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Saudi Arabia's Sustainable Capacity and Security Issues

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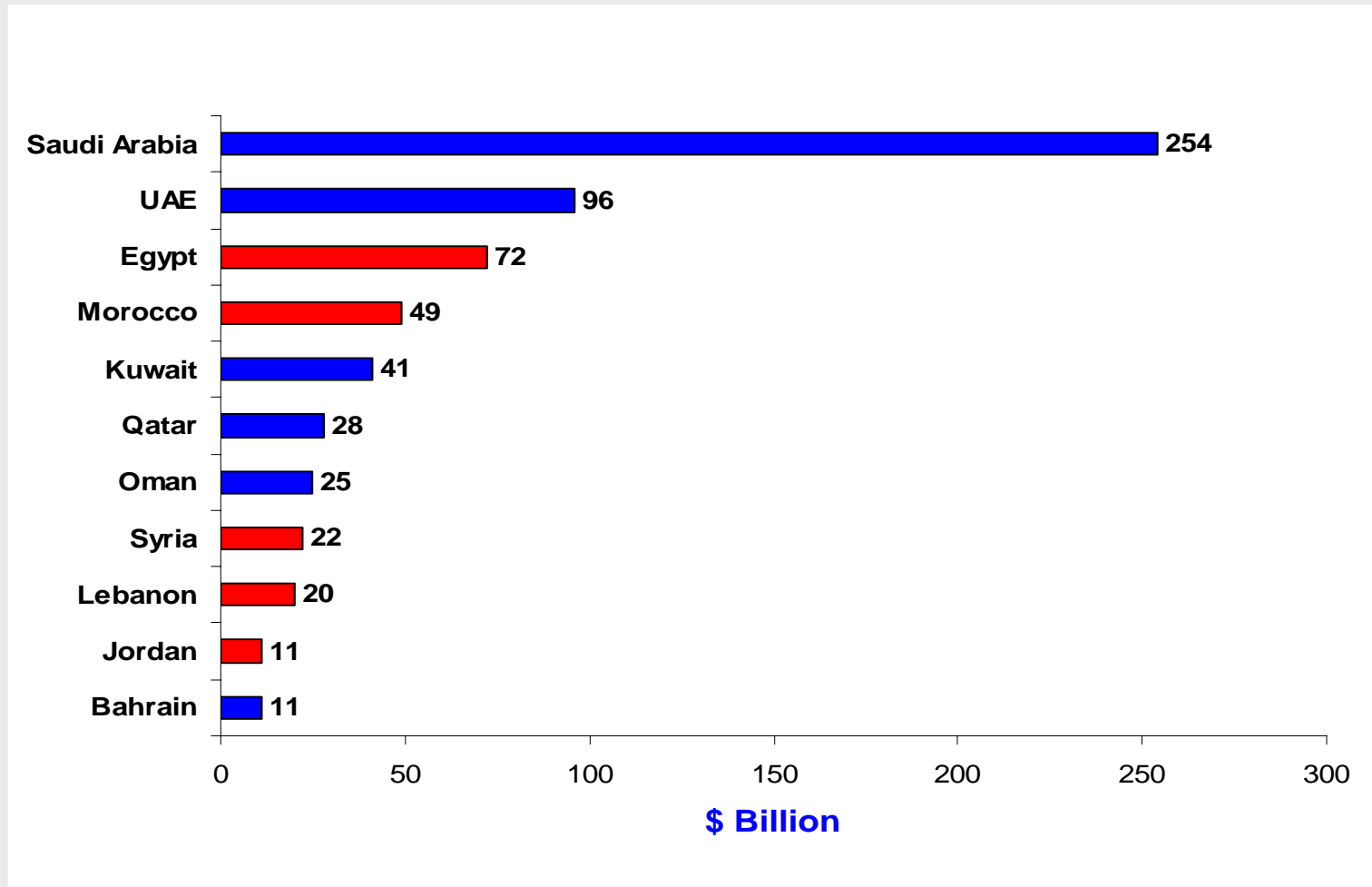
Saudi Place in Region

- **The center of the Muslim world:** As the birthplace of Islam and home to its two holiest cities, Saudi Arabia plays an unparalleled religious role for the world's Muslims.
- **The largest economy in the Middle East:** Saudi Arabia's 2004 GDP was \$254 billion, representing between 35 - 40% of the GDP of the entire Middle East (excluding Israel). 2005 estimates show the economy will come in at approximately \$330 billion.
- **The largest stock market in the region:** Saudi Arabia had an average market capitalization of \$500 billion during summer 2005. This represents 45% of region's \$1.1 trillion market capitalization. Saudi Arabia's stock exchange is the largest of the emerging markets, surpassing that of China, India, and Russia.
- **Central to regional security:** The Kingdom has the largest and most modern military and internal security apparatuses in the Gulf, and continues to play an important role in the stability of GCC states.
- **The world's sole energy super-power:** Saudi Arabia is the largest oil producer and holder of largest oil reserves in the world. The Kingdom has 25% of the world's total proven reserves and a production capacity of 11m b/d (which is between 45-48% of total Middle East capacity). Saudi Arabia holds 40-42% of the proven reserves in Middle East.

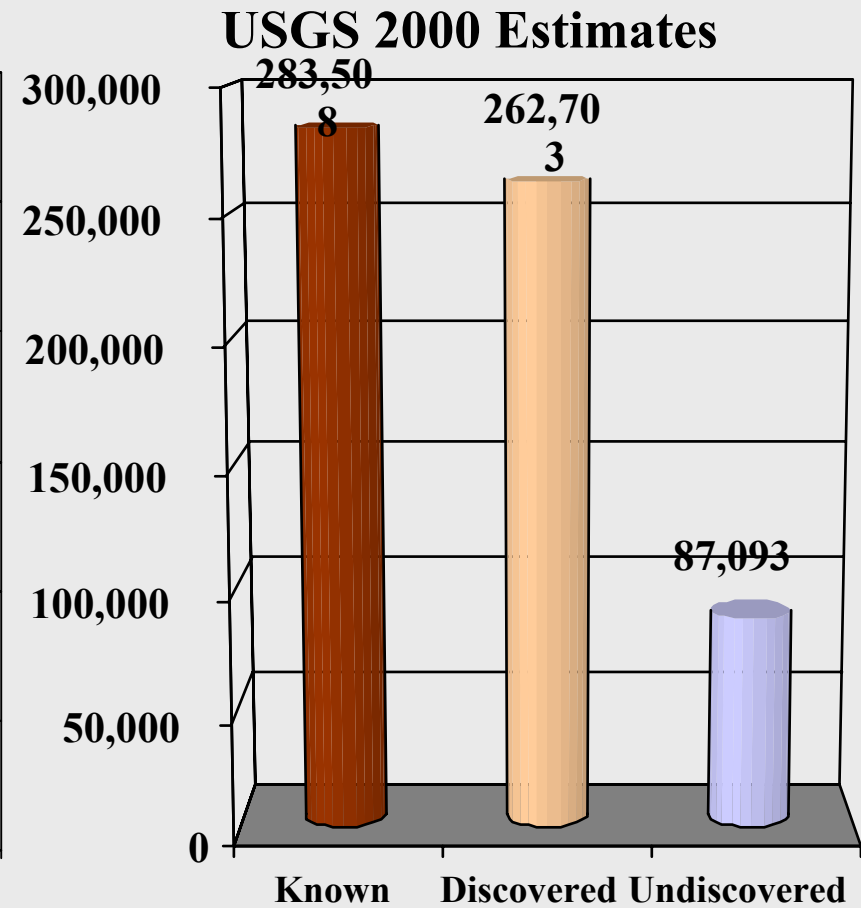
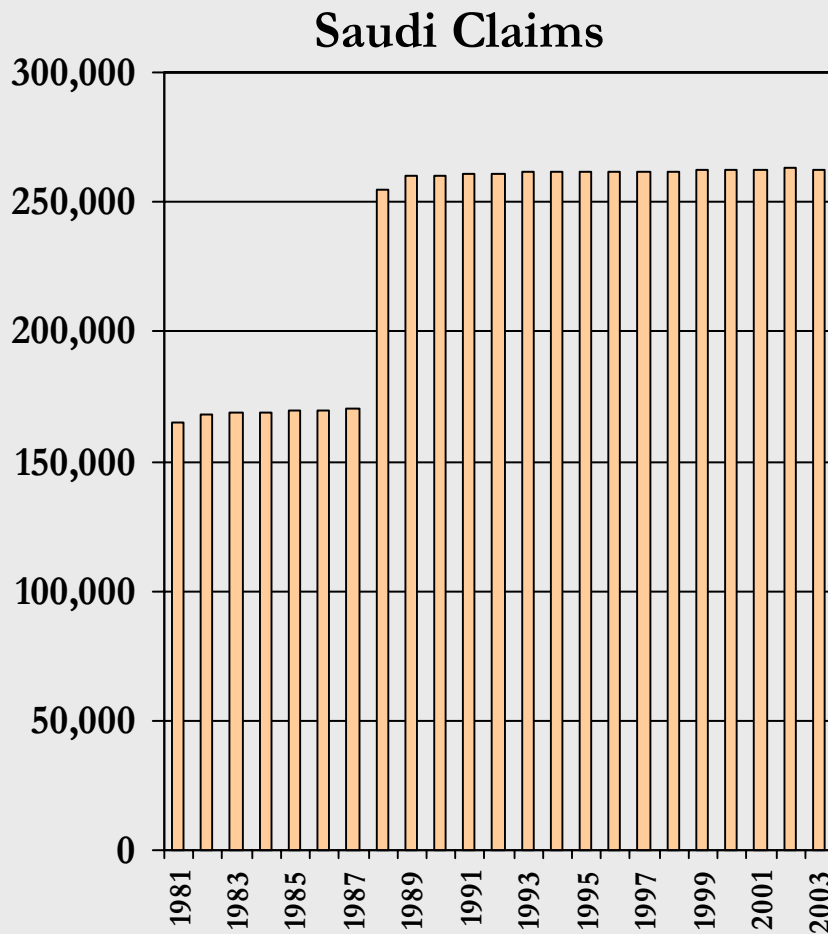
Saudi Place In Energy Market

- **The largest oil reserves in the world:** Saudi Arabia claims 25% of the world's proven reserve (260 billion barrels), and 200 billion barrels more as "possibility."
- **The largest oil producer in the world:** Saudi Arabia produces 12.5% of world total production, and has been the only past oil producer that consistently sought to maintain surplus oil production. EIA forecasts in 2025, Saudi production capacity will be 22.5 million b/d.
- **An influential member of OPEC:** Saudi Arabia continues to play a central role in the decisions of OPEC, due to its immense reserves and influence over the other member states, especially the Gulf countries.
- **Claims largest spare capacity:** The Kingdom has claimed goal of 1.5-2.0 million b/d of spare capacity. Claims to have 12.5 million b/d by 2009, and be "easily capable" of producing 15 million b/d within the next 15 years.
- **Central to Gulf Security:** The Kingdom has the largest and most modern military and internal security apparatuses in the Gulf, and continues to play an important role in the stability of GCC states.

2004 GDP Comparison



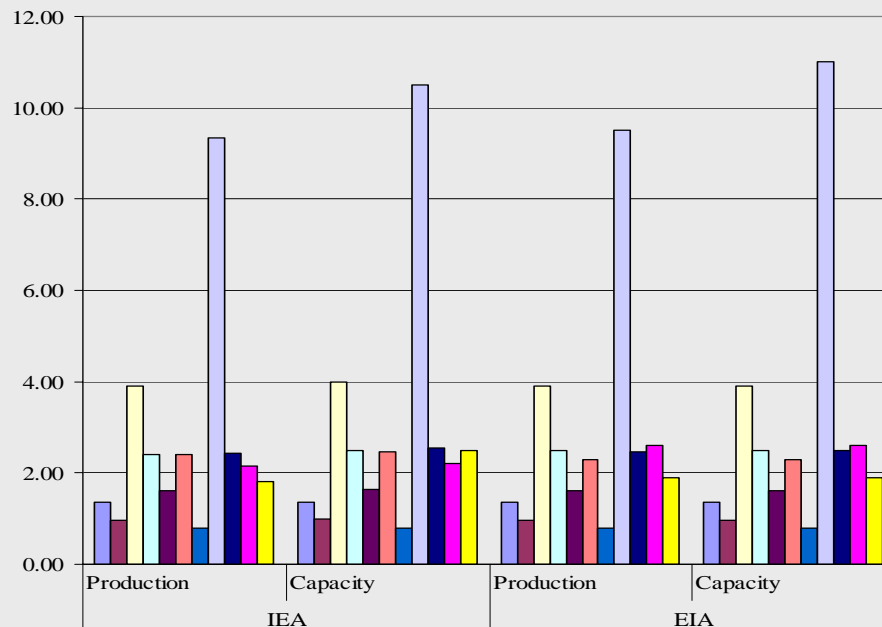
Saudi Oil Reserves (billion bbl)



Planned Saudi Production Increases

- In light of current market conditions and Hurricane Katrina, Saudi Arabia is planning on increasing production from 9.5m b/d to 11m b/d.
- According to Minister of Petroleum and Mineral Resources Ali Al-Naimi: “We are closely monitoring the impact of Hurricane Katrina on US crude oil supplies, refining activity and oil prices...we continue to be in close contact with our customers, especially those in the US, to assist them during any shortfall in oil supplies.”
- Even before Katrina, Al-Naimi had said, “To adequately fulfill this year’s additional demand, Saudi Arabian output shall be increased from current levels at a later time this year.”

Saudi Production Capacity in 2005



Capacity (Saudi claims):

- 10.6 mm b/d in Jan, 2004
- 10.8 mm b/d in Feb, 2004
- **11.0 mm b/d in Mar, 2004**
- abandoned policy to eliminate excessive inventory buildup in the OECD March 14, 2005

Production (Saudi claims):

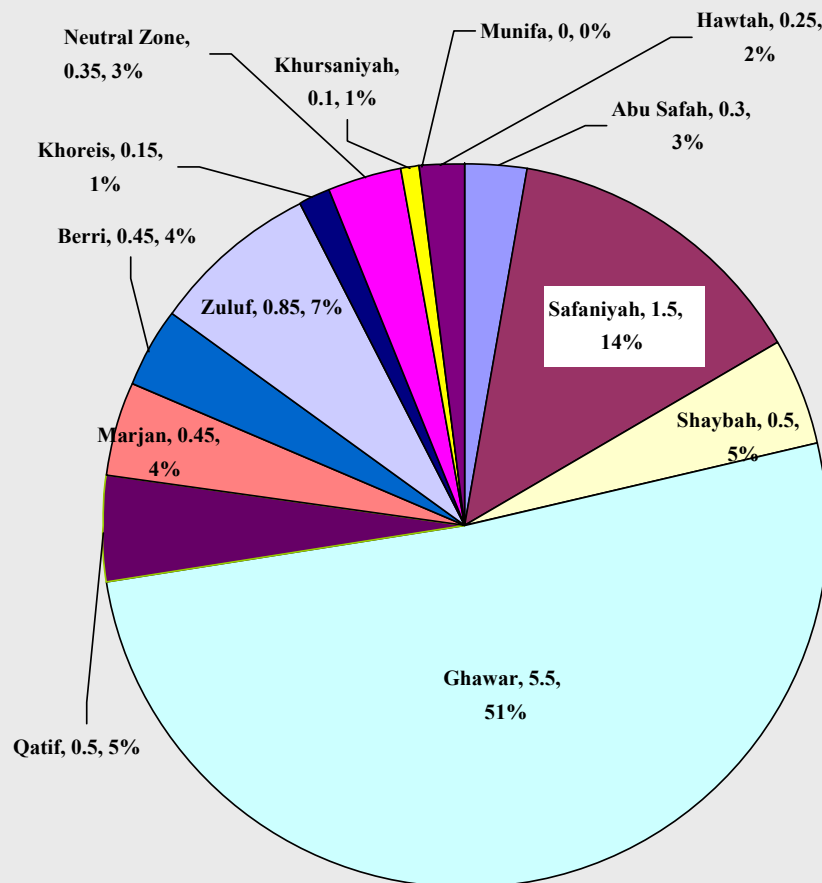
- 9.25 mm b/d in Feb, 2005
- 9.5 mm b/d in April, 2005
- 9.6 mm b/d in Aug, 2005

Algeria	1.35	1.35	1.35	1.35
Indonesia	0.95	1.00	0.96	0.96
Iran	3.90	4.00	3.90	3.90
Kuwait	2.40	2.50	2.50	2.50
Libya	1.62	1.65	1.60	1.60
Nigeria	2.40	2.45	2.30	2.30
Qatar	0.78	0.80	0.80	0.80
Saudi Arabia	9.35	10.50	9.50	11.00
UAE	2.42	2.55	2.45	2.50
Venezuela	2.16	2.20	2.60	2.60
Iraq	1.81	2.50	1.90	1.90

Source: Adapted from IEA Oil Market Report, April 12, 2005; and EIA Short-Term Energy Outlook, April 2005.

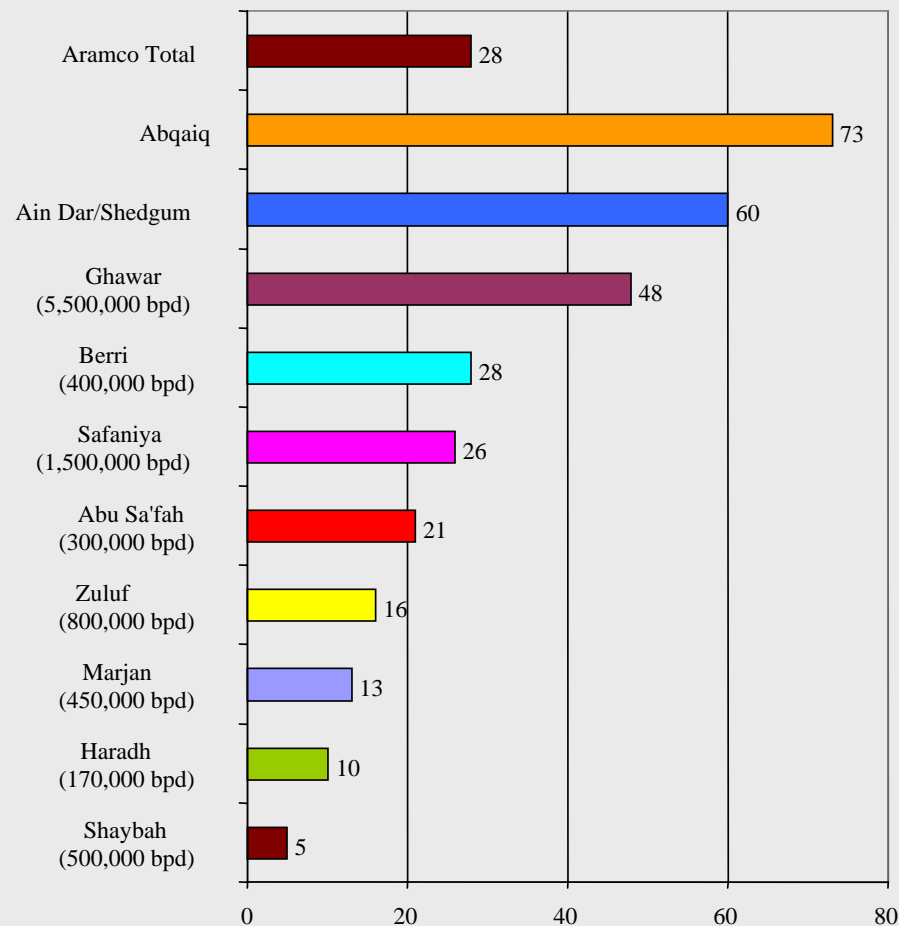
Note: Saudi capacity according to the IEA was 10.0-10.5, and the EIA was 10.5-11.0

Saudi Oil Fields Production in 2005



- Has 80 fields & 1,000 wells.
- More than 50% of reserves are contained in eight fields.
- Ghawar and Safaniyah produce usually 65% of the Kingdom's oil.
- Munifa is offline.

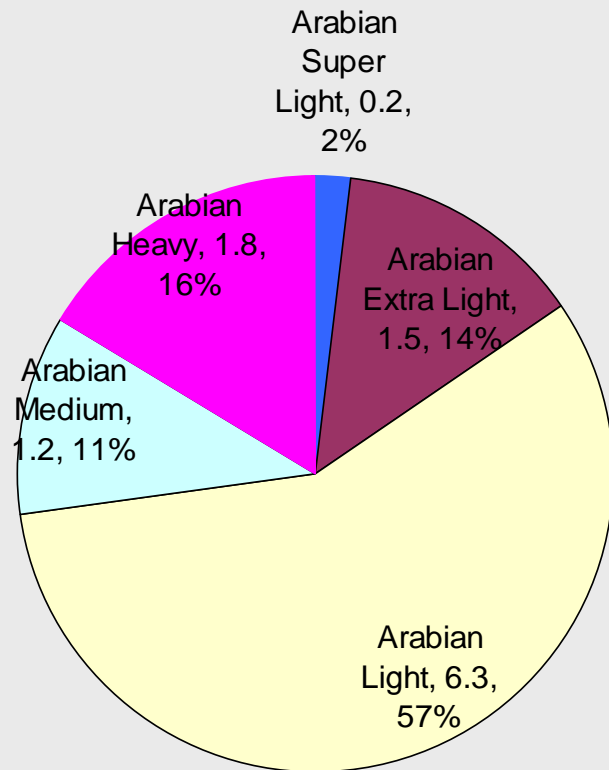
Oil Field Depletion Rates & Capacity



Source: Saudi Aramco

- Total depletion rates: % of the estimate oil resources has been pumped.
- Saudi oil fields total depletion rate: estimated to be 28%-30%
- To keep the same capacity, need more discoveries.
- Total producible oil at given cost very difficult to estimate, as is gain from secondary and tertiary recovery.

Current Saudi Production Grade



Source: Saudi National Security Assessment Project

- About 70% of the Saudi production capacity is considered light gravity.
- The country is moving towards reducing the two heavier grades.
- **Ghawar:** the major producer of Arabian light crude.
- **Abqaiq:** producer of Arab Extra Light crude. An enormous field, containing 17 billion barrels of proven reserves.
- **Shaybah:** with estimated reserves of 15 billion barrels – produces a mix of Arabian light and Arabian Extra Light.
- **Munifa:** is still offline, but it could reach 1 million b/d of Arabian Heavy.

Saudi New Production Contributing to 12.5 million b/d Capacity in 2009

Oil Filed	Grade	New Capacity (b/d)	Date
Abu Safah & Qatif	Arab Light & Extra Light	500,000-550,000	2004/2005
Haradh	Arab Light	300,000	2006
Khursaniyah	Arab Light & Extra Light	500,000	2007
Shaybah	Arab Extra Light	300,000-400,000	2008
Nuayyim	Arab Extra Light	100,000	2009
Khoreis	Arab Extra Light	1.0-1.2 million	2009
Total		2.70-3.05 million	2004-2009

Source: Saudi National Security Assessment Project

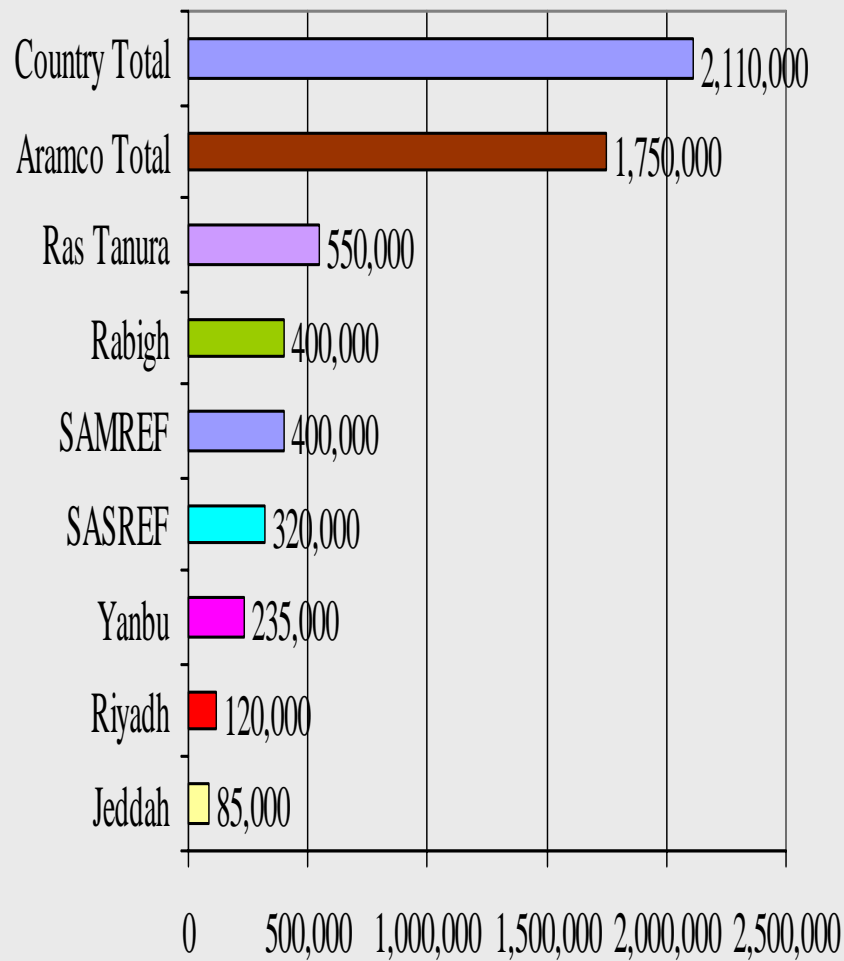
11,000,000 b/d	Estimated sustainable capacity in March 2005
+ 2,400,000 b/d	Estimated increase in capacity on stream 2006-09
- 800,000 b/d	Will go into replenishing the natural decline 2005-09
≈ 12,600,000 b/d	Estimated sustainable capacity in 2009

Note: this is not \$3 per incremental barrel oil. Investment costs will reach \$18 to \$20 billion 2003-2009.

Saudi Fields “Mega Projects”

- **Munifa:**
 - In January 2004: was offline
 - Aramco claims it could produce up to 1 million b/d in the foreseeable future (no decision has been made to develop the field because it produces Arabian Heavy).
- **Abu Safah & Qatif:** Completed late 2004 and its cost was \$4 billion.
 - In January 2004: produced 300,000 b/d
 - In early 2005: came on stream and produced 500,000 b/d
- **Khursaniyah:** Signed March 2005. The budget was approved for \$4 billion (up \$1 billion from initial estimates).
 - In January 2004: produced 100,000 b/d
 - By 2007: Aramco claims will reach 500,000 b/d
- **Khoreis:** The budget was approved for \$6 billion (up \$1 billion from initial estimates).
 - In January 2004: produced 150,000 b/d
 - By 2009: Aramco claims will increase to 1.0-1.2 million b/d
- **Haradh:** Inaugurated January 2004, its estimated cost is \$1 billion.
 - In January 2004: it was reported to produced 170,000 b/d
 - By 2006: the project is expected to expand it to 300,000 b/d
- **Shaybah:** Its estimated cost is \$1.5 billion.
 - In January 2004: produced 500,000 b/d
 - By 2008: Aramco claims its new capacity will be 300,000-400,000 b/d
- **Aramco says that all these fields (except Munifa) will be developed**

Saudi Refining Capacity



- Saudi Arabia has 8 refineries, with a combined crude throughput capacity of roughly 2.1 million b/d, and about 1.75 million b/d of overseas refining capacity.
- The Kingdom plans to upgrade and expand the Rabigh refinery by 425,000 b/d.
- The Kingdom has plans to expand its refining capacity in North America, to build 2 new domestic and 3 new overseas refineries in next 5 years.

Saudi Refining Expansion Program

Increases capacity from about 3.9 million to over 6.0 million b/d by 2011. Includes:

- ❑ **MOTIVA Enterprises (Texas):** Expansion to increase from 235,000 to 600,000 b/d. (Cost: \$4 to \$5 Billion; Aramco owns 50%.)
- ❑ **Fujian Refinery Project (China):** With SINOPEC and EXXONMOBIL, to increase to 230,000 b/d. (Cost: \$3.5 to \$4 Billion; Aramco owns 25%.)
- ❑ **Qingdao Refinery Project (China):** With SINOPEC adds 200,000 b/d. (Cost: \$1.2 to \$1.5 Billion; Aramco to own 25%.)
- ❑ **Rabigh Refinery Expansion:** With SUMITOMO, to increase from 400,000 to 825,000 b/d. (Cost: \$6 to \$7 Billion; Aramco owns 50%.)
- ❑ **Yanbu Refinery New Project:** Adds 425,000 b/d with international partner yet to be selected. (Cost: \$4 to \$5 Billion; Aramco to own 50%.)
- ❑ **Jubail Refinery Expansion:** Plans for 400,000 to 450,000 b/d capacity project with an international joint venture partner. (Cost: \$4 to \$5 Billion.)

Abdullah-Bush Texas Summit

- ❑ The US “signaled” to the Saudis that it wanted a commitment to increase oil supply in the short-run to ease the high oil prices.
- ❑ Saudi Arabia reiterated that it thinks that one of the reasons for the high gas prices is the bottleneck created by aging US refineries. Possible Saudi investments in US refineries.
- ❑ The Saudis presented their plan to invest \$50 billion in the energy sector to increase production capacity to 12.5 million bpd by 2009 and to reach 15 million b/d within 15-20 years.
- ❑ The joint statement said, “Both nations pledge to continue their cooperation so that the oil supply from Saudi Arabia will be available and secure. The United States appreciates Saudi Arabia's strong commitment to accelerating investment and expanding its production capacity to help provide stability and adequately supply the market.”
- ❑ Oil Minister Al-Naimi has stated that the Kingdom will increase its petroleum production in light of Hurricanes Katrina & Rita.

Saudi Oil Revenues & Stability

- Oil revenues made up 90-95% of total Saudi export earnings, 70%-80% of state revenues, and approximately 40% of the Kingdom's GDP in 2004/5.
- High oil revenues came at the right time (funding \$32 billion stimulus package):
 - Unsatisfied public with a budget deficit since 1982 & rising public debt. (\$5.33 billion paid down on domestic debt).
 - High costs of internal security following the May 2003 bombing.
 - The budget surplus gave the leadership an opportunity to practice transparency in government spending.
 - Support social programs & entitlements given high unemployment rates.
 - Finance aging infrastructure.

Oil Revenues Financing Stimulus Package (~\$32 billion for 2005 & 2006)

- \$8 billion to increase salary of government employees (15% raise).
- \$10 billion allocated for development and maintenance of services and infrastructure, including:
 - \$2.13 billion for the building of public housing projects.
 - \$1.86 billion for construction of new desalination plants.
 - \$1.33 billion for construction of new highways and roads.
 - \$1.2 billion for street maintenance and drainage system.
 - \$1.06 billion for construction of new schools.
 - \$1 billion for the construction of university campus construction.
 - \$800 million for construction of primary health care facilities.
 - \$666 million for construction of new vocational training institutes.
- \$4 billion allocated for **Saudi Export Program Initiative**.
- \$3.46 billion to increase the capital of the **Saudi Industrial Development Fund**.
- \$1.2 billion to increase the capital of the **Saudi Real Estate Fund**.
- \$800 million to increase the capital of the **Saudi Credit Bank**.
- \$4 billion to increase the minimum social security payment.

Oil Infrastructure Security

- ❑ The Saudi security budget is estimated to total more than \$8.0 billion in 2004.
- ❑ Between 2002 and 2004, \$1.2 billion to increase security at all of its energy facilities.
- ❑ Oil fields are large area targets, with many redundant facilities.
- ❑ Air surveillance from helicopters and round the clock F15 patrols. On the perimeter, heavily equipped National Guard battalions stand guard.
- ❑ At any one time, it is estimated that there are between 25,000 to 30,000 troops protecting the Kingdom's oil infrastructure.
- ❑ Saudi Arabia's terminals are similarly well defended. Each terminal and platform has its own specialized security units, comprised of Saudi Aramco security forces and specialized units of the National Guard and the Ministry of Interior. The Coast Guard and components of the Navy protect the installations from the sea.

General Vulnerabilities

- Under MOI: representatives from the Special Security Forces, Special Emergency Forces, the General Security Service, regular forces of the Public Security Administration, the Petroleum Installation Security Force (PISF), specialized brigades of the National Guard, the Navy, and the Coast Guard.
- The weakest link in the system is the estimated 17,850 km of pipeline in the Kingdom.
- Short of a spectacular strike on the scale of 9/11, or some form of systematic sabotage from inside Saudi Aramco or other key energy industries, most foreseeable assaults are likely to be quickly confined and any resulting damage is likely to be repaired relatively quickly.
- Energy security will, however, be a continuing problem for Saudi Arabia and the world. Moreover, global energy use expected to rise by more than 50% by 2025, and the security of Saudi energy exports will play a steadily more vital role in the world's economy.

Saudi Stability To Do List

- ❑ Aramco and others project future oil revenues cannot sustain high per capita income or Saudi economy.
- ❑ Economic and social reforms are at least as important as political reforms. Despite many of the good things the Kingdom has done in the last three years, there is a lot to be done.
- ❑ Demographics, diversification, youth explosion, Saudization, social and political change.
- ❑ The privatization campaign has been slow and at best ineffective to build a private sector robust enough to meet the employment needs of the country and diversify the Saudi economy away from oil.
- ❑ A realistic and concerted effort has to be channeled into dealing with the demographics and unemployment to limit the pool of recruitment by extremists.