

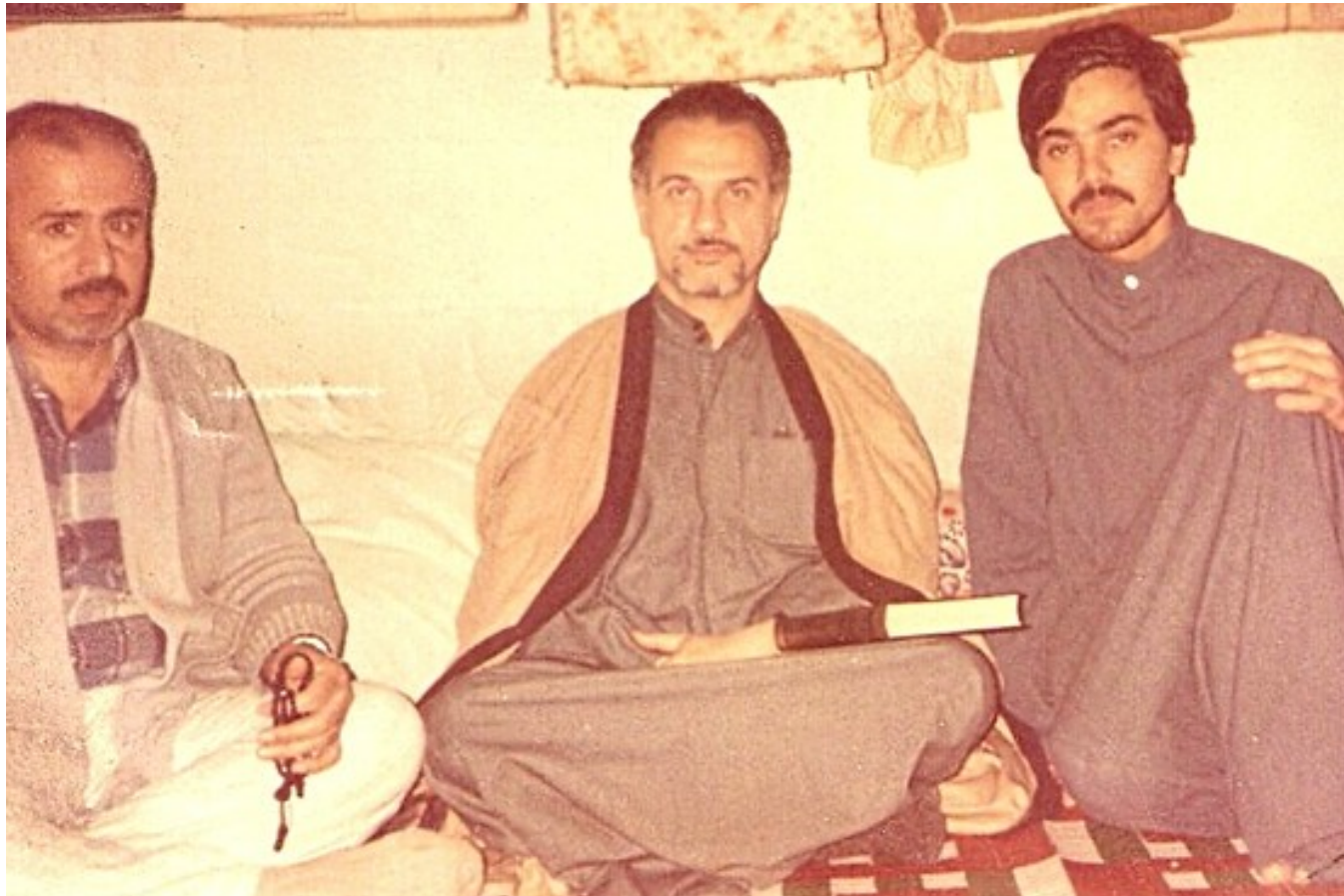
Iraq's Ambition



**Forum on Global Energy, Economy, and Security
June 14-17, 2011
Aspen, Colorado**

The Auction

Shahristani – Release from Solitary Confinement at Abu Ghraib



Oil Ministry “Leapfrogged” Its Legal Dilemma –

- Draft Oil Law was submitted in Feb. 2007
 - Iraqi production was declining & funding inadequate
 - But Draft Oil Law never passed – it was held hostage to a ongoing Kurdish veto
 - For two years development of a successful framework for working with foreign oil companies was “frozen”.

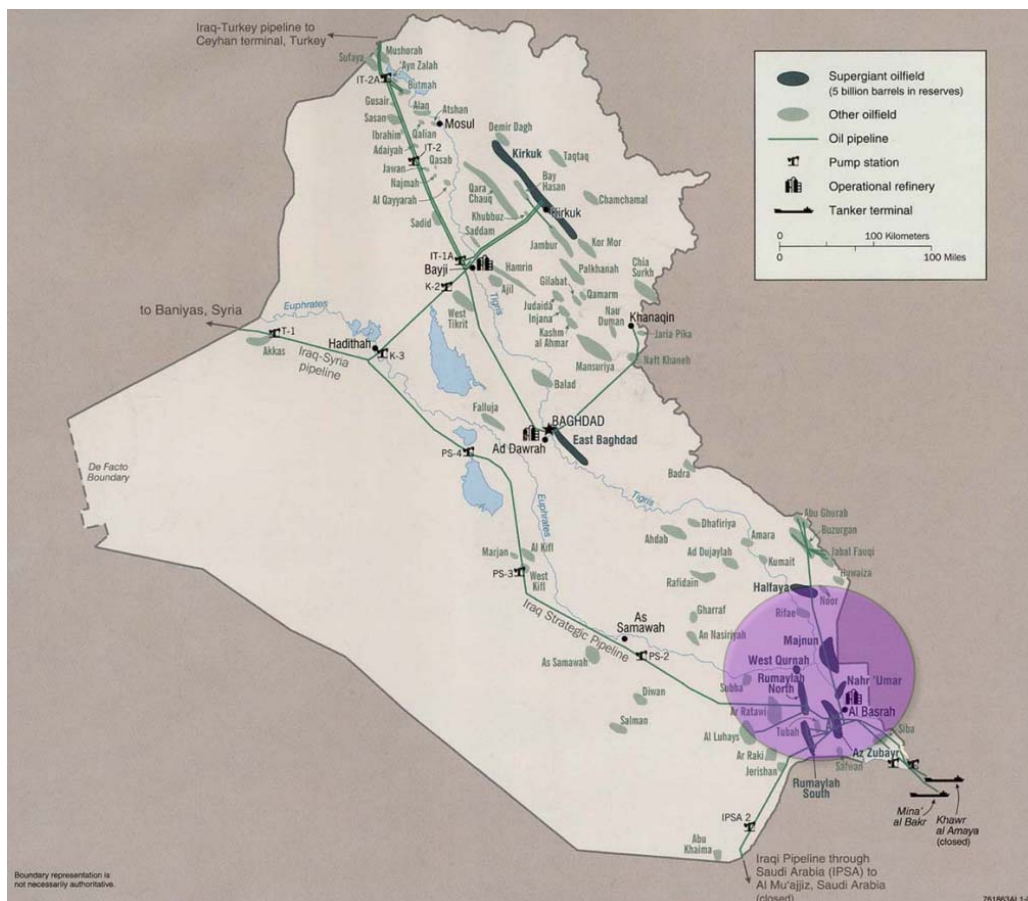
By early 2009, the Oil Ministry through its government “leapfrogged” this impasse.

- For the 2009 auctions the Ministry used a 1987 law and linked it to a clause in the 2005 Iraq Constitution.

The Result

- Power to sign contracts with foreign oil companies now reside in the Ministry
- Contracts with foreign oil companies do not require a parliamentary vote for oil deals.
- Despite the concern about the strength of the legal authority of this format, it has held up.
- Political opposition has been virtually absent
- One legal challenge by a former MP was scuttled by a court ruling in 2010

The world's largest concentration of oil - 60 billion barrels of oil within 100 km radius



"We did a private evaluation of Iraq's oil resources for the government... We believe they are probably greater than Saudi Arabia's."

—an executive of one of the original Aramco partners, and an Aramco Board member, in a private conversation in 1987

The December 2009 Iraqi Auction is the Largest Single Transfer of Petroleum Reserves into the Oil Market in the History of the Petroleum Era

Iraq's Oil Contracts – The Basics

- Iraq's contracts were intended to enable world class oil companies to work in Iraq
- But Iraq's political context did not allow for a format where foreign companies assumed equity ownership of reserves and production.
- The technical service contract format that was adopted achieves both: It allows the foreign company to assess, bid for, plan, and execute oil developments in a format roughly the same as it would use in Western oil regions. But these activities are performed within a tight regulatory framework with a minimal level of financial profit.
- Foreign companies can make decisions only in committee with the Iraqi regional oil company assigned to the field in question, and political representatives of the local area.
- Estimates of prospective financial returns have generally been a return of roughly 10% to 15% on their investment over the life of each project.

Contractual Requirements and Incentives

- Iraq's contracts are built around a time schedule – the overall goal of the contracts is to bring on the greatest possible volume of production as quickly as possible.
- Once a foreign company wins and signs a contract, there is no luxury of time. Producing plans, drilling appraisal wells, stopping field declines and then building infrastructure are all stipulated in the contracts
- There are powerful incentives for reaching production goals quickly and penalties if minimum production levels are not reached at contractual timing.
- Company returns are independent of oil prices levels. Activity will not slow during low price periods. Iraq itself holds the price risk.
- There are no explicit contractual rewards for cost efficiency. Speed is rewarded; efficiency is not.

Technology, efficiency and speed

- Much of the power of the Iraqi oil developments lies in applying current oilfield technology to a country that has not had access to contemporary techniques since the 1970's.
- While efficiency is not built into the contracts, the goals of volume and speed require the greatest application of sophisticated technology available. The Iraqi oil profession, competent, but unexposed to current tools in use, will benefit greatly.
- Where there is “waste” due to a lack of economic penalties for higher costs, the benefit will likely go to those companies who work directly or indirectly for the operating oil companies.
- Oilfield service and drilling companies, companies involved in construction and road building, de-mining training and environmental activities will not be regulated.

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

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.

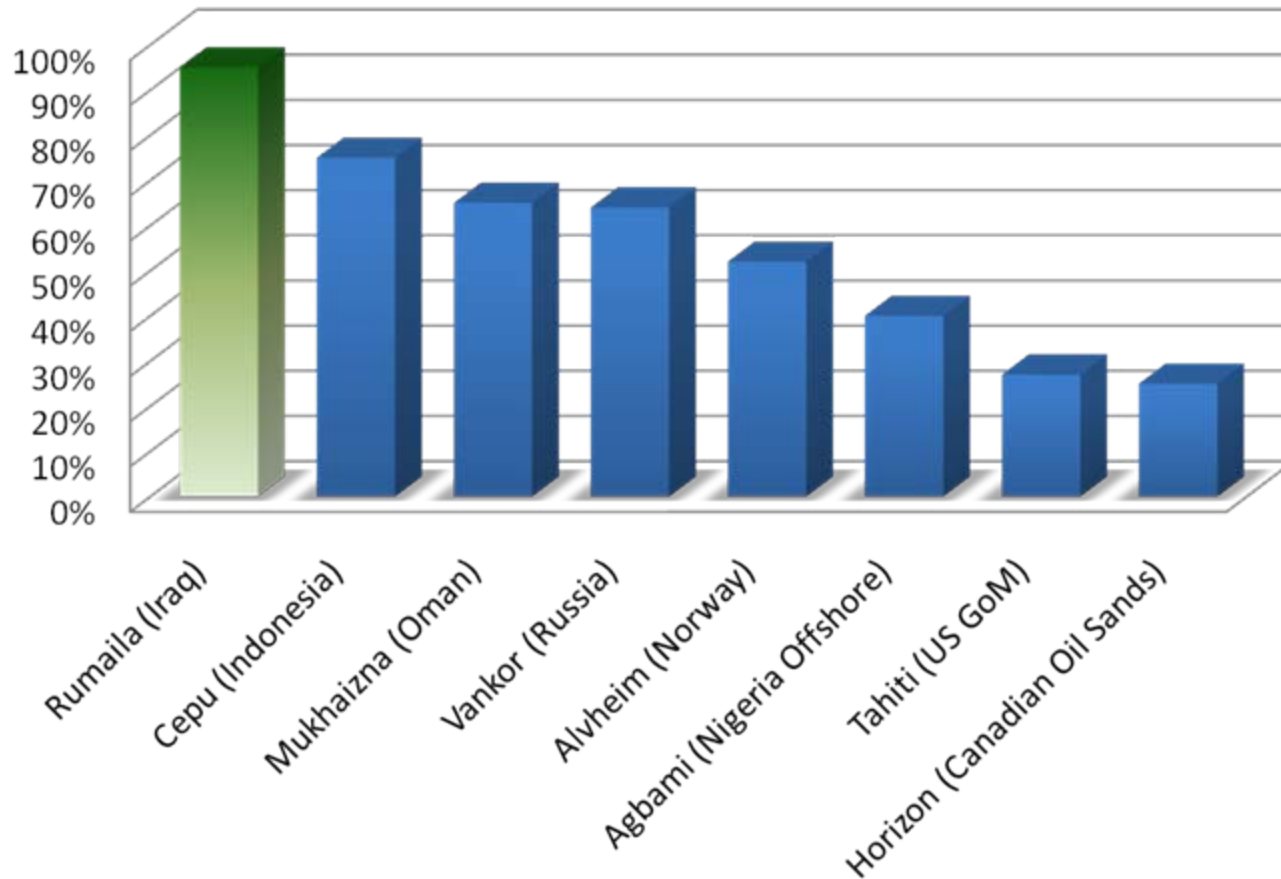
How 6 mm bd became 12 mm bd - overnight

- After 1980, Iraq embarked on 5 separate oil development plans, always with a target of about 6 mm bd over 5 or 10 years.
- The 2009 auctions targeted just over 7 mm bd assuming that 5 mm bd would be produced from the auctioned fields.
- This was the government representation and the industry's belief ***until the contracts were signed on West Qurna 1 and Zubair***. Combined with the production commitment of the Rumaila project, BP, Exxon and ENI were signing clear commitments to reach a combined incremental production of 4.8 mm bd on ***three fields alone***.
- It was at that moment that the Oil Minister began to articulate the 12 mm bd target for all of Iraq
- 12 mm bd remains a highly controversial estimate. Veterans of the industry say that the old target – 6 mm bd – is probably correct.

Company “bid volumes” were much greater than ministry expectations – This is WHY

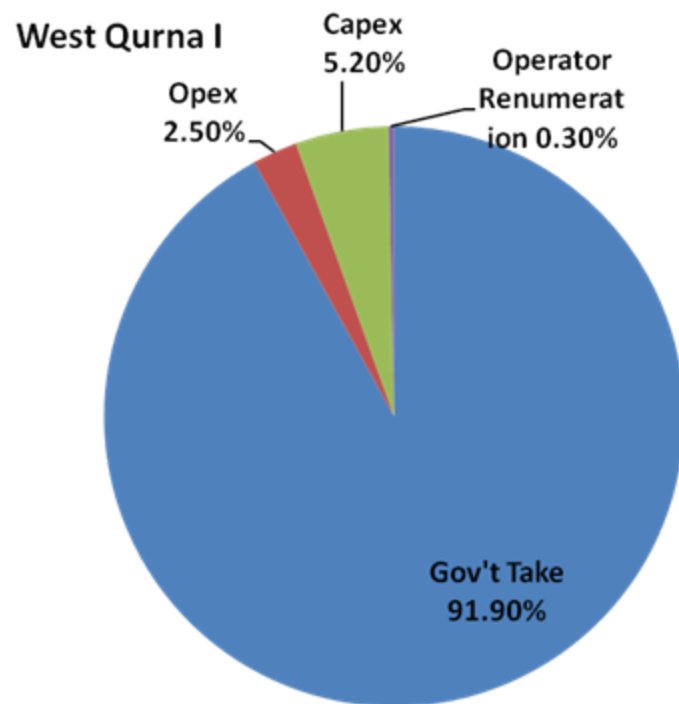
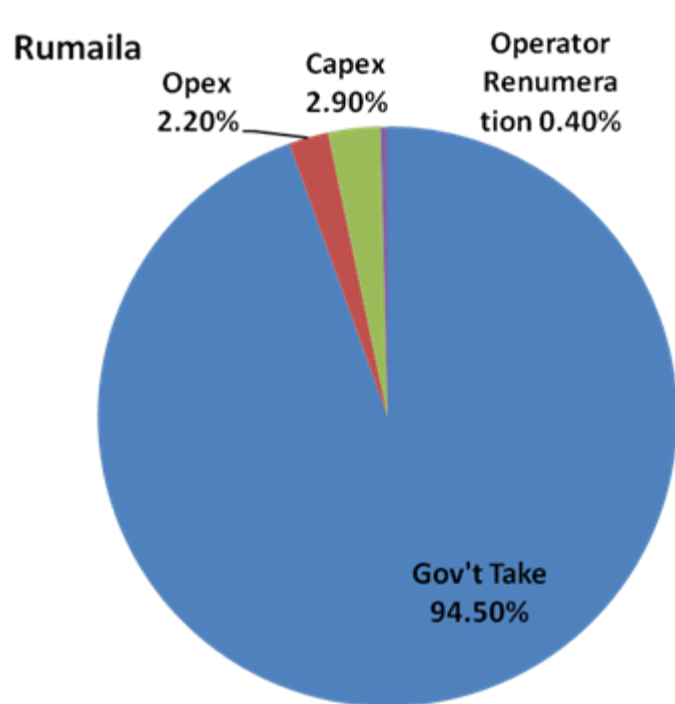
- Iraqi oil ministry personnel, data and associated expertise had close experience with the fields, but *on a format of 1970’s technology*
- The use of 3D seismic, deviated & horizontal drilling and much more accurate measurements of reservoirs revolutionized the development potential of all the fields.
- Recovery factors, estimates of oil in place and the speed of ramping up new production all provide a major uplift in reserve and production estimates.
- The oil in place numbers have received no attention, ***but one of Iraq’s key petroleum engineers told EPRINC that all of the current oil in place numbers are likely to be revised upward.***

Gov't Revenue Share Across Several Projects



Source: DB

Project Cash Flows



Source: DB Data

Rumaila - Cost Recovery Impact on Incremental Revenues alone

	Average Production (mm bd)	Production (billion barrels)	Revenue @ \$75/bbl		Capital Spending (\$ billion)	Recoverable Costs (\$ billion)		Cost Recovery as % of Total Revenue
2010	0.02	0.007	\$0.5		\$1.7			
2011	0.31	0.113	\$8.5		\$2.5	\$1.7		20.0%
2012	0.61	0.223	\$16.7		\$3.5	\$2.5		15.0%
2013	1.11	0.405	\$30.4			\$3.5		11.5%
<u>3 Year Total</u>		0.748	\$56.1			\$7.7		13.7%

Are the Current Contracts Secure from Political Pressure?

- EPRINC believes that it is highly unlikely that the Iraqi government will cancel, change, tamper or even adjust the existing contract structure.
- Oil, one of Iraq's great national blessings, is being set free from the captivity of the past 100 years
- Under EPRINC estimates of Iraqi production increases, government revenues will double by 2015 and quadruple by 2020. There will be sufficient revenue to both enable recovery from an drastic economic circumstance and to build a flourishing society into the future.
- The instinctive fear of foreign "theft" of oil resources has been calmed
- Allawi's recent comments opposing "the auctions" referred specifically to the gas auctions after the elections.



Over 90% of the oil
revenue goes to the
government over
the long-term



Equitable Revenue Distribution – the fly in the ointment

- The equitable distribution of oil resources remains crucial. A mechanism for doing so is contained in pending legislation which is tied to the draft oil law written in early 2007.
- These will not be addressed until a government is formed. They will not be passed until the “Kurdistan Veto” is overcome.
- A belief in equitable revenue sharing is also tied to the excruciating struggle for political power and the alliances that are being “explored”. Given the intense political rivalries involved, a solid legal sanctuary for an even handed access to the benefits for all Iraqis is extremely important

PRODUCTION PROFILES

(1) Work Underway Now

(2) Prospects for Expanding Output

Iraq is Breaking NOC Mold

- NOCs act to maintain their large store of reserves by producing slowly.
IOC maximize the net present value of their reserves by producing quickly.
- Iraq's contracts **provide incentives solely for speed of development**. They will challenge the development model of Gulf producers.

<u>Reserve/Production Ratios</u>	<u>Years</u>
Largest OPEC countries	90.1
All other countries	20.2
All IOCs	12.5

Iraq will look more like an IOC

Iraq at current production	134.1
Iraq at 12 mm b/d	26.3

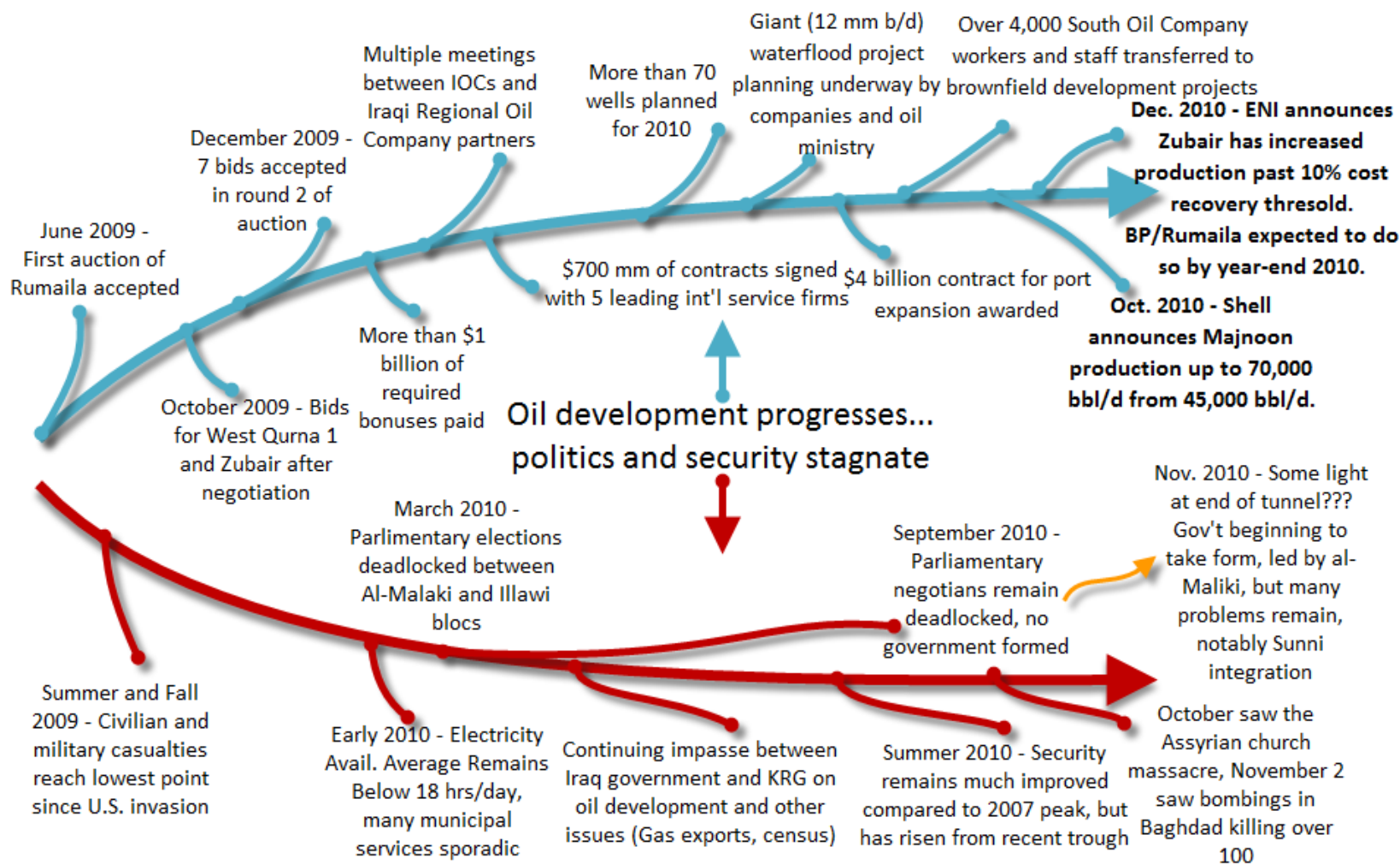
New Reserves Data

- 143 billion barrels
- 71% of proven reserves is in southern fields, 20% in northern fields (especially Kirkuk), 9% in central region fields
- West Qurna now largest field in Iraq (displaces Rumaila), 43 billion barrels (second largest field in world)
- Says won't accept quota until production reaches 4 million, but that it will decide its own production
- "Iraq will add around 300,000 b/d of new capacity by end □ 2011, pushing exports up to 2.2mn □ 2.3mn b/d" - Shahrastani

Oilfield progress continues, but future remains uncertain...

- Operators making tangible progress in fields
- Infrastructure plans being solidified and funded
- Security is a growing concern
- Uncertainties in bureaucratic process and corruption within central government and ministries
- Election dispute looms, along with potential opposition to oil and gas auctions

Delinking of Politics and Oil Development



Field Development Moving Rapidly

- Rumaila: \$1 billion investment in 2010, \$2 billion in 2011
 - 80-100 drilling tenders to be issued by 2011
 - 3 tenders to drill 49 wells at a cost of over \$500 million have been awarded
- Exxon expects to raise West Qurna 1 production 10% by 1Q 2011
 - Has contracted Haliburton to refurbish wells

Field Development Moving Rapidly (cont.)

- West Qurna II set for 230,000 bbl/d in 2012
- Shell has raised Majnoon production to 70,000 bbl/d from 45,000 bbl/d
 - *The production increase required "relatively little investment because infrastructure is already there," Shell CEO Peter Voser*

Work Beginning for Service Contractors

Southern Iraq is beginning to see operational bases from the major service companies being built.

- **Weatherford** contracted at Rulalia, Gharraf, and Missan Group
 - In 2nd quarter **Schlumberger** completed constructing 40 acre compound (Basra). Expecting 600 employees coming into Iraq by 2010 end.
 - **Baker Hughes** finished a compound in 2nd quarter. 30 employees currently stationed at compound.
 - **Halliburton** started constructing multiple operational bases and within last month has signed major contracts for Majnoon and Zabair.
- But these are mainly workover contracts designed to get production thresholds required for cost recovery. Super-giant field expansion contracts and projects will come later.

Additionally, substantial funding will be needed for:

Water processing (\$12-15 billion estimates), **Pipelines and terminals** (Ministry of Oil says \$50 billion), **airports, roads, employee and ex-pat housing accommodations**

Encouraging Geological News

- Well Flow Rates:
 - Public reservoir volume and flow rate data conservative
 - Initial flow rates of 40,000 bbl/d at some wells
 - Expectations of 10,000 initial and 4,000 over life of well (10-20 years)
- Recovery Rates:
 - Current reserve estimates assume 35% recovery rate
 - But rates of 45%-55% percent have been seen, can expect up to 65% in some cases

Iraq Crude Oil Export Expansion Project (ICOEEP)

- Seeks to expand export capacity to 4.5 mb/d from 2.2 mb/d
 - Project includes: 120 km of pipeline linking new single point moorings (SPMs) to terminal and fields, SPMs compatible with VLCCs, subsea valve manifold between old and planned export terminals, dredging for VLCCs, new onshore metering.
- New \$6 billion Fao port
- Leighton offshore was just awarded \$733 million for SPMs at the Fao and al-Basrah terminals

Iraqi Oil Technology Frozen in Time – Now Revolutionized

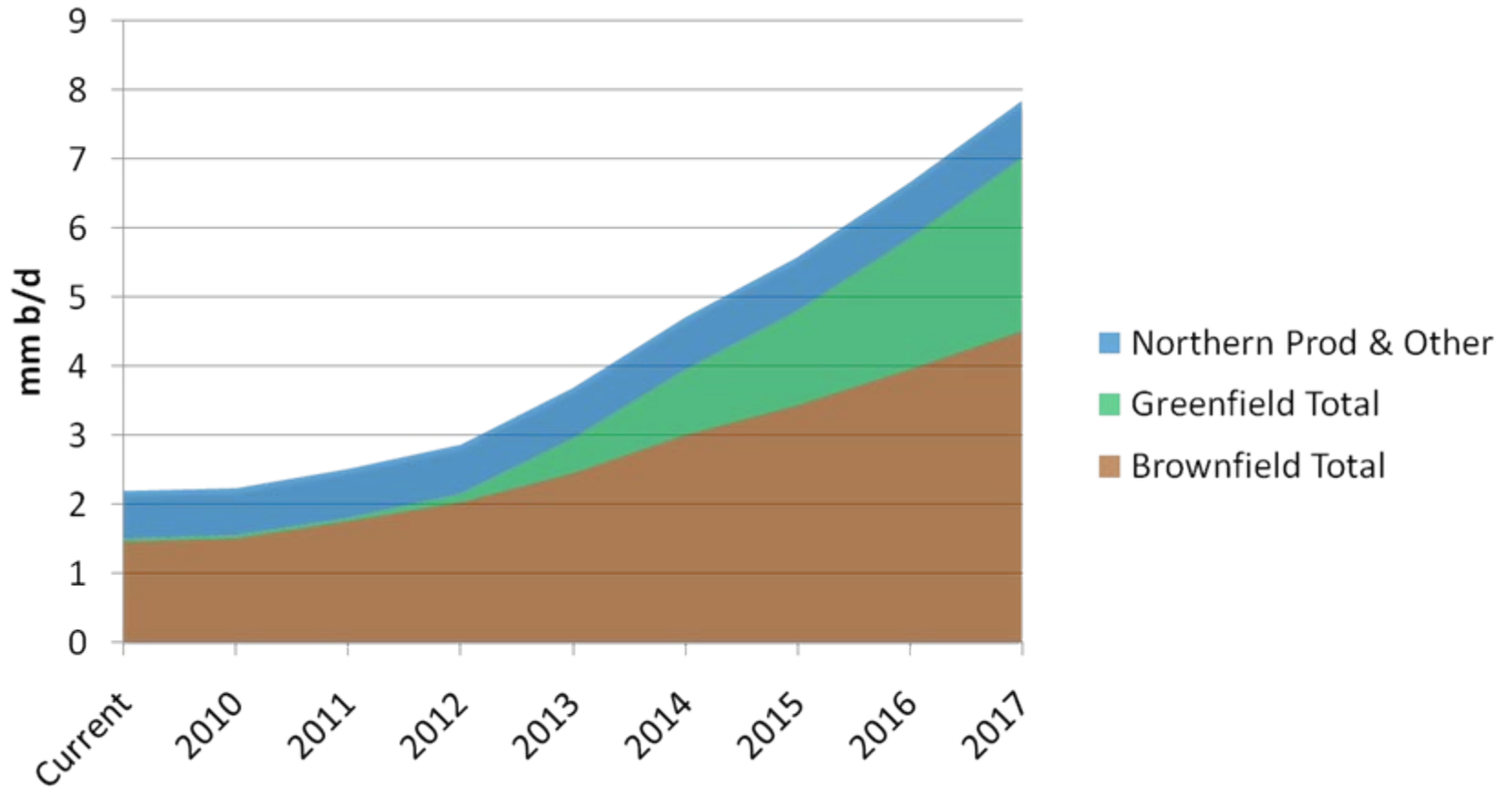
... a visit by veteran oil journalist Ruba Husari to Iraq's largest producing field

The work now underway in Rumaila is “...reversing the trend of continuous malpractice imposed by years of war and sanctions. Some of the techniques used in Rumaila date back to the 1970’s and have not been updated since.”

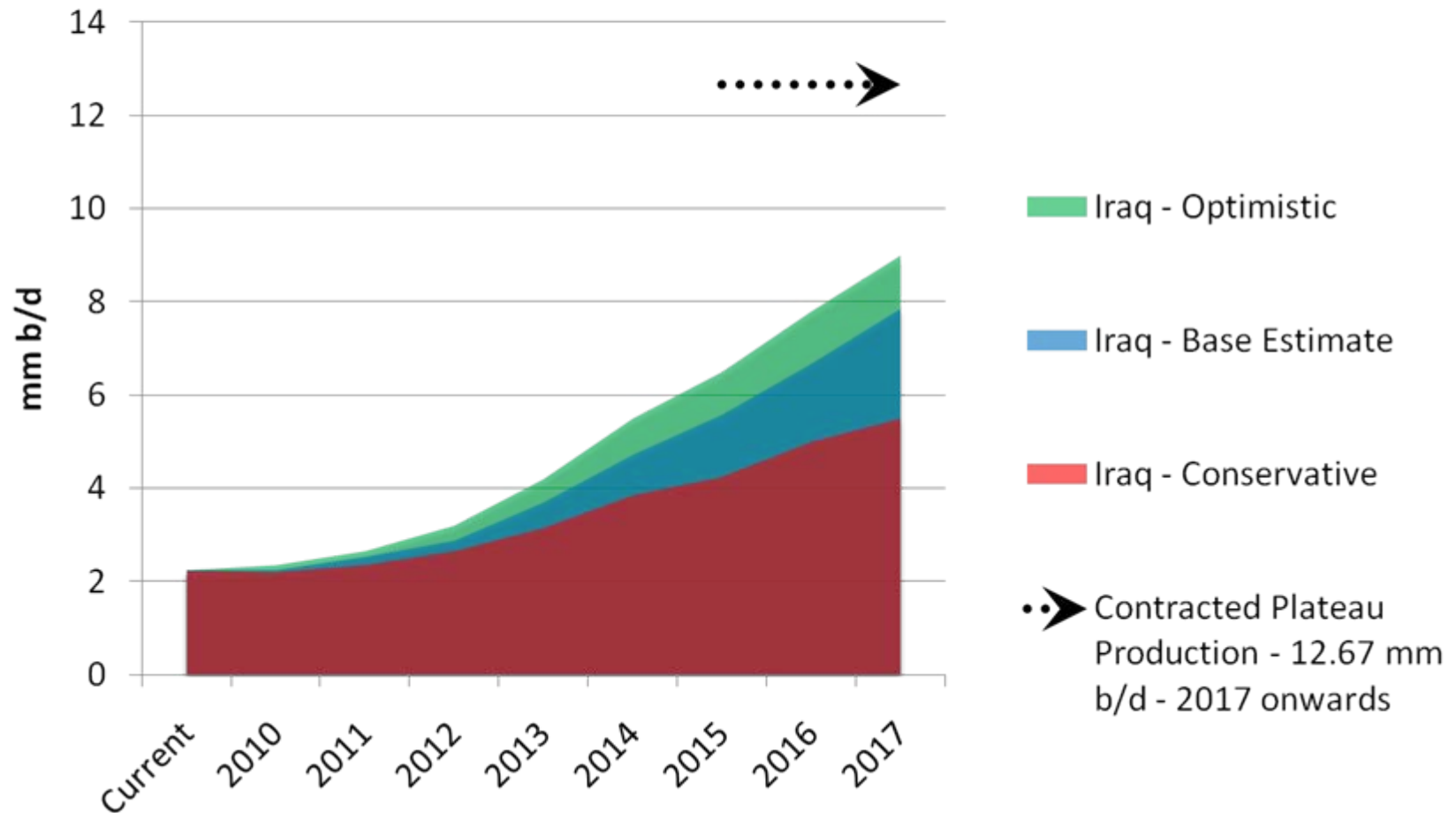
Basic tools, not available in the 1970’s, are available now: **electric submersible pumps, horizontal wells, 3-D seismic, sophisticated well logging**

As a result of contemporary technology, recovery rates are expected to rise from estimates of 35% to as high as 50-65% in the primary reservoirs in the Southern fields

Estimated Production in Greenfield, Brownfield, and Northern Projects



EPRINC's Optimistic, Base, and Conservative Estimates of Future Iraqi Production



Infrastructure and Constraints

(Real and Imagined)

Impediments

- Demining
 - Mines everywhere – onshore and offshore
 - Demining manpower short by perhaps a factor of 100
- Big Project Regulation
 - Large projects will be subject Ministry red tape and frequent delays
- Invoices for Cost Recovery...
 - are submitted to the Ministry – unknown how these will be audited and processed

Impediments (cont.)

- Bureaucratic congestion and delays for smaller subcontractors
 - In addition to congestion being a physical problem, getting people in and out may be slow (i.e. visa problems, paperwork, etc)

Financing for Infrastructure not Included in Contracts

- Cost recovery from oil revenues could be politically sensitive
 - likely to be dealt with by royalty in kind.
- Unknown how the Exxon-organized waterflood project will be paid for
 - could be treated as a contractual “supplementary cost”, financed as a loan, and paid back “in kind”
 - Foster Wheeler port contract will be paid for in two tranches and is allocated in 2010 budget

Pipeline Status

- Iraq has **five main pipelines, two are either closed or inoperable.**
- This distribution network moves crude to Gulf or Mediterranean ports or to domestic refining.
- Two tanker loading facilities (Khor al Amaya and Al Basra) are linked to the Fao terminal on the Gulf coast. Al Basra was expanded in 2007 by the US Army Corps of Engineers bringing capacity to 1.7 mbd (but poor pumping equipment still limits to 1.7 mbd).
- In 2006 an explosion greatly damaged Khor al Amaya leaving capacity at just 100 kb/d.

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

Infrastructure Issues

<u>Issue</u>	<u>Status</u>	<u>Comment</u>
<u>Security</u>	In place	Current violence is in the North
<u>Oil Service Companies</u>	Most company tenders made	Schlumberger, Haliburton, Baker Hughes, Weatherford, Chinese, Turk, and Iraqi Companies
<u>Oil field Equipment</u>	Accessible outside of Iraq	No concerns by service companies
<u>Skilled Labor</u>	Largely foreign company employees	Skilled Iraqis at retirement age, others need training
<u>Waterflood</u>	In planning with Exxon-Mobil heading a committee of producing companies	Massive 12 mm b/d of water to all Southern fields. Target date – 2013

Infrastructure Issues, continued...

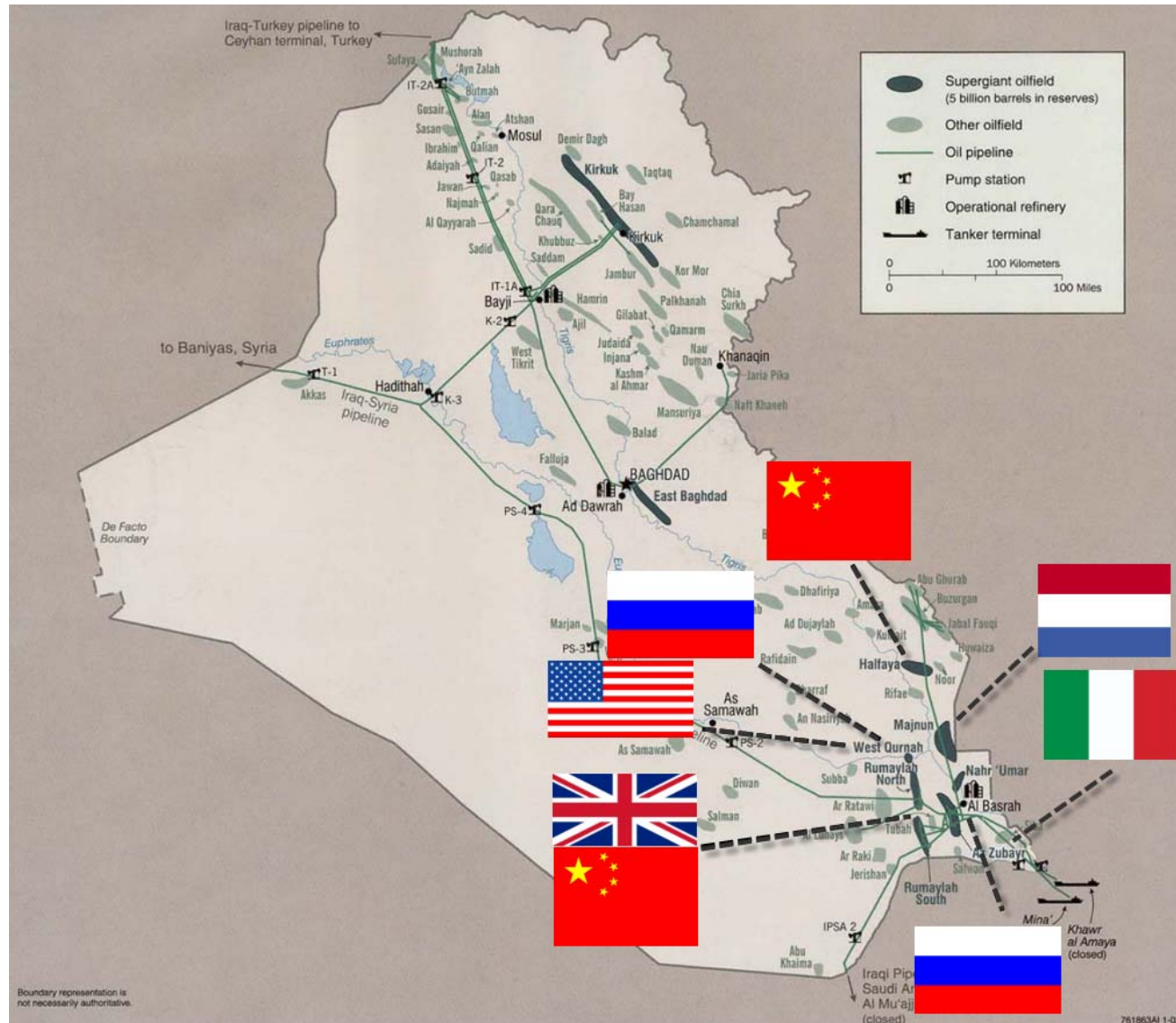
<u>Issue</u>	<u>Status</u>	<u>Comment</u>
<u>Incoming Ports</u>	Adequate now, may be subject to congestion in a few years	Conflict with incoming consumer goods. Expansion may not be difficult. Arrangements with Kuwait could significantly ease problem.
<u>Oil Export Ports</u>	On paper, only adequate until 2013	Technologies could provide near term expansion. Agreements with Kuwait would greatly help. Large Iraqi-financed Pipeline across Saudi Arabia to Red Sea was closed in 2000. Construction of a pipeline through Syria under discussion.
<u>Strategic North South Pipeline</u>	In disrepair, no apparent discussion of rehabilitation.	In its absence, Northern export capacity will be significantly underutilized, putting burden on Southern exports.
<u>Iraqi Bureaucratic Infrastructure</u>	Thin and often inadequate essential to payments of pipeline	A highly important element for the oil developments. Ministries have been and port contracts very politicized. Late payments could slow overall developments.

Security And Politics

Security Concerns are Numerous – But not Crippling

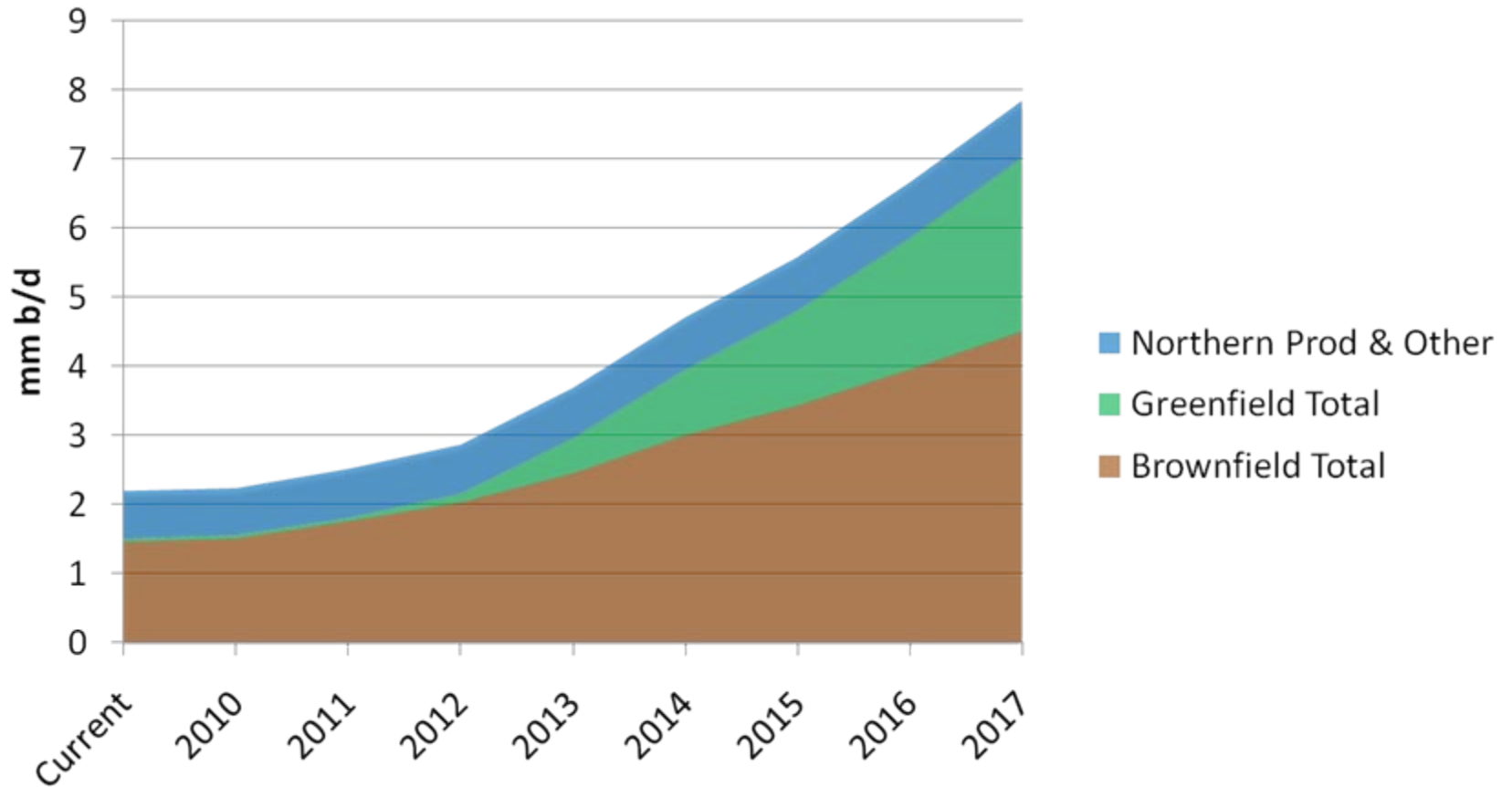
- Kidnapping and extortion
 - Latin America style with ransom demands
- Tribal threats – often territorial or with political agenda – can be countered
- Attacks carried out against local law enforcement
- At the moment these are more cost issues than anything else and are manageable and are not expected to cause delays

4/5 of the UN Security Council (and then some) Operating Iraq's Southern Supergiants

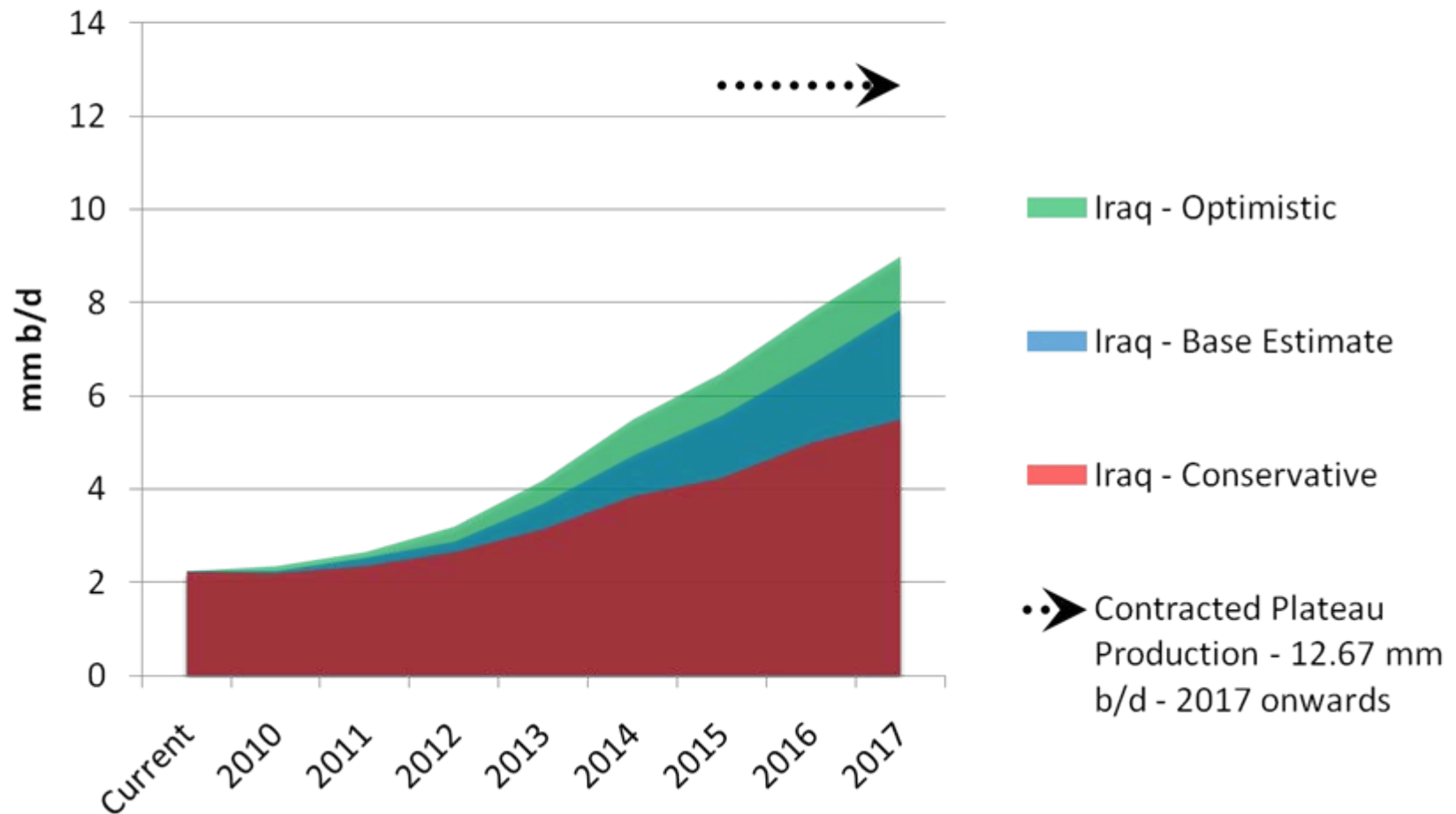


How Might Iraq Shift Long Run Expectations on Oil Prices

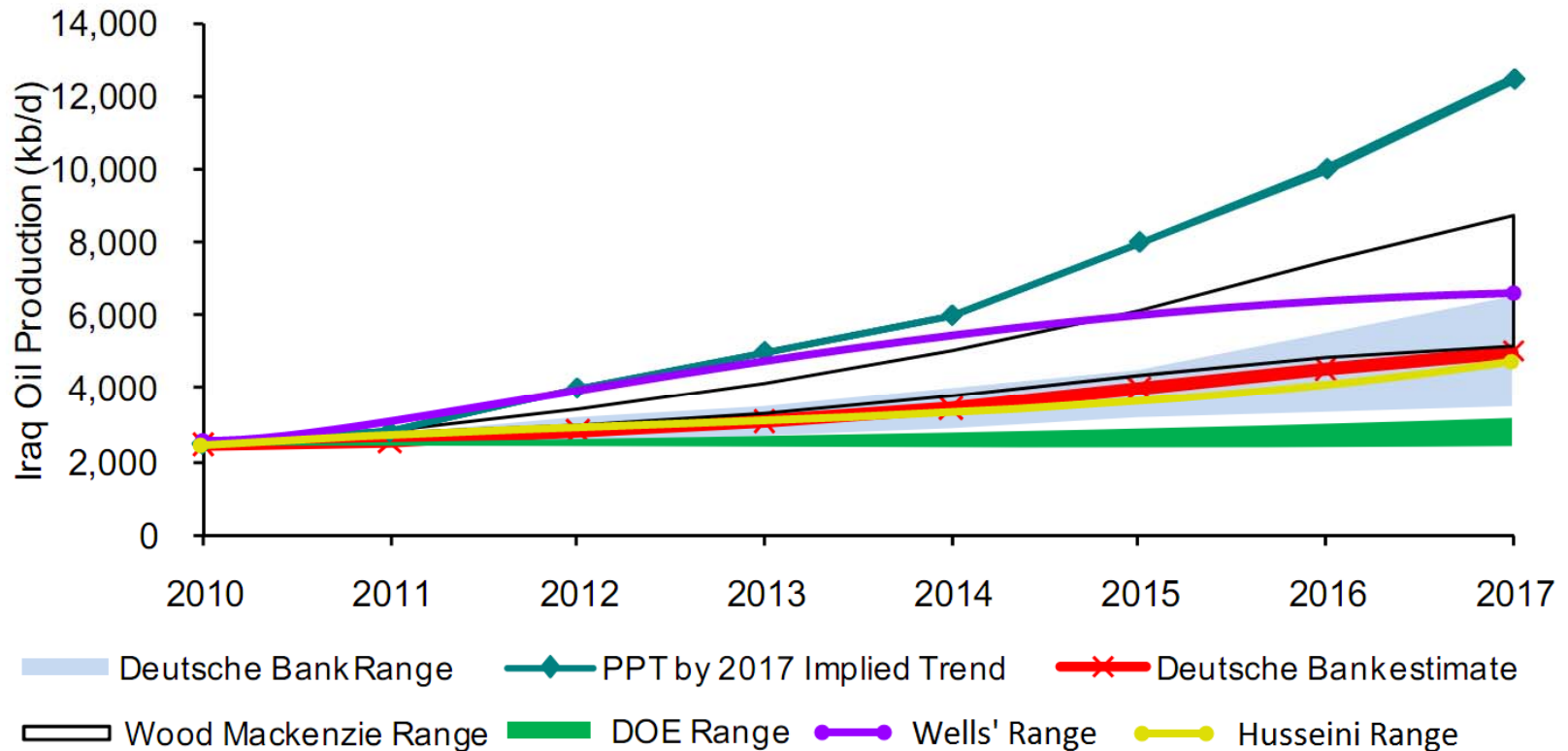
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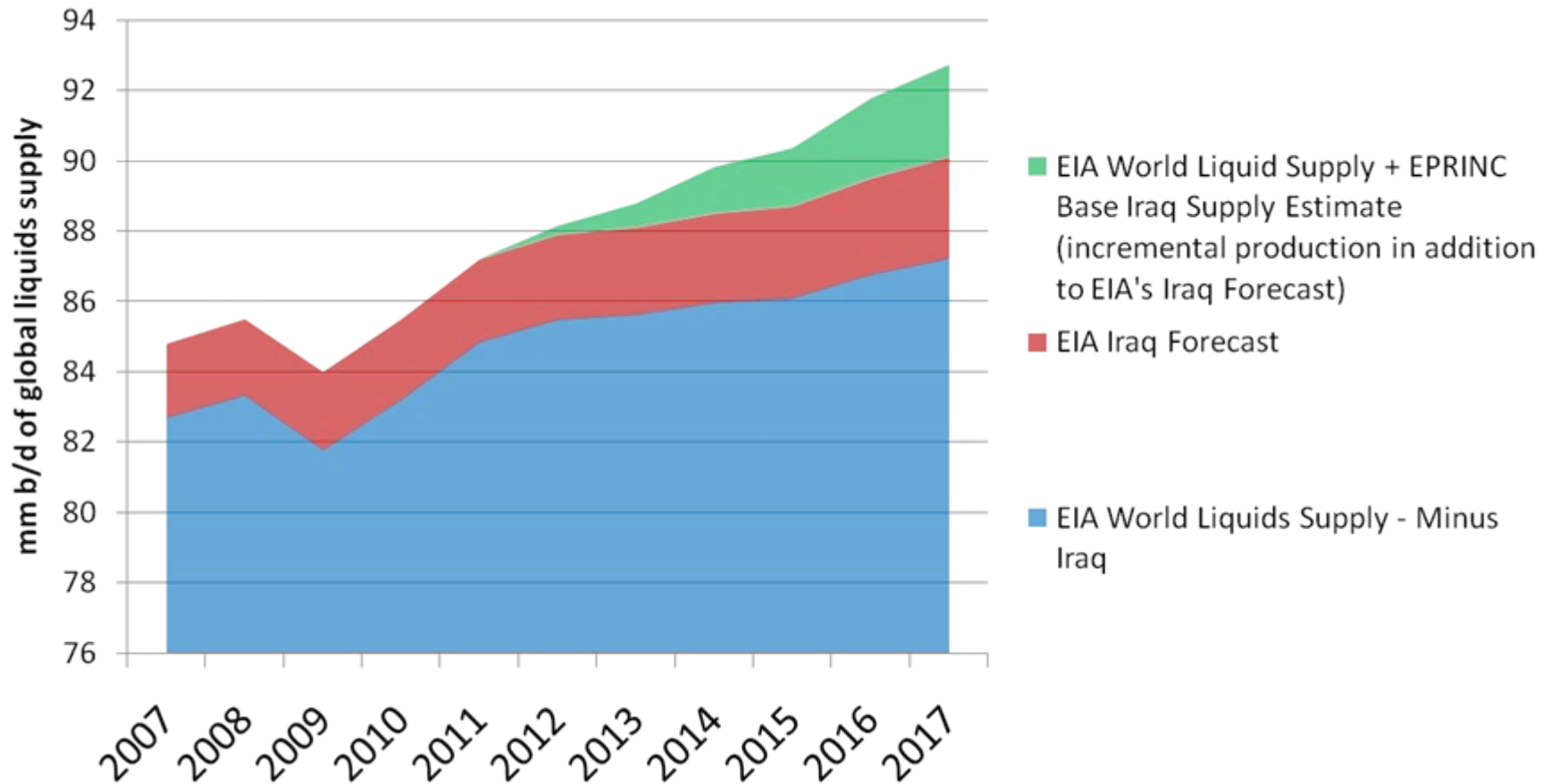


Range of Expectations for Iraqi Production



Source: DB, Hussein Energy, Neflex

EPRINC Forecasted Iraqi Production – Impact on EIA Reference Case



When will rising Iraqi production impact oil prices and OPEC?

- Companies have been content to hold historically high levels of inventory in the past 12 to 18 months but they will not be when they believe supplies will rise more quickly (Iraq) than global demand
- EPRINC believes that by 2014 or earlier, oil markets will begin to see larger Iraqi increments as a reality
- Prices will be constrained or may fall (higher downside price risk)
- OPEC will attempt to regroup and to “re-instate” Iraq into OPEC production arrangements