

Overview of global crude oil reserve estimates and supply patterns

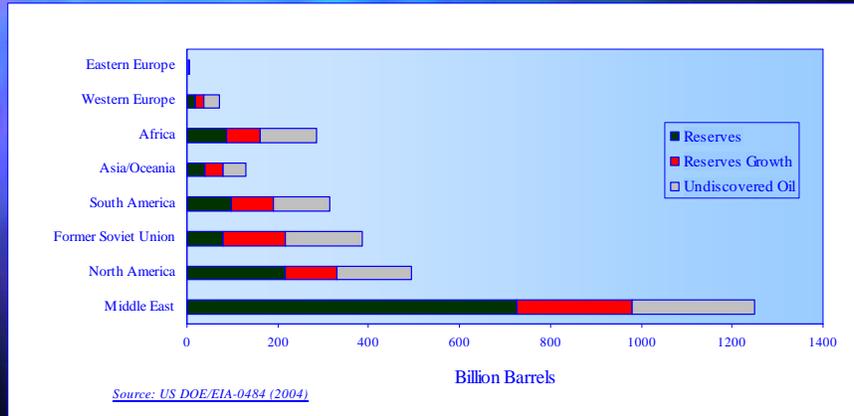
*Professor Wumi Iledare
LSU Center for Energy studies
Baton Rouge, LA 70803*

*Presentation at Audubon Kiwanis Weekly Meeting
Baton Rouge, LA. September 9, 2004*

Outline

- Composition of global oil reserves & supply
- Selected indicators of oil reserves and supply trends
- Understanding the key players in the global oil market
- World petroleum supply patterns
- Concluding remarks

Where are conventional oil resources located, 1995-2025?



090904

Audubon Kiwanis Weekly Meeting, Baton Rouge, LA

3

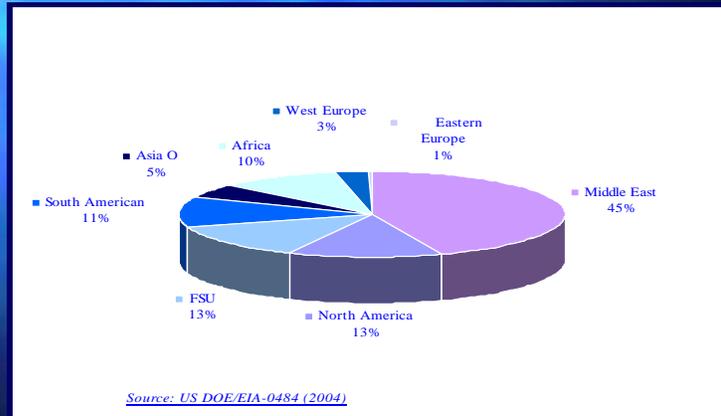
Where are proved oil reserves located?

Rank (Current)	Country	1-1-2004	1-1-1994	1-1-1984
1	Saudi Arabia*	262.7	261.4	168.8
2	Canada	180.0 [†]	10.0	9.6
3	Iran*	130.7	92.9	55.3
4	Iraq*	115.0	100	65.0
5	United Arab Emirates*	97.8	97.7	32.4
6	Kuwait*	96.5	96.5	65.0
7	Venezuela*	78.0	64.4	25.9
8	Russia	69.1	--	--
9	Libya*	36.0	22.8	21.8
10	Nigeria*	34.3	21.0	16.6
11	United States	30.7	30.2	35.6
12	China	23.7	29.5	18.2
13	Mexico	16.0	50.8	49.9
14	Qatar	15.2	3.1	3.3
15	Algeria*	11.3	9.2	9.2
16	Brazil	10.6	5.0	2.1
17	Norway	10.1	9.5	3.8
18	Kazakhstan	9.0	--	--
19	Angola	8.9	1.9	1.7
20	Azerbaijan	7.0	--	--
	Total World	1147.7	1023.6	723.0

[†] Reported in OGI, Dec 22, 2003; others are as reported in BP statistical Review of June 2004; * denotes OPEC Members

4

Distribution of ultimate oil recovery

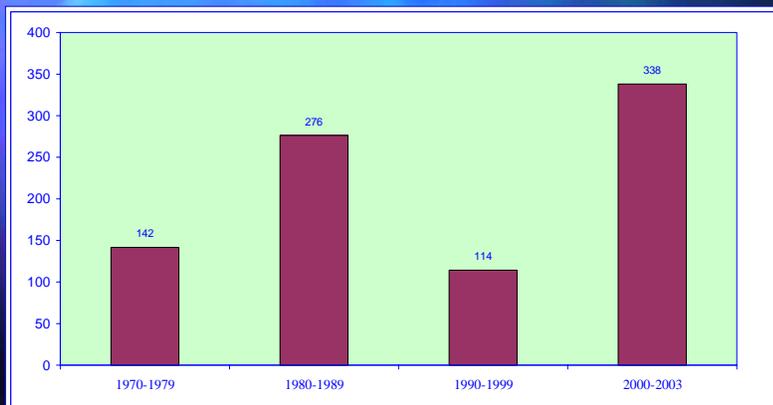


090904

Audubon Kiwanis Weekly Meeting, Baton Rouge, LA

5

Replacement rate of global oil reserves produced, %

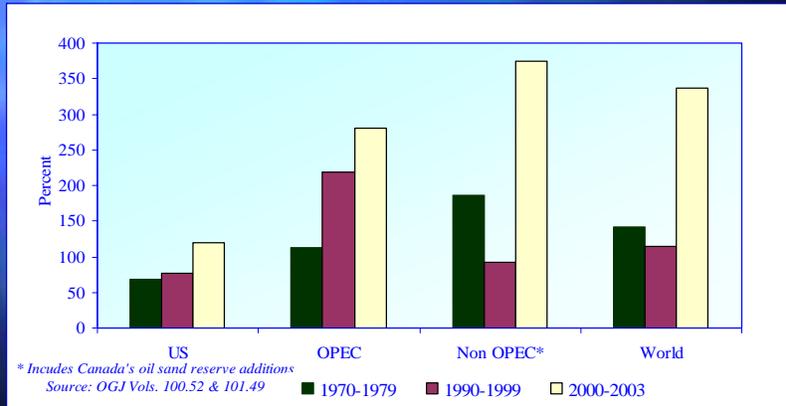


090904

Audubon Kiwanis Weekly Meeting, Baton Rouge, LA

6

Replacement rate of produced oil reserves Time & Space

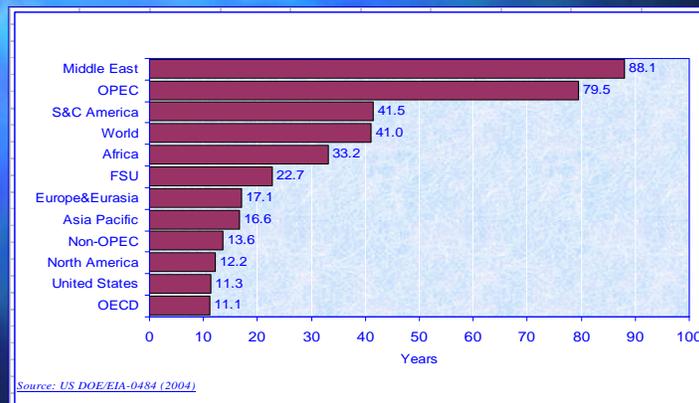


090904

Audubon Kiwanis Weekly Meeting, Baton Rouge, LA

7

Oil production equivalency of proved reserves at the 2003 production rate



090904

Audubon Kiwanis Weekly Meeting, Baton Rouge, LA

8

Who are the key players in world oil market?

- The multinational oil companies have interests in maximizing long term profits.
- Net oil importing countries OECD member countries, the G7 countries, IEA wants easy access to cheap, clean and secure energy.
- The brokers operating in the commodity market claim they provide stability to oil prices.

Who are the key players in the world oil market?

- The net oil exporting countries represented by OPEC desire rapid economic development and maximization of their citizens' social well being.
- Government policies in producer and consumer nations are mostly designed to correct petroleum market inefficiencies and manipulations.

Role of the multinational firms

- Oil companies like to have inventories of oil reserves so they engaged in prospecting for oil all over the world, making it possible to develop cheap oil first.
- The expectation that minimum finding costs will drift upward are counteracted with natural surprises and technical progress which tends to lower finding and development costs and put pressure on prices.

Role of the multinational firms

- Technical progress including 3D seismology, horizontal drilling technology, deepwater production systems and information are products of the oil industry to lower costs putting further pressures on crude oil prices.
- Industry restructuring in the form of downsizing, reliance on contract services and adoption of less hierarchical decision-making has made the industry more efficient worldwide in response to the low oil prices of the 1980s. Thus, the industry is less susceptible to price disruption.

The role of OECD

- The diversification of supply sources has reduced irrational response to a little political uncertainty in the Middle East.
- Agreement for crude swapping in case of any disruption.
- Strategic petroleum reserves/inventory as a cushion for a sudden rise in price for whatever reasons.
- The U.S. energy policy objectives of economic growth, energy efficiency, cheap and secure energy and clean environment have implications on world oil supply and prices.

The role of OECD

- Favorable tax policies to promote restricted use of oil reserves and hence global oil pricing
- Consumption related taxes for conservation purposes
- Production related taxes or subsidies to promote domestic production

The role of OPEC

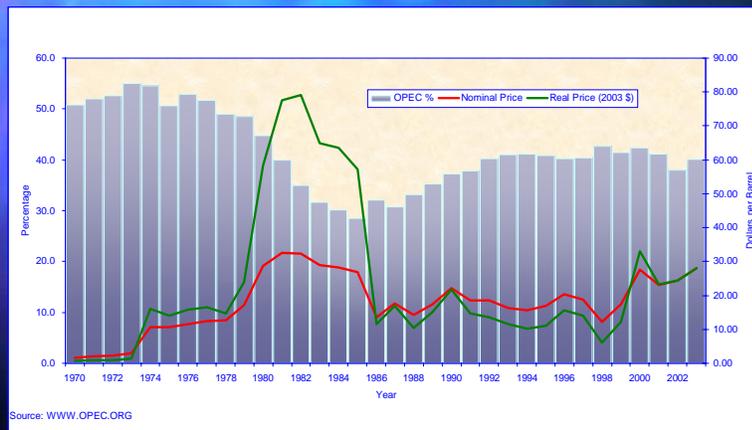
- OPEC, the Organization of Petroleum Exporting Countries was formed in 1960 for the effective management of petroleum resource endowment in the member nations and curtailment on the rising power of the "seven big oil sisters".
- OPEC Currently has 11 members from a membership of 13 in the 70s. (Gabon and Ecuador opted out in the 1990s).
- OPEC reached its ultimate market power in the 1970s when oil prices quadrupled.
- OPEC has certainly changed the face of the petroleum industry over the past 40 years.
- OPEC still occupies a position of influence in the oil market because it controls enough reserves and production capacity.

090904

Audubon Kiwanis Weekly Meeting, Baton Rouge, LA

15

OPEC world oil market share and price trends

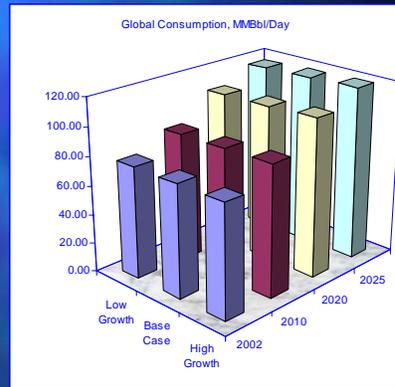
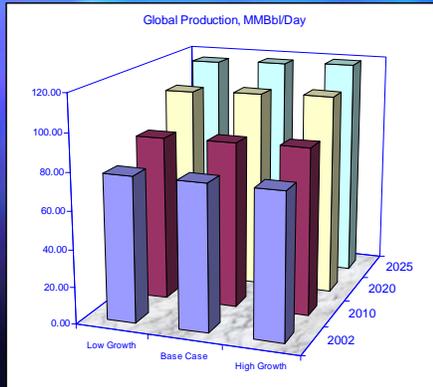


090904

Audubon Kiwanis Weekly Meeting, Baton Rouge, LA

16

Global supply and disposition projections --USDOE/EIA-084 (2004)

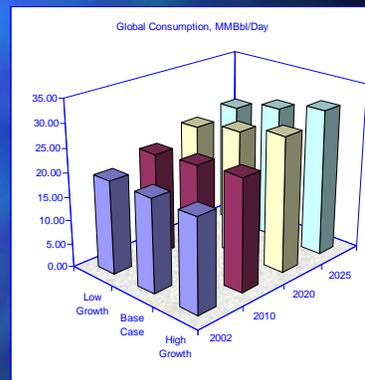
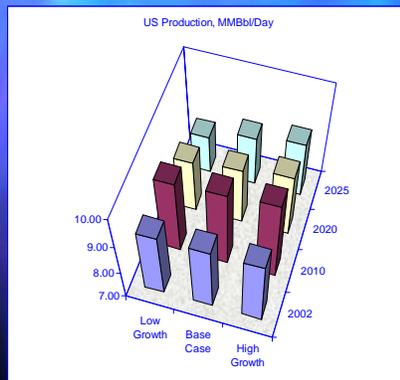


090904

Audubon Kiwanis Weekly Meeting, Baton Rouge, LA

17

US supply and disposition projections -- USDOE/EIA-084 (2004)

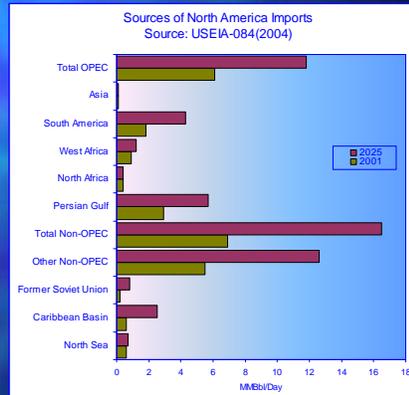
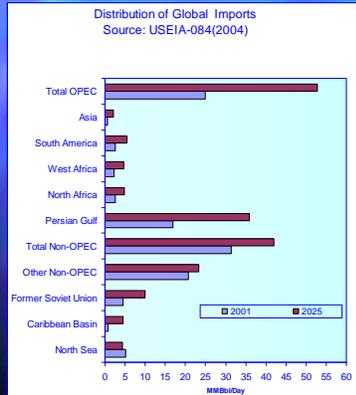


090904

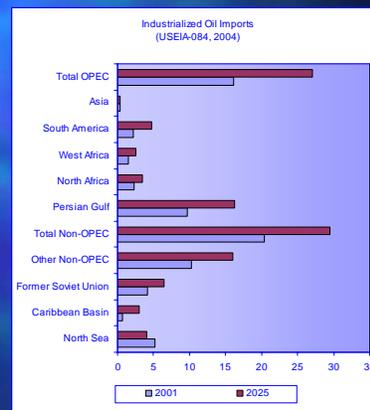
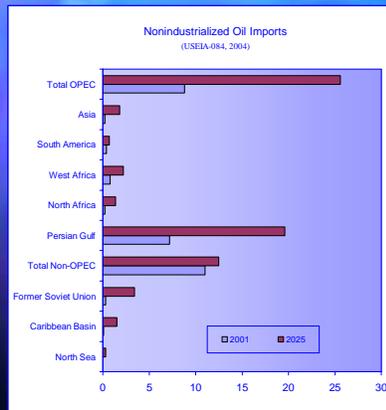
Audubon Kiwanis Weekly Meeting, Baton Rouge, LA

18

Crude oil imports & supply patterns



Worldwide petroleum trade patterns



Concluding remarks

- OPEC would continue to occupy its position of influence in the oil market, because it controls significant proportion of world oil reserves and production capacity.
- Diversification of oil supply sources in the industrialized countries would continue to put pressure on OPEC to manage oil production effectively
- Economic growth in the expanding economies in Asia and China would continue to drive the price of oil upward
- Import dependency in the US is expected to rise in the face of the expanding economy according to EIA projections
- The good news is the availability of enough petroleum resource endowment to support a petroleum dependent global economy for at least 4 decades, ceteris paribus.

References

- Energy in Focus. BP Statistical Review of World Energy, 2004.
- International Energy Outlook, 2004. U.S. Department of Energy.
- *Oil and Gas Journal*, December Issues on World Report, 1970-2003.