

Iraq's Huge Ambition – 12 million barrels/day by 2017 Is It Possible?

Presentation by:
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At the end of an hour we saw a far-away town sleeping in a valley by a winding river, and beyond it on a hill, a vast grey fortress, with towers and turrets, the first I had seen out of a picture.

“Bridgeport,” said I pointing.

“Camelot,” said he.

A Connecticut in King Arthur’s Court
The Complete Novels of Mark Twain



I mean, if you add the numbers, it's almost unthinkable.

I find it astounding.

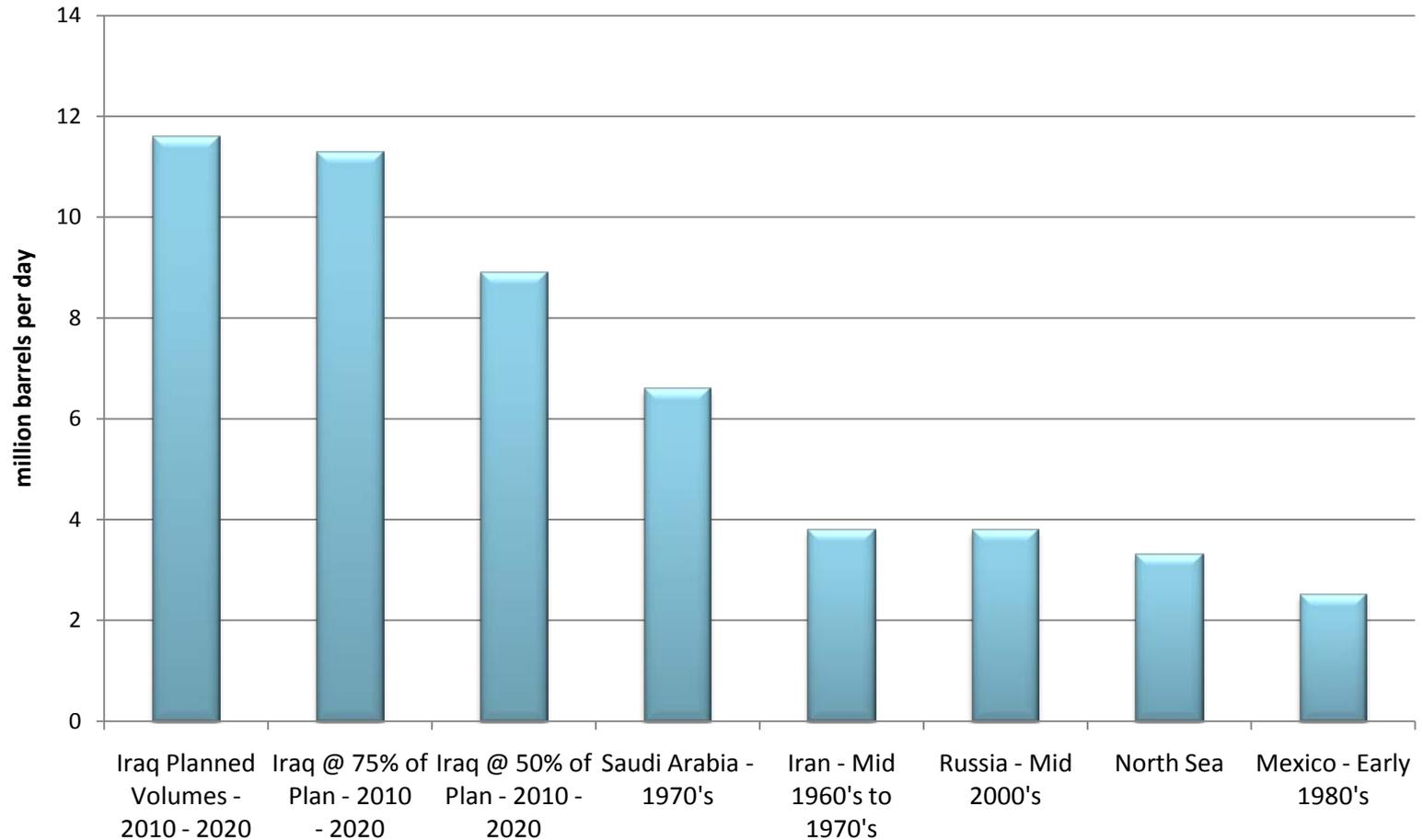
I would urge you to think about it in those terms.

Weatherford CEO, responding to an analyst's question in mid-April.

Iraqi Production – 1920's to 2020

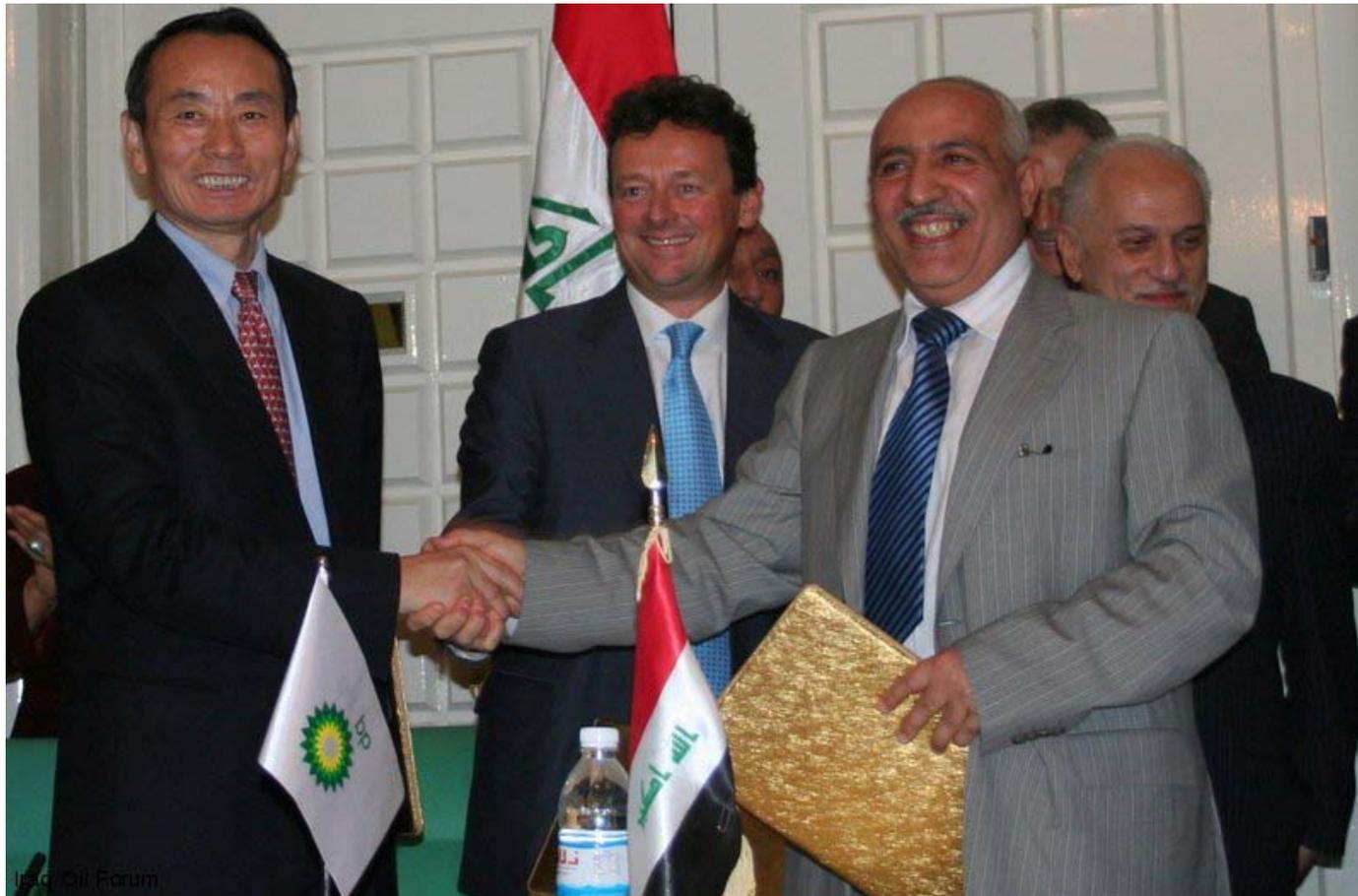


Largest Historical 10 Year Crude Oil Production Increases



BP and CNPC CEOs

First to Win an Iraqi Field in the 2009 Auctions



Ministry Expectations vs. Bid Volumes

Field	Ministry Targets	Bid Volumes (Net of Current Production)	Difference
Rumaila	1.750	1.850	0.100
Majnoon	0.600	1.754	1.154
W Qurna I	0.600	2.065	1.465
W Qurna II	0.560	1.800	1.240
Zubair	0.400	0.930	0.530
Halfaya	0.250	0.532	0.282
Gharaff	0.120	0.230	0.110
	4.280	9.161	4.881

If one adds the “upside surprise” to Oil Ministry expectations of 6 to 7 mm b/d it yields a production target of 11 to 12 mm b/d.

All of the upside surprise took place following Oct. 1.

BP on Iraq

- BP CEO Tony Hayward said Iraqi production could rival Saudi Arabia's by 2020:
 - "The resources there are relatively easy to bring onstream and there is no reason to believe that Iraq can't be producing 10 million barrels per day by 2020 or so."*
- Cautioned that obstacles remained:
 - "The realities of the challenges of execution on the ground mean things will happen a little slower than all of us are perhaps planning for today."*

Justified Optimism

Iraq's Reserves

- Iraq's proven reserves of 115 billion bbls are spread across 80 fields.
 - The large majority of these reserves are found in 43 fields
 - 37 fields have been allocated 0.1 billions barrels, but these fields remain underexplored
- 440 structural anomalies possess hydrocarbon potential
 - Of these, only about 115 have been drilled

Source: Tariq Shafiq

Iraq's Mathematical Potential

- Iraq can lift the 10 mm b/d plateau to 12 mm b/d if....
 - Depletion rate is limited to 4-5%
 - and 60 billion bbls of new reserves are added – these reserves would represent 28% of likely potential reserves
- Plateau could be maintained for 8 years if reserves are added at a rate of 3 billion bbls per year
- After 25 years, production would be 11 mm b/d with remaining reserves of 88 billion bbls.

Source: Tariq Shafiq

Higher Recovery Factors Can be Expected

The (Rumaila) reservoir experiences a strong aquifer drive from the South West and there is evidence that the oil water contact is slightly tilted as a result of this. These conditions lead BP to be optimistic of achieving a very high recovery factor for the Rumaila Main Pay sands of the order of 65% to 70%.

Michael Daly, BP

Instead of 35% we talk about 50% recovery factor for the Mishrif and Main Pay, and instead of 45% we talk about 55-60% or even more of the oil in place to be recovered in the Main Pay

Thamir Ghadhban, May 2009

Strong Incentives to Move Quickly

The contract incentivizes the contractor to deliver rapid production growth, firstly to trigger cost recovery by exceeding the initial improved production target (IPT) and later to achieve the plateau production target (PPT) as early as possible. It also encourages sustaining that plateau for seven years.

So, to be successful a company needs to believe that the IPT can be achieved rapidly, preferably before major capital investment has been made. Also that sufficient incremental production can be achieved fast enough after major capital investment, so that the full remuneration fee and cost recovery can be paid and financial exposure limited.

Michael Daly, BP

Husari – Revolution in Oil Practices

- BP is revolutionizing the way oil is produced in Iraq's biggest and oldest field – reversing the trend of years of malpractice:
 - Electrical submersible pumps
 - Seismic – 3D and 4D
 - Logging
 - Modern perforating techniques
 - Higher water injection rates

Source: Iraqi Oil Forum, April 24, 2008

Rumaila Progress – Jan 20 – 1st JMC Meeting

“Timing is most important, not the price.”

- \$1.7 billion budget for 2010
- Tenders for drilling
- Target to add 150-200 tbd by December, 2010
- Rehabilitate gas – oil separation plants to handle 1.3 mm b/d
- 2010 Work Program – 52 new wells, 30 workovers
- 2011 Plan: +10 rigs, drill 200 wells, output to 1.5 mm b/d
- Supplying all 12 production units and 10 water injection plants with an internet connection

Service Companies in Basrah

- Weatherford International is increasing its workforce in Iraq to more than 1000 employees by July.
- Schlumberger is finishing up work on a 40-acre compound near Basrah where it expects to have 300 employees by July and nearly double that by the end of the year.
- Baker Hughes said it has about 30 employees in Iraq and expects a 30-acre base to be finished by the end of April.
- Halliburton expects its slightly smaller base to be complete soon after.
- If security improves further and oilfield work increases, a ***\$3 billion to \$4 billion market annually is possible by the middle of the decade***, according to Schlumberger

Source: Upstreamonline

Exxon Leading Iraq Water Injection Project

US supermajor ExxonMobil has been picked to lead a "multibillion-dollar" water-injection project on behalf of international oil companies that won contracts in southern Iraqi oilfields, according to reports.

The cost of the project would be distributed among those majors that won development contracts for southern oilfields in the two auctions Iraq held last year, Abdul-Mahdy al-Ameedi, director of the Oil Ministry's licensing office told Reuters.

The Iraqi Federal Government and Kurdistan – A New Era

...the proceeds emanating from the sale of oil produced in the Kurdish region would go to central government coffers and which would eventually “be beneficial to the (Kurdish) region”.

Oil Ministry Undersecretary Muatasim Ahmad said the new initiative had come from the Kurdish leader Massoud Barzani.

Iraqi English Language Newspaper Azzaman

Airlines

- Lufthansa announces 4 weekly flights to Erbil
- Abu Dhabi National Airline to commence flights to Baghdad
- First Scheduled London to Baghdad Flight on April 26, 2010

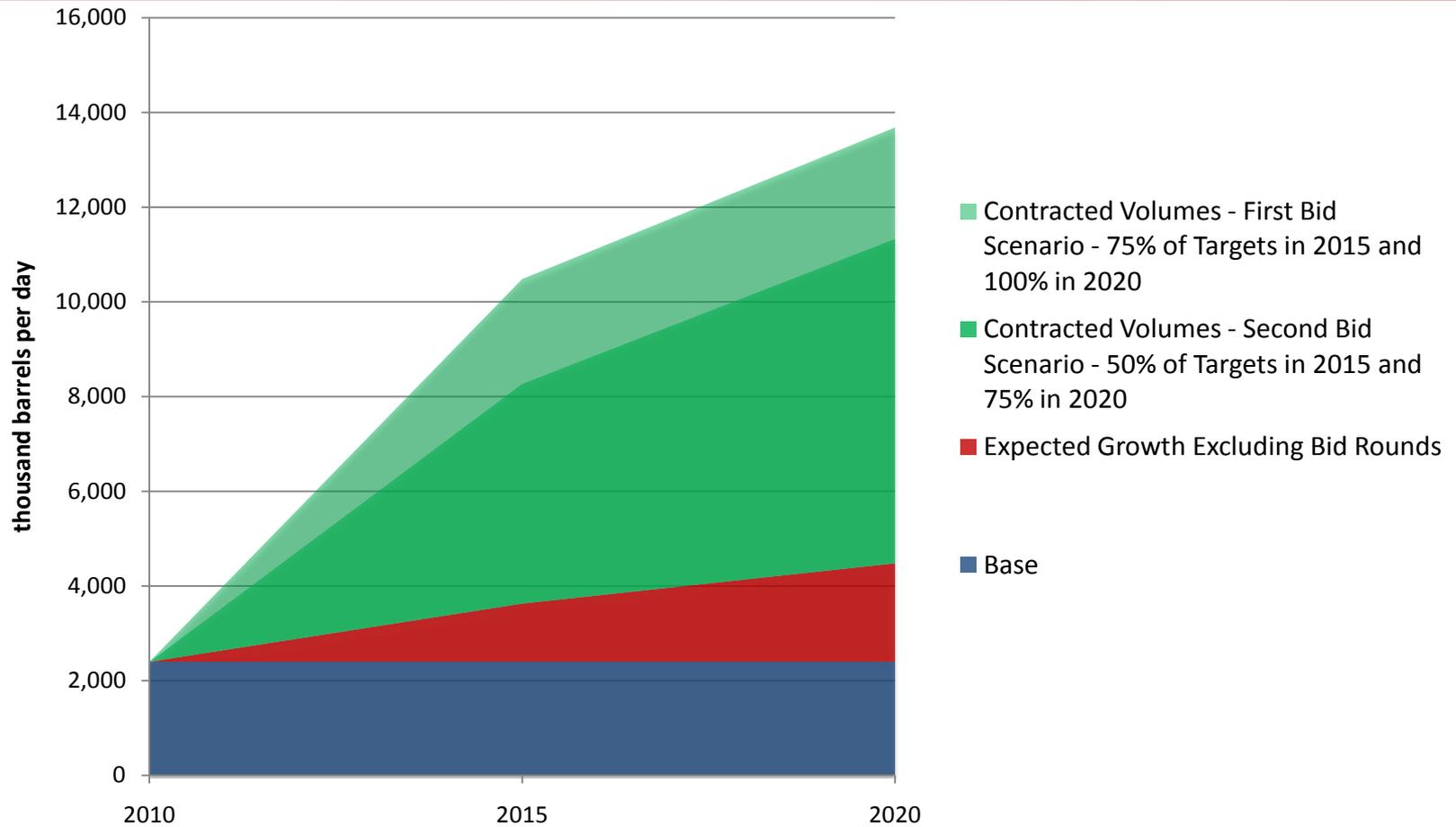
IOCs and the Future of Basrah

The private sector is gearing up to cater for the demands of the international oil companies and a number of service companies have been established. New hotels have been and are being built. The construction of an oil or energy base is underway. There are numerous contactors who are ready to pick subcontracts for civil works, transports, catering, etc. The port of Khor Al-Zubair is being rehabilitated to increase its offloading capacity.

... of course they can [also] sponsor sports clubs, for which Basrah is well known, SOC Football Club being in the top first division in Iraq!

Former Iraqi Oil Minister on the IOCs and the Basrah community
February 6th, 2010

Iraqi Production Growth Under Several Scenarios



Field Info and Company Shares

Field	Companies and Shares	Reserves - Billion Bbls	Bid Production Plateau - mm b/d	Current Production - mm b/d	Production Growth Required - mm b/d
Rumaila	CNPC 37%, BP 38%	17.000	2.850	1.046	1.804
W Qurna I	XOM 60%, Shell 15%	12.900	1.800	0.260	1.540
Zubair	ENI 53%, Oxy 23.3 %, Kogas 23.3%	12.600	1.200	0.186	1.014
Majnoon	Shell 45%, Petronas 10%	8.600	2.325	0.046	2.279
W Qurna II	LUKoil 67.5%, Statoil 7.5%	4.400	1.800	0.000	1.800
Halfaya	CNPC 37.5 Petronas 18.8%, Total 18.8%	4.100	0.535	0.003	0.532
Gharaf	Petronas 45%, Japex 30%	0.863	0.230	0.000	0.230
Total		60.463	10.740	1.541	9.199

Big Problems

The Cost of.....

What costs \$600 per day per person?

Politics

- Deadlocked Election
- Inter-Regional and Religious Conflict
- Intra-Shia Conflict
- Rampant Corruption
- Very Poor Government Infrastructure

Current Export Capacity

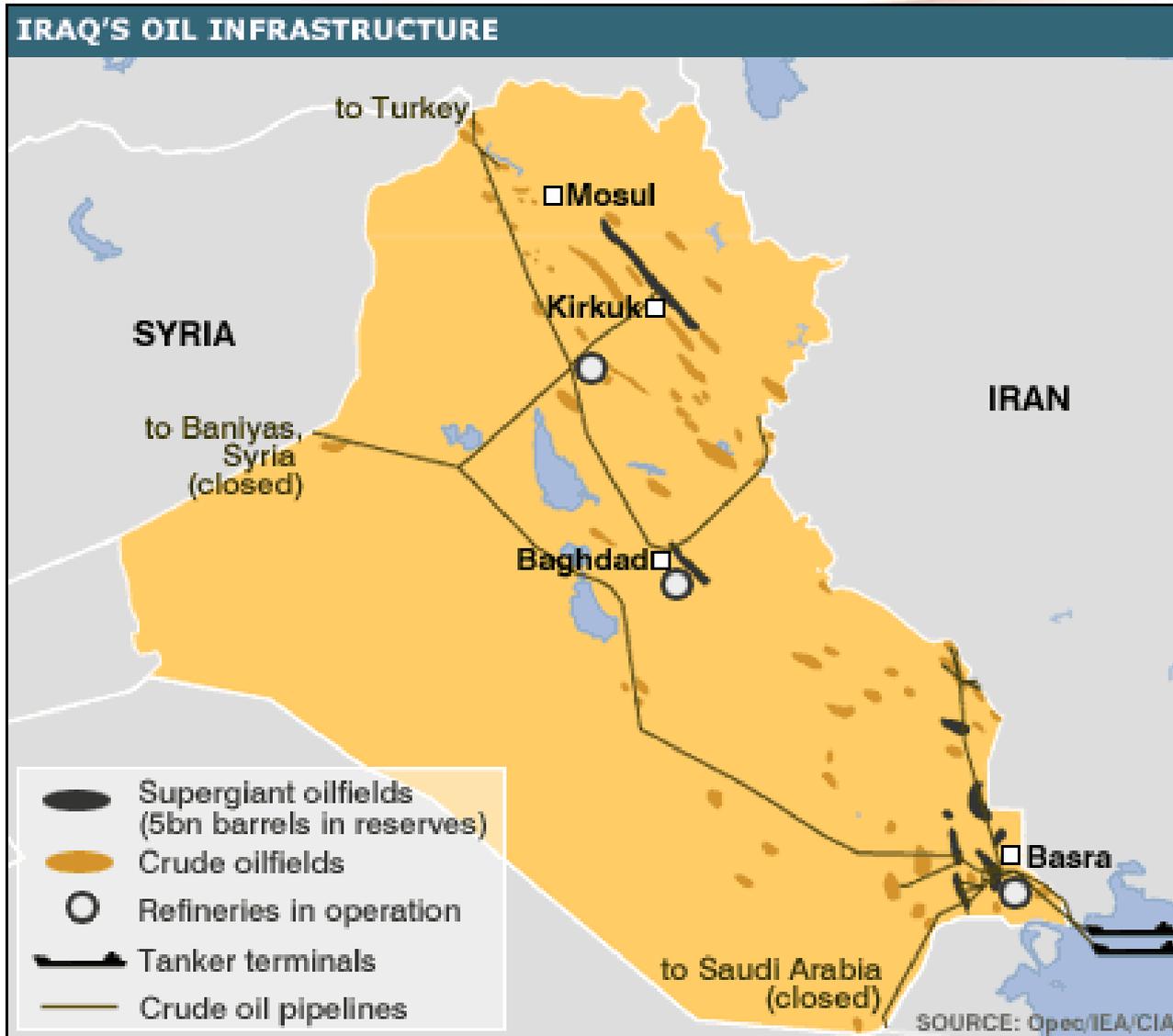
- Maximum existing export capacity no more than 3 mm b/d
 - 1.4+ mm b/d from the south
 - 1.5 mm b/d from the north
- With planned construction projects in the Gulf a maximum of 4 mm b/d might be possible by 2013
- Iran recently claimed that KAAT falls within Iranian territorial waters
 - Similar claim may be used by Kuwait and Iran regarding BOT
 - If Iraq must withdraw further into territorial waters, there will be lesser water depth at terminals and ULCCs will not be able to berth
- IPSA – Saudi gov't decided in mid-200 to confiscate IPSA facilities
 - IPSA was a \$ 1 billion project with 0.6 mm b/d capacity, 100% financed by Iraq

Source: Excerpts from a paper by Issam Chalabi, Former Iraqi Oil Minister, November 2009

Export Opportunities and Difficulties

- Iraq-Turkey export facilities
 - Current capacity 1.4 mm b/d – but to fully utilize Iraq would need to pump Basra oil from the south through the south-north strategic pipeline, which is under capacity and must be fully rehabilitated
- Iraq-Syria pipeline system
 - Technically, any attempt to export oil via this route will require a completely new pipeline system all the way from Basra
- Political Issues – Hemmed in by its neighbors
 - Saudi Arabia, Kuwait, and Syria not excited about plans to increase production to 6-8-10 mm b/d
 - Doubtful that current ruling parties support new project via Turkey and Jordan.....
 - Leaving Iran, which will undoubtedly be opposed by many Iraqis and Americans

Source: Excerpts from a paper by Issam Chalabi, Former Iraqi Oil Minister, November 2009



Source: BBC

Oil Ministry - Issues

- Lack of control over accounts and receipts
- At end of 2008, only 1/3 of planned meters had been installed on its oil industry
- North Oil Co. burned 1.4 million bbls of condensates it could not sell
- State companies reinjected 605,000 bbls of oil, damaged reservoirs
- Millions of bbls of oil unaccounted for
- Placed \$3 billion in revenues in an Iraqi bank instead of Iraq's oil account with the NY Federal Reserve Bank

Source: International Crisis Group

Company Financing?

- According to model contracts, the provision of export facilities is outside the scope of the work of the oil companies
- If required, it will be an additional obligation and cost

Now Iran

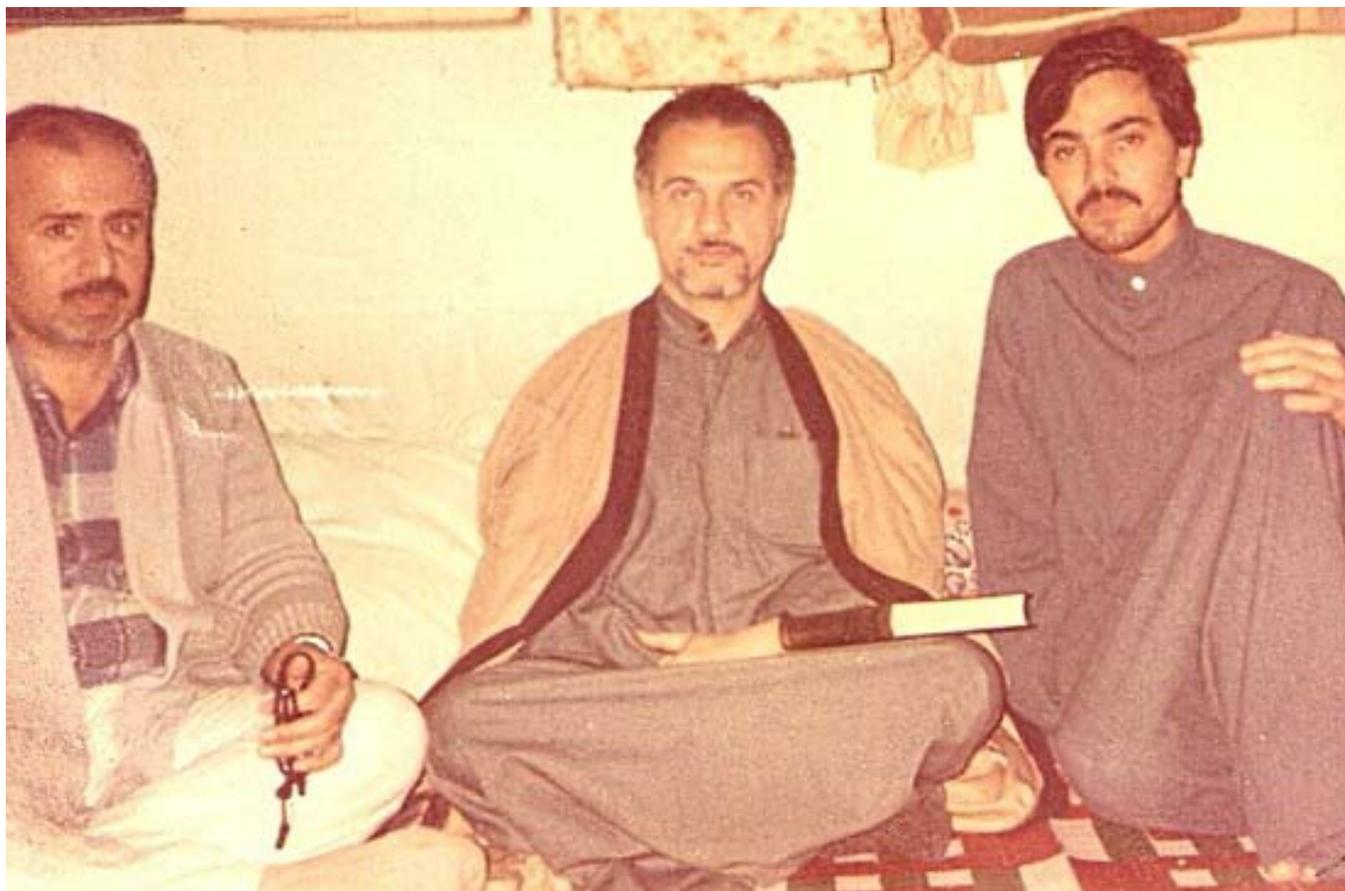
*We are currently involved in negotiations with Iraqi officials in regard **to beginning oil drilling operation in Iraq** and we are trying to set up an office in Iraq," IRNA quoted Heidar Bahmani, an official of the state-owned National Iranian Drilling Company (NIOC), as saying in a report late yesterday.*

"We are awaiting the Iraqi government's positive response," he added.

News Wires, 26 April 2010

Shahristani

Shahristani – Release from Solitary Confinement at Abu Ghraib



Protecting Iraqi Wealth From Unclean Hands

2006: New Government, Shahrستاني's Appointment

Hundreds of ministry employees murdered or kidnapped

Top technocrats left Iraq

Shahrستاني fired 250 security staff – militia members

Evidence of illegal activities turned over to inspector general

Fired or transferred others

Shahrستاني: "I'm not a political animal, and I don't enjoy politics. The only reason I've accepted and continue with my responsibility to protect Iraqi wealth from unclean hands."

Legal Basis of Auction

- Ministry relying on a Saddam era law from 1987
 - Provides the Oil Ministry with the authority to sign contracts
- 2005 Constitution does not require parliamentary vote

Auction

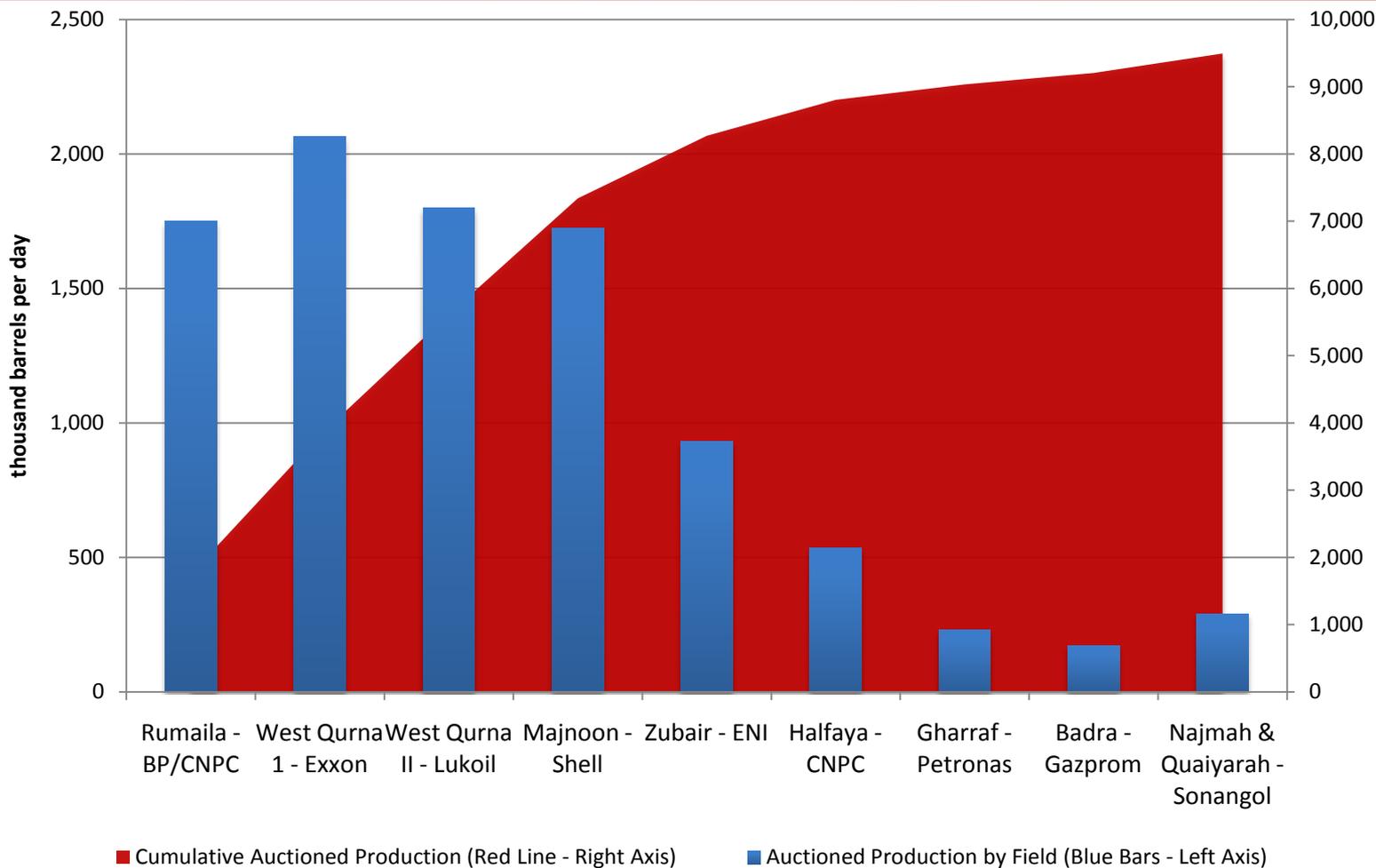
First Round Bids

Field	Consortium % Share	Oil Ministry Maximum RF	RF Bid Profit/bbl	Plateau Production Bid mm b/d
<u>Rumaila</u>	BP 51 CNPC 49	\$2.00	\$4.00	2.825
	XOM 80.1, Petronas 19.1		\$4.80	3.100
<u>Additional bids</u>	<i>BP 51 CNPC 49</i>		\$2.00	2.825
<u>W Qurna 1</u>	XOM 80 Shell 20	\$1.90	\$4.00	2.325
	CNPC 46.7 Petronas 33.3 Japex 20		\$2.60	1.900
	LUK 67 COP 33		\$6.49	1.500
<u>Negotiated</u>	<i>XOM 80 Shell 20+C39</i>		\$1.90	2.325
	LUK 67 COP 33		\$1.90	1.500
<u>Zubair</u>	ENI 35 SNP 20 OXY 25 KOGAS 20	\$2.00	\$4.80	1.125
	CNPC 67 BP 33		\$4.09	1.075
	XOM 65.1 Shell 19.9 Petronas 15		\$4.80	0.850
<u>Negotiated</u>	<i>ENI 53 Oxy 23.3 Kogas 23.3</i>		\$2.00	0.930

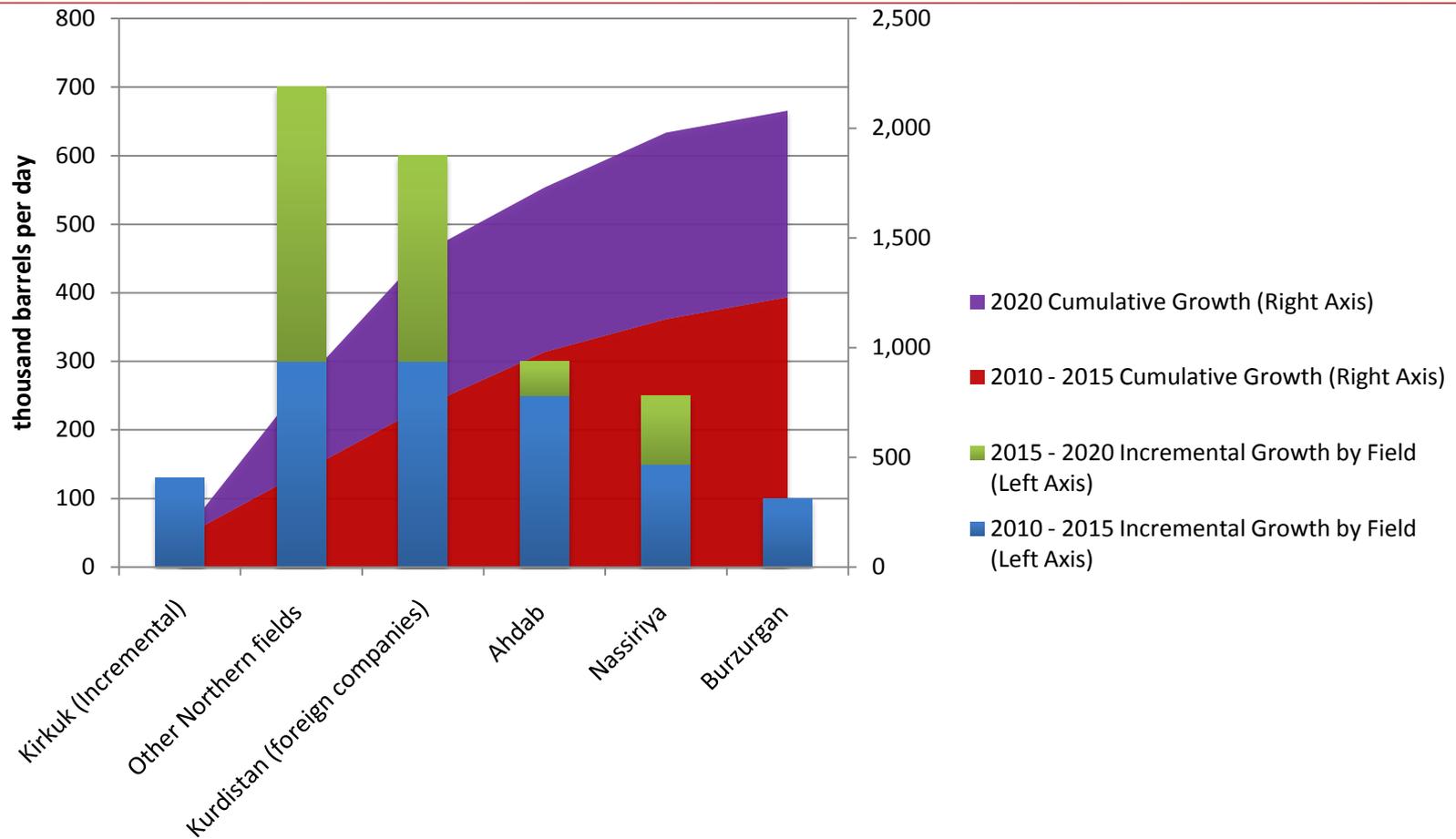
Second Round Bids

Field	Consortium % Share	Oil Ministry Maximum RF	RF Bid Profit/bbl	Plateau Production Bid mm b/d
Majnoon	<i>Shell 60 Petronas 40</i>		\$1.39	1.800
	Total 57 CNPC 43		\$1.75	1.405
W Qurna II	<i>LUKoil 85 Statoil 15</i>		\$1.15	1.800
	Petronas 60 PetroViet 20 Pertamina 20		\$1.25	1.200
	Total		\$1.72	1.430
Missan	CNOOC 80 Sinochem 20	\$2.30	\$1.40	0.450
<u>Negotiated</u>	<i>CNOOC 80 Sinochem 20</i>		\$2.30	????

Auctioned Production at Peak by Field and Cumulative



Expected Iraqi Production Growth Excluding Auctioned Projects

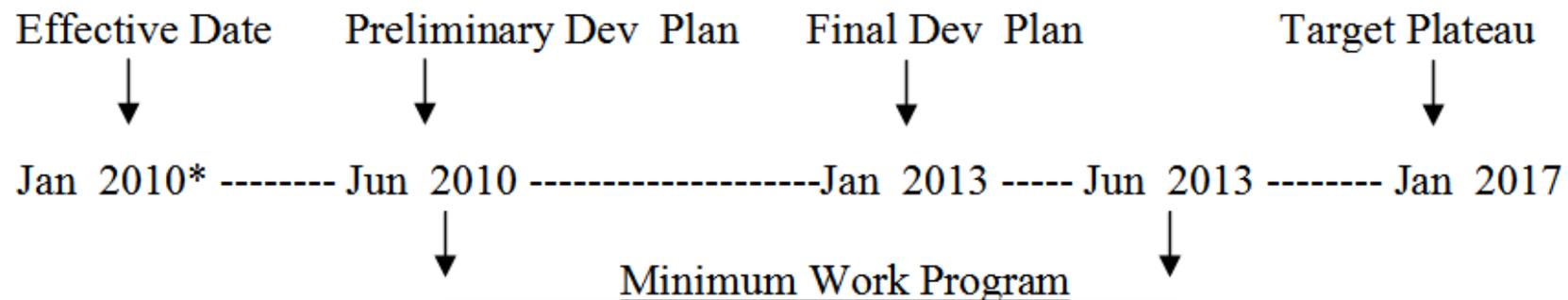


Contracts

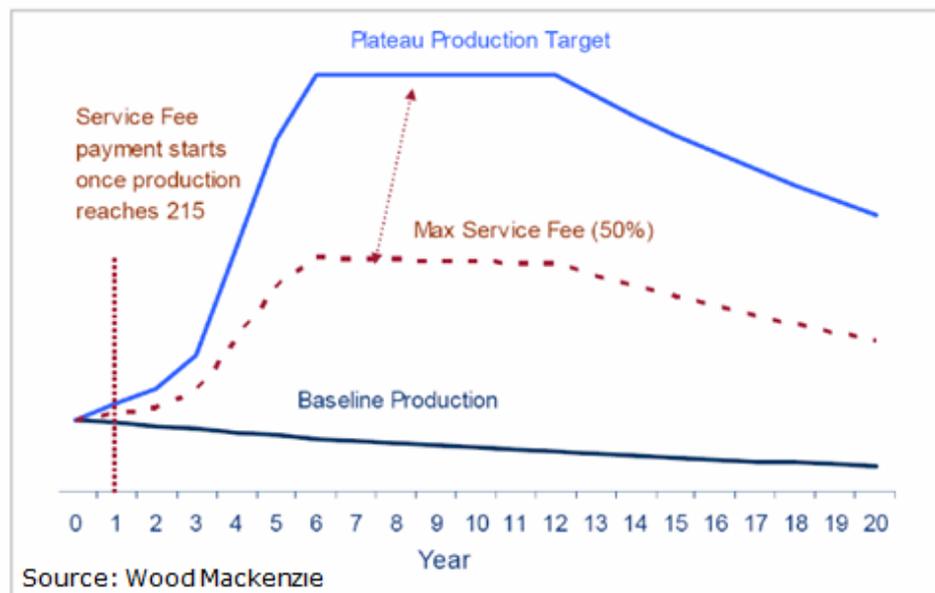
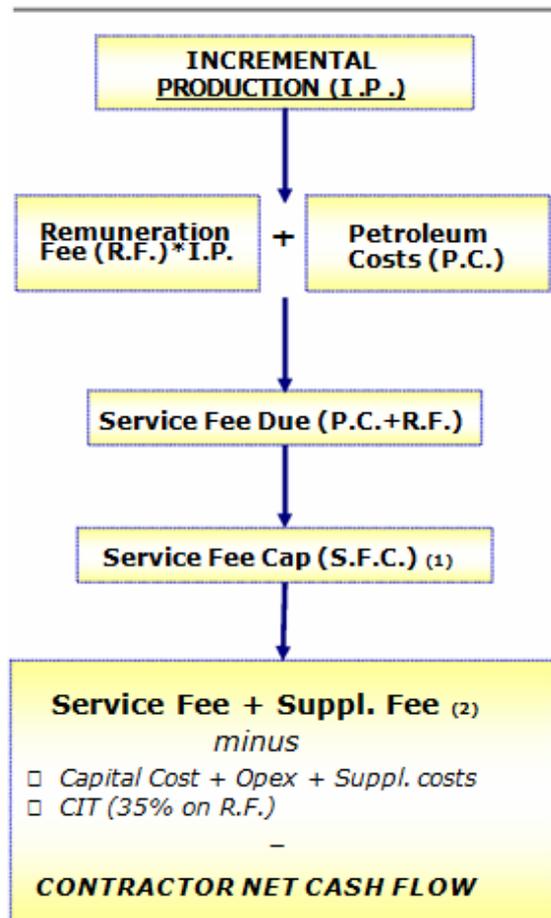
Husari On Contracts

- Technical Service Contract – For Producing Fields
 - I: Rehabilitation Phase – 3 Years
 - Rehabilitation
 - Stop suboptimal operations
 - Arresting Production Decline
 - Achieving Sustainable production 10% above initial rate (as soon as possible)
 - and Appraisal (for both producing and non-producing reservoirs)
- By the time the rehabilitation phase ends, output is expected to be up by at least 30% as they embark on an enhanced redevelopment plan.

Timeline of a Development and Service Contract



Zubair Service Contract Flow - ENI



The contract term is twenty years with an optional five-year extension



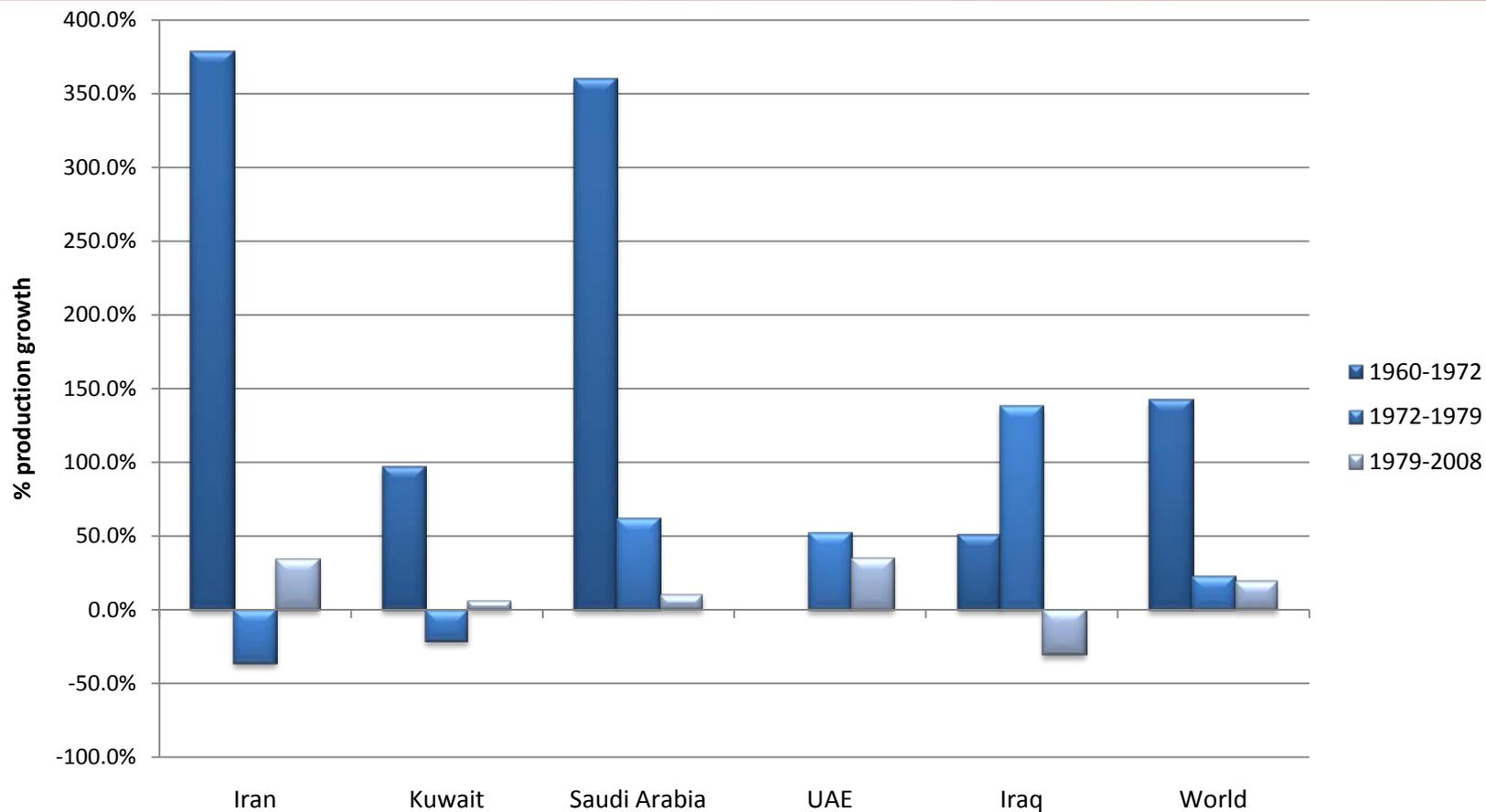
eni

(1) Extent of a maximum of 50% of the I.P. revenues

(2) Max 10% of Baseline Production revenues

History

ME Crude Production - % Change Across Historical Periods



Post UN Sanctions - 1995

- Iraq's longer term objective of reaching **crude oil output of capacity of 6 mm b/d includes an interim goal of 5 mm b/d by 2000.**
- Iraq has signaled its intention to **allow foreign companies to operate in its oil sector...[and]** a re-introduction of production sharing and greater involvement in exploration and production...
- Given this development, **crude oil production capacity of 6 mm b/d seems reasonable**

Source: IEA, OECD

2003 – A Large IOC Presence in Iraq Proposed

An alternative is for the national oil company to enter into a contractual regime with international oil companies to expedite the process of rehabilitation and future production capacity expansion, instead of paying out cash payments to service companies.

Such arrangements would provide the state-of-the-art technology, training and investment capital.

Such arrangements could take the form of buy-back service or production-sharing contracts

Tariq Shafiq, writing in 2003

Iraq's Production has Remained Stagnant

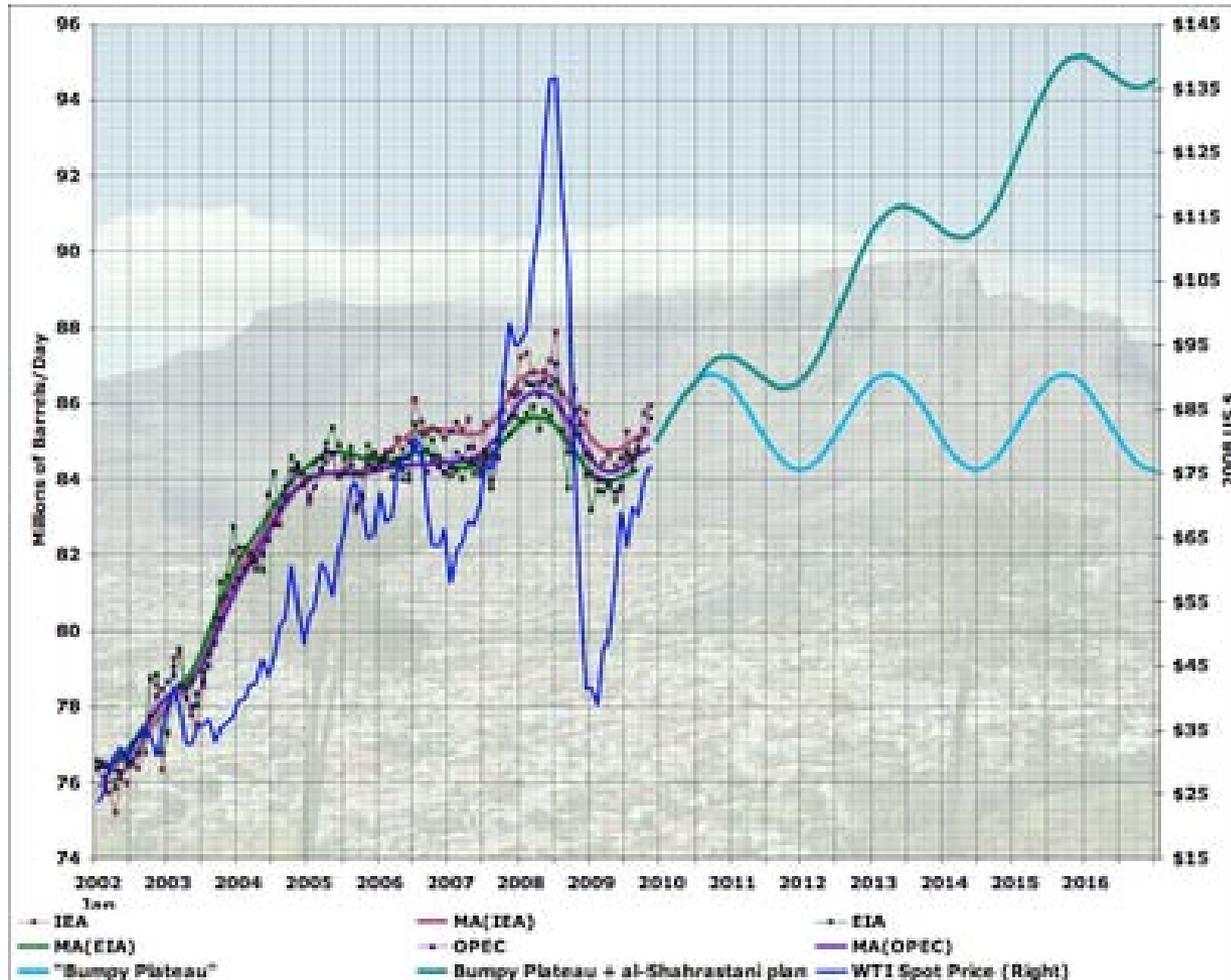
- Production capacity is still below what was prevailing prior to the US invasion in 2003.
- Since the beginning of 2004, production has remained around 2 million b/d
- The increase during the past two years has been due to opening infrastructure in the North (no new production capacity)
- At the same time there have been significant declines in the large Southern fields

Implications

What Will Iraq's Production Surge Do to the World?

- OPEC Collision
- Oil Prices
- Alternative Fuels
- Peak Oil Perceptions

Global Oil Production Implications



Iraq's Potential Impact on "Peak Oil"

I have been associated with the view that oil production would not go too much higher. You can see articulation of this point of view, for example, at old Oil Drum pieces like [Why Peak Oil is Probably About Now](#), and [Hubbert Theory says Peak is Probably Slow Squeeze](#).

*It seems to me that the possibility that Iraq may actually succeed in doing this should be taken seriously. If it did succeed, that would act to delay the final plateau of oil production **by a decade** (ballpark)*

Stuart Standiford, former staff member, The Oil Drum (a "Peak Oil" journal)

