghana gas pipeline, would lead to deeper economic integration between neighboring states. A growing industrial base and rising power supplies would create jobs and foster greater economic and social stability in West Africa’s oil producing states.

VIII. Conclusion: One Final Axiom

I began by quoting one British prime minister on energy security. I would like to conclude by quoting another. I remember a discussion I had with Margaret Thatcher in the course of working on *Commanding Heights*.⁸

“Remember Thatcher’s Law,” she said at the end of our talk.

Not being familiar with it, I asked her what it was.

“The unexpected happens,” she replied. “You had better prepare for it.”

At times like this, we’re very mindful of the surprises—whether in the Middle East, Venezuela, or Nigeria. But Thatcher’s Law seems to me a very good principle—indeed, an essential one—to keep in mind both now and in the future when it comes to energy security.

8. Daniel Yergin and Joseph Stanislaw, *The Commanding Heights: The Battle for the World Economy* (Touchstone 2002), p. 106

Daniel Yergin

Chairman

Cambridge Energy Research Associates

Daniel Yergin is a highly respected authority on energy policy and international politics and economics. He is Chairman of Cambridge Energy Research Associates (CERA). Dr. Yergin is both a Pulitzer Prize winner and recipient of the United States Energy Award for “lifelong achievements in energy and the promotion of international understanding.”

His most recent book, *The Commanding Heights: The Battle for the World Economy*, with coauthor Joseph A. Stanislaw, has received wide attention for its analysis and narrative of how the “world is changing its mind about markets.” It has been translated into 13 languages and made into a six-hour documentary, which aired on PBS as its major television series on globalization in 2002 and will have a major new national broadcast, beginning on May 15, 2003. This nationally broadcast series is receiving extraordinarily positive reaction. *The Washington Post* calls it “stunningly ambitious, brilliantly successful... No more important program for making sense of our life and times has been seen on the air in at least a decade and just possibly a good deal longer.” *Wired* states that it “does for the economy what Ken Burns did for jazz and the Civil War.” The series won the 2003 New York Festival Gold World Medal for best documentary series in the worldwide competition.

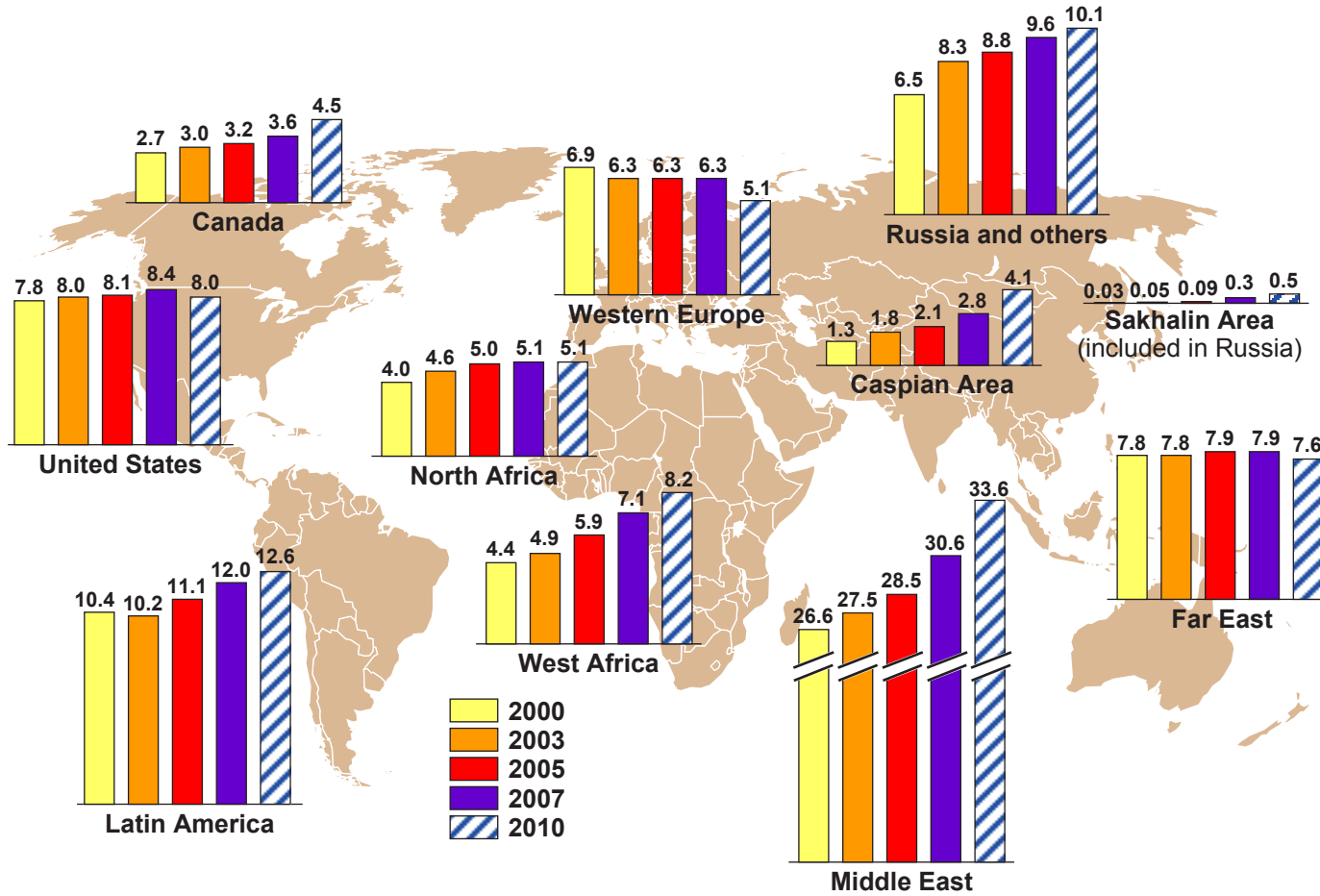
Dr. Yergin received the Pulitzer Prize for General Nonfiction for his work *The Prize: The Epic Quest for Oil, Money and Power*, which became a number one national best seller and was made into an eight-hour PBS/BBC series seen by 20 million people in the United States. The book has been translated into 12 languages.

Dr. Yergin is a Brookings Institution Trustee and a member of the Committee on Studies of the Council on Foreign Relations. He is a member of the Secretary of Energy’s Advisory Board. He is also a member of the Board of the United States Energy Association and of the National Petroleum Council, and serves on the NPC Co-chairs’ Coordinating Committee. He is a Director of the US-Russian Business Council.

CERA has offices in Cambridge, Massachusetts; Washington, DC; Oakland, California; Paris; Oslo; Moscow; São Paulo; Mexico City; Calgary; Bangkok, and Beijing. It provides 27 energy research services to organizations around the world, covering major segments of the energy industries and geographic regions.

Shifts in World Liquid Capacity

(million barrels per day)



Source: Cambridge Energy Research Associates.
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