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The future of Middle East oil in a globalized world

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The role of the Middle East in the world oil supply to 2010, 2020, 2050
Economic and technical determinants

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OUTLINE

I. ON LONG-TERM CONSIDERATIONS IN ENERGY MARKETS OUTLOOK.

I.I Long term scenarios and 2030 energy perspectives

What cannot be expected

Predictions or forecasts, especially with quantitative assessments

Reliable probability estimates, even in the case of reference scenarios

Deterministic guidelines for action

Defining to-day the best policy to follow for the next 3 or 4 decades

Integrate and compute the consequences of radical discontinuities or catastrophes.

Potential global contribution

Alternative images of how the future could unfold;

Descriptive scenario outline possible (or probable) developments;

Normative scenarios attempt to incorporate the consequences of specific modifications in policies, institutions, technologies etc;

Identification and evaluation of the main drivers for change, including new paradigms or essential new factors which may dramatically change the future (e.g. Environment, information technology) their specific dynamics, the potential impact of their evolution.

Testing the internal consistency of a set of assumptions and key relationships

Clear cut distinction between endogenous and exogenous factors (e.g. prices).

Aid for efficient strategies of permanent adaptation to new situations.

I.2 Some of the most challenging issues of the 2030s energy perspectives for the Gulf countries

Will the world "thirst for energy "continue to grow around 2% a year? and particularly what will be the evolution of the most important market for Gulf oil: Asia? Is a world oil production over 120 mbd by 2030 required and possible, and can the ME contribution reach half of it

Will the Gulf producers, primarily SA, take full advantage of their reserves and low costs oil situations to take a dominant position in supplying the bulk of the increase in oil supply by 2030? Is there a global security risk if they succeed? and is there a major economic risk if they fail?

Will the main drivers for change, determining the actual issue, come from resources constraints and security concerns, or from environment and technology? and what will be the role played by oil companies and importing countries' governments.

How much and how rapidly will the substitutes for conventional oil increase their absolute contribution and their market share? What is the long term significance of the climate change syndrome and the "anti-oil" bias in parts of the western society?

Is there a possibility, in case of persistent high prices, of an acceleration of the process of substitution to oil leading to an economic depletion of oil reserves before their physical depletion?

Which policy mix of capacity; volume of production and prices will then be considered as optimal by Gulf producers in order to maximize their revenues , the value of their reserves, and the perspectives for their economic and social development?

Is the opening of their upstream oil sector an absolute necessity for Gulf countries to obtain the financial and technical means to increase considerably their productive capacity?

1.3 Key factors and "hot spots" concerning energy supply and the role of oil by 2030.

Energy supply will register a continuous growth, but the rate of growth will slow down. No global resource constraint or oil scarcity.

The years 2015-2020 will be a watershed period (Nuclear, non-conventional oil, carbon emissions policies)

Oil will remain the dominant fuel, its stationary uses will be reduced, but for transportation, there are no dependable substitutes before the 2020s.

Natural gas increases its share in world energy supply, this growth might be slowed down, but not reversed, by infrastructure and financing difficulties.

Non conventional oil will constitute a sizeable part of total oil supply in 2030.

Coal may keep its place as an abundant and cheap fuel, especially in Asia, but high uncertainties arise from the magnitude of technical changes in matter of cleanliness, efficiency and responses to constraints on carbon emissions.

The future of nuclear energy is widely opened, the decisive datelines are around 2015-2020

Renewable energy may start playing a significant role after 2020 in their "modern" form, much depending on political will to support R. and D. and intensive diffusion efforts.

II. TWO POLES SCENARIOS FOR TOTAL OIL SUPPLY BY 2030 AND THE CONTRIBUTION OF GULF PRODUCERS

II.I Some basic relations in the POLES model.

Main assumptions in the oil and gas discovery model

Ultimate Recuperable Resources (URR) estimated from USGS figures modified through the period to account for increased recovery rates.

Discoveries depend on the drilling effort

Reserves are equal to total discoveries minus the past cumulative production

For all regions except the Gulf, the production depends on a price-linked to R/P ratios. Gulf producers act as "swing producers " to adjust supply to demand.

Oil international prices depend on world R/P ratios

II. 2 Two scenario for 2030: a reference case and an abundant resources case.

Reference case

URR are computed from USGS "mode estimate" (50% probality) integrating increasing Recovery Rates.

URR of world conventional oil: 4000 Gtep by 2030

Increased R R and non-conventional limits the decline in total reserves..

Increased production levels half the R/R from 44 years to 22 by 2030.

Abundant resources case

URR: USGS upper estimates (5% probability).

URR near 4500 Gtep.

Increased resources benefit more non-Gulf and non-OECD countries.

Prices are lower.

II.3 Main differences between the two scenarios and possible contribution to the analysis of the situation of ME producers

Production structures and the role of the Gulf are very contrasted in the two cases.

In the abundance case, oil production is 128 mbd, as compared to 121 in the reference scenario.

In the abundance case, Gulf production is 14% less by 2030. , OECD 50% higher and other 63%.

Gulf share is 38% of world total production, (47% in the reference case),OECD 13% (9%), non OECD 40% (34%).

Paradoxically, the non -conventional share is significantly lower as a result of lower prices. (9% insted of 14%.

The differences in URR Abundance and reference decrease over time due to lower recovery rate and reduced role for Non-conventional.

Some implications of the comparisons

Major importance of further studies on the art of reserves and resource endowment.

For the ME, an abundant resource scenario means reduced production and prices (because the resources are mostly "elsewhere").

In any case, the demand addressed to Gulf producers is in the magnitude of 50 mbd or more by 2030.

III. CAN AND WILL THE MIDDLE EAST COUNTRIES PRODUCE ABOUT 50 MBD BY 2030?

III.1 The global picture

If the world oil demand reaches 100 mbd by 2020 and exceeds 120 mbd by 2030, it is obvious that non -Opec, and more broadly non-ME is not the main answer.

It is de facto considered by most analysts that ME oil will flow to the rest of the world, first of all Asia, at a minimum level of 40 mbd in 2020 and over 50 mbd by 2030.

The 1999 ME oil production approximates 21 mbd. In 20 years more than the present production should be added, and the increase is bound to continue at least until the early 40s when conventional oil supply will decline even according to the optimistic views.

Such a trend should not be considered as a natural and guaranteed fact, and requires many specifications and assumptions, and bear important consequences for the world geopolitical situation.

There exists serious possibilities of disruptive forces preventing the ME to play its attributed role of ultimate oil supplier for the next 30 to 40 years.

We do not treat here of the alternate radical situations in case of an uncontrolled evolution of supply and demand leading to a drastic adjustment of the world economic and social conditions. But such an occurrence should never be completely ruled out.

We will rather examine some of the most significant aspects of the "ME as dominant producer".

III.2 Geophysical and technical possibilities.

The controversy between the "reserve pessimists" and the "reserves optimists" fills the pages of the specialised literature. Whatever the "true" figures, (1200 Gb to 3500 Gb),the pre-eminent position of the ME is an evidence for every contributors to the subject.

The smaller the estimation of Ultimate Recoverable Resource level, the stronger the ME position concerning resources and reserves.

Currently adopted estimates sum up the ME dominant position through widely reproduced hard facts: ME countries hold at least 2/3 of proved world oil reserves, supply less than 1/3 of total production and have a reserve/production ratio around 100 years.

The cost of finding one bd of oil and the cost of producing one barrel are extremely low, especially in the two countries with the biggest reserves: Saudi Arabia and Iraq 10 US cents to discover a barrel, and $ 5000 to produce 1 bd more, according to the Saudi oil minister, compared to $ 4 and $ 10 to 20000 in other places.

Spare capacity has declined since 1988, but SA is practically the only producer with unused capacity (2 to 3 mbd) allowing an immediate increase in production. A rapid extension of capacity in several ME countries is a mere political question, whilst it is a technical and economic question in the rest of the world. The cost of advance spare capacity is lower than elsewhere.

III.3 The issues of dependence and security risks: conflicting views.

The foundations for a concern about dependence upon ME oil and security rest on a common sense evidence if ME production reaches or exceeds 50% of world conventional supply, and represent more than 75% of internationally traded oil, the vulnerability of the world oil system to disruption or scarcity will be considerable.

Common sense however is not necessarily reason, and various positions may be registered in the debate

> Market forces dominate and reduce to nil the "normal" risks of ME producers taking undue advantage of their resources (Lichtblau)
>
> Fear of dependency is "self defeating" as it accelerates the drivers for change away from oil and ME domination. (Stevens).

ME oil is needed, conditions should be established to allow orderly increases in production, the risks being reduced by the promotion of viable alternatives.

Political instability in the region carries a high risk factor. Possibilities of a brutal political change in the region opening the door for major disruptions:

External conflicts and unsettled relations both inside the region and with outside countries: Iraq, Iran, Peace process, frontiers disputes between many states, etc

Domestic political and social problems in most countries. Legitimacy of rulers challenged, growing pressure for political modernisation and economic reform.

Saudi Arabia is in the fore front of the "vulnerable states".

This pessimistic view may be mitigated by counter arguments

When is the level of dependency "too high"? is it 30%, 50%; 72%?

There are no examples of disruption for political reasons.

Whatever their political orientation, suppliers loose more by disruption than buyers.

Stability is better assured by prices high enough for ME states to distribute benefits of a "social pact" and comfort the status quo.

III.4 Incentives and hindrances for ME countries, especially SA to considerably increase their capacity and production in the next 30 years.

One key question is "Why should ME countries, SA first, almost triple their production by 2030?"

The political decision to satisfy the world increasing demand for oil will result of the combination of several conflicting perspectives where time is part of a complex strategy.

The rentier schizophrenia:

Civil peace and autocratic rule have to be bought through a social contract which requires huge revenues.

Genuine growth requires diversification from oil, and an efficient economy with taxes, no subsidies, and institutional changes.

For a difficult transition period, any increase in oil revenues deter fundamental reforms, as the status quo is more comfortable for the present rulers.

The high reserves-low costs producers dilemma. (The British coal syndrome).

Low prices and abundant oil lengthen the life of oil as a major energy. and maintain the value of reserves for high resources countries like SA, Iraq and to a less extent Kuwait and Abu Dhabi.

It antagonizes other producers and in the short term reduces the oil revenues of all.

All ME producers are now under strong pressures to maximize their revenues, but this does not determine a definite choice for the longer term.

Saudi Arabia has a decisive role to play and is directly affected by the contradictions between LT and ST considerations.

Its major objective is to maintain a "sustainable growth in oil use"

It has presently enormous revenues needs.

It has always used spare capacity as a weapon, but its short term policy of prices rather than market share reduce the incentive for developing capacity far ahead of medium production targets.

The main rationale for high production from the Middle East, whatever the present short term situation, rests on the future challenge on oil as a major fuel and the potential competition of alternative sources of energy .

III.5 The future of oil and the case for an early economic depletion.

"The stone age did not end because the world ran out of stones".

An abundant and stimulating literature deals with the possibility (not probability), of **an accelerated end of the conventional oil era,** after a period of high competition between producers (Lichtblau, Stevens, Cooper, Odell, Elbony etc). The ME producers would then loose their still important assets underground.

The main trends are well known: they challenge ME oil in the MT

Growth of production of competitive oil from "expensive" fields if prices remain high.

Technical progress, particularly improved recovery rates , increases supply.

Natural Gas uses increase for practical an environmental reasons.

Non-conventional oil plays a substantial role after 2020.

In the longer term, after 2020, the possibility of a major change in environmental perspectives and policies may drastically reduce the demand for oil.

The time factor will play a major role in the future of ME oil.

How to combine ST interests and constraints, and LT menace if high prices prematurely drive oil out of the main scene?

There are irreversibility and discontinuities as well as watershed periods. The years 2010/2015 will be of decisive importance for the future place of oil in the world economy, and thus the call for ME supply. (Nuclear, non-conventional oil, carbon).

There are also inertia of the energy system. The timing of decisions and the choice of the path to implement them may determine the LT outcome.

How long should a situation last to be considered as "durable" or long lasting by deciders. How is determined the perception and reaction lag, leading to decisions affecting long term perspectives? ex; What are the determinants of price reference for LT investments decisions, and are they changing with increased volatility of prices.

The implications of the reducing lead time between "acquiring acreage and the flow of oil" have to be given due consideration. This may strongly influence the approach of the capacity problem.

III.6 Some basic conditions for a high level Gulf countries oil supply by 2030

Not by market alone. Markets are not masters of time, LT objectives require strategies and proper timing of decisions.

It is a necessity to create the structural and institutional conditions for **some kind of price range** allowing ST fluctuations to balance supply and demand, and LT security for investments, creation of spare capacity ahead of previsional demand, and revenues.

Energy problems have to be considered in a **global perspective**, not oil alone.

Present US policy has been for a long period totally contradictory and counterproductive, a fundamental change is an absolute necessity ON MAJOR ISSUES

Reliance on military presence to guarantee Gulf countries security is costly and not adequate to cope with the real threats;

The use of economic weapons (embargoes, boycott), as a political tool is a dangerous model for producers, which invite them to politicize the oil supply in case of disagreements with buyers;

Some major ME producers are now excluded from the market game (Iran, Iraq, Libya in North Africa), and the security through diversification of transport routes (the pipe through Iran for Caspian oil) is deterred for purely political motivations.

Investments needs to develop known fields and discover new reserves are enormous. The upstream opening of SA to foreign companies has been on the agenda for several years. Political obstacles are adamant, but signs of evolution are perceived. The 2 main Producers of the next 30 years, SA and Iraq will necessarily propose agreements, under various legal devices, to allow the entrance of the flow of technical knowledge and investment capacity brought by the companies. It might be also a means to maintain a market for their oil.
The investments needs question has of course many other dimensions.

Consumer countries should put an emphasis on flexibility in the satisfaction of their energy needs, starting with energy saving policies, diversification of sources by regions and categories of fuel, stock building, acceleration of substitution processes.

All parties have a role to play in establishing the conditions for a high level of oil supply from the ME by 2030. It should be a positive sum game.

But nobody can exclude drastic changes in the rules of the game

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