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The U.S.-Saudi Partnership in the Changing Energy World

Perspectives from the Industry

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Robinson West: This is the second panel. The first panel was a political panel and we had the Minister and the Secretary of Energy. This second panel is a commercial panel. It's important to remember that the oil industry, the energy industry is really a business and it's about markets, it's about capital, it's about running big organizations.

Sam Bodman referred to a book, Teaching Elephants to Dance. The members of this panel have been trying to make some very large elephants to dance and they've been doing it very successfully.

The panel is Abdallah Jum'ah who heads Saudi Aramco; Dave O'Reilly, the CEO, Chevron; and Luis Giusti who had been head of Petroleus de Venezuela and is currently on the Board of Shell. So these are some of the most experienced commercial people in the world from different perspectives.

Our format is going to be to have each of them make some initial opening remarks, brief opening remarks. I'll go through some slides quickly, and then we'll have a dialogue. So Abdallah, may I turn it over to you first.

Abdallah Jum'ah: Thank you, Robin. You asked me to, you told me in the corridor to be short. I can't be short, but I will be brief. [Laughter].

Ladies and gentlemen, I was speaking last night at the Baker Institute at Rice University in Houston. I think the message I wanted to leave with everybody is we are ready to satisfy the requirements of the market. I have the mandate as the CEO of Saudi Aramco, I have a mandate from my boss, my government is to always keep between 1.5 to 2 million barrels of excess capacity because as some people indicated, that probably Saudi Arabia and Saudi Aramco, being the world's largest oil producing company may be the figure that stands between economic world, economic prosperity, and world economic peril and we take that seriously, very seriously.

But let me just go and get into the subject directly. You know that we do have 260 billion barrels of recoverable reserves. His Excellency the Minister speaks of 261, we speak of 260 because that's Saudi Aramco reserves. But over the last two decades we have not drawn down our reserves. In fact every year we have added to our reserves no less than what we, at least what we have produced in the previous year.

So every year we produce roughly around 3 billion and we add to our reserves in terms of either studies or new discoveries. We add a similar amount of crude and therefore our reserves have not been drawing down.

We have a very vast and large exploration program to make sure that we continue to have the reserves that will help us in the future.

And let me be more specific. Today Saudi Aramco has the capacity of 10.5 million barrels per day and as His Excellence was saying, we are not producing less capacity because the demand is not there and the hardware to take care of that last increment of oil that are in the medium and heavy. And by the way, Arabian medium and Arabian heavy, in the jargon these are not heavy. Our heavy is 27 API, so this is probably light crude for many.

Last year we put 800,000 barrels per day increments of two fields, the Abu Sa'fah Field, the off-shore Abu Sa'fah Field and the Qatif Field. 800,000 barrels per day at one time.

Next year in July we will be putting 300,000 barrels per day from our Haradh field. The following year we will be putting 500,000 barrels per day of capacity from Abu Hadriyah, Al-Fadhili, Khursaniyah and we have funded them and they are, some of them are under construction."

The year after we will be putting 300,000 barrels per day, 200 from the Shaybah field and 100 from our super light increments near Riyadh. And just before the end of this decade we will be putting probably, not probably, it is going to be the world's largest increment ever put in the market at one time, 1.2 million barrels per day of capacity. Of course some of this is going to be, if you add them, that's going to be more than the 12 million that Saudi Aramco will have, but some of this is going to be [inaudible] potential and some of it is going to be as additional capacity.

At the end of the day by 2009, 2010, we will have in Saudi Aramco a production capability of 12 million barrels per day, and this is to satisfy the mandate from the government to keep between 1.5 and 2 million barrels per day of extra capacity.

Do we have the resources to do that? By God, we do have the resources. I assure you that we do.

Do we have the financial resources to do that? We have. My balance sheet virtually has no debt, I will tell you that.

We have a mandate to satisfy the requirements of our capital program from internally generated funds and we have done that all our history and we continue to do that, so we do have. We have state of the art technologies and we have a world class work force. These are talented teams of earth scientists that we have trust on.

Our reservoir management strategy is really we take the long term, and today we were talking about whether we have peaked and we are going to go down, of our 80-plus fields we have, the fields that we have developed are only 28 of those fields that represent around 60 percent of our reserves. But we do have a long term management strategy of our reservoirs and we are putting a lot of money. We wouldn't be putting these investments unless we have a lot of confidence in the capability of our reserves and the sustainability of our operations.

Of course as His Excellency the Minister mentioned, our commitment to the market by putting the, we have a large fleet of super tankers and we continue to build super tankers.

Since this is an area where the forecast is the U.S.-Saudi cooperation, I would like just to emphasize areas that I believe will be of interest, of cooperation between the U.S. industry, not only in the oil but in other areas, and Saudi Aramco. With this huge capital program we are in need of a lot of contractors, a lot of suppliers, a lot of equipment. We have had a problem with United States companies as EPC contractors and I would encourage our friends in the construction and design and procurement industries to really come forth, because this is going to be a huge program ahead of us.

We have 12 million barrels per day by the end of this decade and we have built the scenarios to put 15 million barrels per day in the market, if and when it's needed. Therefore I will call on my friends in the industry in the U.S. really to come forth and help us. We need design, we need procurement, we need construction and we need a lot of equipment and activities that would help us put our programs together. That's on the upstream business.

But when we talk about increment, it's not a question of only gas pipelines and a gas oil separator and drilling and so on. It has more than that. We are working on the whole process from underground to the ship. Therefore, there is a lot of activity.

In the downstream, of course this is an area that we alluded today that it is a bottleneck that is facing and that's what is affecting also the issue of prices. We have had joint ventures in Kingdom. We have had joint ventures in the U.S., and today we are moving into a new paradigm, having joint ventures in the refining business, in the downstream business outside. We do have now our big program that we will have together with ExxonMobil in China.

I think another area is we need technology, the world needs cleaner fuels and we need to work with the institutions in the U.S., scientific institutions, education institutions really to help us handle the issues pertaining to the environment. We take this at heart and we work very hard. We have started working but we would like also proposals coming from organizations like the scientific community to really go even beyond carbon sequestration.

Again, we need also for our big program, we need services from these companies, we need oil field services. We are getting a lot, but we really need more. We need consulting services also and we are, because we have a lot ahead of us.

I think one last point I would like to allude to and that's the human resource development. Saudi Aramco has probably one of the largest programs that a single company is doing to develop its employees, but we need, and this country has provided us with a lot of education.

I have currently on my manpower at least 4,000 people who have had education in this country. But we have had a problem over the last three years of accessing the educational institutions of this country and I hope that that link between our work force and the education of this country is weakened. We really would like to strengthen it. Things are getting better, but they are not going back to where we were.

I have today 400 students in graduate and undergraduate that are today in many parts of the world that otherwise would have been in the U.S. if we did not have all of these problems. We will continue to increase that number because the door is rather a little bit, it's problematic. I appreciate, of course, the security concerns that this country has faced and continues to face, but we would like to work on that aspect so that we can get back to our education in this country.

Most of my management team are U.S. educated. Practically all of them today at that level are U.S. educated and we would like to keep that as an important point I just wanted to leave with you. We are ready, we will deliver, and I hate to say this, but I will say it, trust us. Thank you very much.

[Applause].

David O'Reilly: Good Morning. First of all let me say what a pleasure it is to serve on this panel with two such distinguished partners, Abdallah Jum'ah from Saudi Aramco and Luis Giusti from CSIS and formerly very prominent in the Venezuelan oil industry. A very knowledgeable person. And of course our chief here, Robin West from PFC.

I just want to touch on two points. The first, maybe you could call it a geopolitical point, and the second is some facts and figures about investment which I know is a great concern to many.

I want to talk about the notion of independence and debunk it for a moment. This business has not been independent, as far as the U.S. is concerned, for a long, long time. We gave up on that notion 50 years ago. We import a lot of oil. We continue to import more and more of it. We're beginning to import more and more natural gas. This is not a new phenomenon. This is a phenomenon that's been going on for decades. It's a part of the world economic integration. Why should we treat oil and gas any differently than we do all the Chinese goods we buy in the WalMarts or treated differently from all the automobiles and automobile parts that we buy from different parts of the world? There is an integration going on that's a part of globalization.

You might say that the oil industry was out in front of this trend. This is not a new phenomenon and it's something that I find remarkable that we have politicians today that mislead I think the American government by talking about independence when we should be talking about interdependence and what that means for all of us.

I'm not saying that it's not important for our country to develop resources at home. It is important. It is important to look at how efficiently we use energy. Of course it's important. These are critical issues. But we should not be misleading people by thinking we're in an independent world when the reality is we're headed exactly the opposite direction and it's probably a good thing we're headed in the opposite direction. This world needs more collaboration, it needs more interdependence and I think it's a trend that I think we should embrace and not be afraid of and work to be realistic about where our energy comes from.

In fact if you look at the trade balance numbers, energy has been a declining component of our trade imbalance. Look at the statistics. Consumer goods have grown rapidly over the last five to six years from an import standpoint. Automobiles and automobile parts have grown substantially. And despite the relatively high prices of oil, oil as a component of our trade imbalance has dropped from 50 percent to about 28 percent as of 2004. So let's get real about energy, folks, and recognize we're in an interdependent world, not an independent world.

I want to talk briefly also about investment. I think there's a feeling that there's not enough investment going into this business. I don't agree with that. I want to explain a little bit why.

We have $50 billion worth, in our company alone, $50 billion worth of projects to increase energy supply under management today. We'd like to have more of it in the U.S. but the reality is the opportunity set in the U.S. is relatively modest. Lots of places are off limits and there's only so much fighting you can do to overcome that. So most of our investments are going overseas, but they are indeed increasing supply.

Not all that $50 billion is for our account. That includes our partners that are co-investing, and some of our partners are governments. So we are making substantial investments around the world, and I would anticipate that because of the lag time, and I think this came up earlier when Secretary Bodman talked about the lag time it takes for a response. This is a capital intensive business. We're dealing in very very big projects today. We're not just running out adding a few wells here and there. This is big stuff. Multi billion dollar investments, they take time to discover, they take time to engineer, they take time to develop and they take time to produce. It is not unusual for a major project today to take seven to ten years from its inception to the point of production, and that's reality and it's something that we're experiencing around the world.

One cautionary note. This is an industry that has gone through a period of 15 to 20 years of over-capacity. The skill level, the capacity in terms of engineers, drilling rigs, tubular goods, machinery, all the stuff that's needed to develop oil and gas reserves and get them to the marketplace is in tight supply today and I think it will take time and a sustained belief that this is a good business to invest in for some of that to grow back. So I think if there is one cautionary note that I would leave with you about the capacity to invest, it is all about the issue that my good friend Abdallah was talking about a few minutes ago. It's about the people and the intellectual capacity we have in the business to deliver on the enormous demands going forward.

Thank you. [Applause].

Luis Giusti: Good morning, ladies and gentlemen. Thanks, Robin, for chairing the panel. Abdallah and Dave, a pleasure to be here.

I will limit my comments to three points which I think will add a little bit to the discussion that has already been taking place.

First a comment about the market and the reason I think it's important is because the market has certainly been different to what we used to know in the past. In 2002 predictions of the price for that year were 22 WTI (West Texas Intermediate), is only three years ago. OPEC had set a ceiling of 21.7 and it's now close to 30 million barrels a day. At the end of the year, however, the average was 27 and prices have been going up ever since. Ups and downs, but at the end we have seen very high prices.

One thing that happened is the fear factor was already mentioned by Minister Naimi and that set in protracted backwardation, it certainly has affected the stock movements as we used to know them. This vortex that we've lived through with the backwardation [ph] for a number of years will come to an end, or would come to an end if you would have ample supply of crude or a slow-down in demand.

Demand has kept very high, as pointed out by Minister Naimi also, but now we see the stocks at comfortable levels. Still, prices are at $50 a barrel. Some analysts have labeled the market as schizophrenic because of that. Of course demand very high, 4.6 million barrels a day only in two years, 2003, 2004. This year also very high. Strong demand for light/medium oil because of the maxed out convergent facilities of the refineries, and that touches up on one of the most important points which is the restrictive refining network that we see. And certainly the speculation by the funds, and we know how volatile they can be and how fast they can move.

So that leaves a question. We're going to have high prices here. Coming to next year it's only natural to expect that they would soften to what level, and that's going to be a critical question if we want to see progressing the plan of developing additional production. If there are too low prices then certainly we won't have the necessary investments. Too high may at the end turn also against the industry. So that's one food for thought.

The second thing is the forecast of, the outlook of IEA (International Energy Agency) and it's huge the challenge. The fact that you have to go to 120 million barrels a day of oil by 2030, adding 200 million barrels a day of oil to compensate for decline. The same things in gas, going from 80 TCF a year to 187 TCF a year. That implies adding 309 TCF a year of additional capacity. Investment, $3 trillion in oil, $3.3 trillion in gas. This is a huge challenge, and the question is, is the oil industry going to be up to that challenge? That I think is an extremely important question.

Who will undertake that challenge? International oil companies (IOCs) and national oil companies (NOCs). It's a very short list.

International oil companies, well, they have problems of their own. New legislations to conform, more inquisitive shareholders that are demanding all the time. On the other hand they have to watch their [inaudible] returned on average capital employed, but also at the same time they sometimes feel that this may be a shackle for new developments, as Dave O'Reilly will tell you.

Perhaps the most important question concerning the international oil companies is they have taken a lot of cash in with the windfalls. Everybody would expect a lot of that money to go to new investments in the portfolio. However, we have seen that a lot is returned to the shareholder, in part because of lack of opportunities as has been stated clearly by Dave O'Reilly several times in the past. That is a critical issue that will have to be faced by the oil industry.

The second group of actors, national oil companies. They have access to the reserves; they have their own problems of course. It is clear in the case of Saudi Arabia, as we have seen, that there is a clear alignment between the government of the country and the national oil company as stated also by Abdallah Jum'ah. So there is certainly not a problem in Saudi Arabia, and we can see the clear vision of the government and the clear vision of the corporation. It is not always the case. So when we see Saudi Arabia really willing to bring up this effort, the question will be will Saudi Arabia alone be able to do it?

Perhaps the answer to that question may be no. A lot more will have to come about in terms of a new paradigm of cooperation so these two groups of companies can face the challenge.

If not, what we would see, of course, is an era of additional volatility. Not right now. I think we're going to see moderation in the next few years, but certainly the big question for the future is will this cooperation effort come to fruition in such a way that we will see this new paradigm of cooperation evolving? Neither the IOCs nor the NOCs are watchdogs for the supply of oil to the world. So unless you have a vision like has been shown here today by Saudi Arabia, it's going to be very difficult that you will be a strong actor in the search for this new paradigm.

Thank you very much. [Applause].

J. Robinson West: I'm going to put a few slides up. I was afraid Luis was going to give my whole talk, which is always a worrisome task.

A couple of points I'd like to make. On this first slide, this is our projection of crude oil flows around the world. And you can see between 1997 and 2010. What you can see is a surge of crude flowing from the Middle East to Asia and from West Africa to Asia, an from Russia and the Caspian into Europe and the Atlantic Basin. What this means is, the first thing, there is going to be a growing dependence on certain regions; and secondly there is going to be changing crude flows, and with it changing commercial and political influence. So this is a map which has important commercial significance but it also has very very important geostrategic interest.

The second thing is there has been discussion in the first panel and in the second one about OPEC's spare capacity. And the solid bars show the spare capacity. The dark line is the price of oil. There's a clear correlation between spare capacity and oil price. As spare capacity has shrunk, the price of oil has risen.

The Gulf holds virtually all of the spare capacity and 85 percent of that is in Saudi Arabia. I would point out, I think Saudi Arabia has managed this really very very credibly. Last year the Minister and Alan Greenspan discussed that Saudi Arabia was the central banker of oil which they really are. They provide liquidity and stability of the market. But this question of surplus capacity is critical.

But there are other important issues in capacity and that is refining capacity. And one of the things that people have assumed is that there would always be adequate refining capacity, and this, given worldwide demand, just isn't the case. What this chart shows is that we are heading for a refining cap as well as a production cap. So both sides of the chain are getting tighter and tighter.

This is a complicated chart which I'm going to try and go through very quickly. The first thing, let me say that these projections are based on existing technology. But my firm, PFC, examined every non-OPEC oil field and the data is pretty good. There is one incontrovertible fact, and that is, it was alluded to in the first panel, and that is discovery sizes are clearly shrinking in such key areas as the North Sea and the North Slope in North America are mature and declining. OPEC production will increase, but you can see on this we estimate that non-OPEC production will probably increase 2012, somewhere in that area, and we see OPEC production probably peaking somewhere around 2015, 2020. But we see worldwide demand continuing to grow at a compound annual growth rate at 1.8 percent.

I think it was Minister Naimi who said the world is going to need a lot of BTUs, and it's not at all clear where these BTUs are going to come from because from our standpoint we see it as extremely difficult for the world petroleum system to produce more than 95 to 100 million barrels a day.

And the fact of the matter is, is the demand, going back to the IEA projections, we'll go above that. So we are getting into a very tight situation.

The last chart. Luis Giusti who is really one of the most dynamic figures and one of the transformational figures in national oil companies (NOCs), talked about national oil companies and the changing role. Before 1961 virtually the only provinces in the world that the industry couldn't invest in were Russia and Mexico, the big provinces. But starting in '61 really with the nationalizations in Iraq, this led to the rise of the national oil companies and the national oil companies, as you can see, now control 77 percent of the world's resources. The oil business is a resource business, and frankly, the NOCs are in an absolutely critical position.

The oil industry is unique, I believe. It is the only industry in the world where international capital cannot flow to the most efficient production. So this is a unique structure that we have.

I'd like to stop there with these three slides to kind of set the stage for our next discussions.

Let me begin really with you, Luis, on this last slide, talking about national oil companies. There is a decided shift in the balance of power in the market. Will the NOCs leverage this position in terms of prices, tougher commercial and ownership terms, increased taxes, tariffs and royalties? What's the role of the international oil companies going forward? How do you see this?

Luis Giusti: I don't think we can put every national oil company in the same bag, let's put it that way. I think we have seen a clear indication of what Saudi Aramco is doing and planning to do in the future. Some other people may have different ideas.

We are seeing in many places in the world an impulse to opening up to the international oil companies. We could even mention cases like, for example, Libya. Iran is trying to improve their buy-back deals. Then we see other minor players that are very open and they understand this very well like is the case of Colombia. We see other cases where there are second thoughts about what should be done as in the case of Venezuela. But I think the international oil companies will have a major role in all of these countries, and I'm sure there are ways, they have been proven by the way on many occasions, that this cooperation can come to fruition and we will see the new developments and the portfolios in the international oil companies increasing and getting more sizeable.

J. Robinson West: Dave O'Reilly, how do you see the NOCs?

David O'Reilly: I would say that the role of the international oil companies is a very important one and it's really in three dimensions. First of all, technology. We invest a lot in technology and I think differentiating technology that has actually driven us into these new areas. Without the technology improvements of the last couple of decades, for example, we wouldn't even be in the slice that you've got up there, that meager slice on that chart.

Know-how and our ability to integrate. Many of the opportunities today that we're dealing with are very complex. They are not just simple production. They involve complex reservoirs, sometimes in deep water. They involve integrating processing at the surface or subsurface as well as integrating to the marketplace so it's a very complicated picture. So I would say technology integration and know-how are what differentiate us.

I also agree with Luis' point that not all NOCs are the same. Aramco has a long history of being a superb manager of its resources and is well capable of continuing to do that, but given the shortage of experienced technologists in the world today I think there are many exceptions to that where there is a role for IOCs, and carving that role out and seeing that it's done in a manner that is to the benefit of the sovereign governments that have a stake here as well as generating a fair return and a stable return for the investors that come from outside those countries I think is where the opportunity lies.

J. Robinson West: Abdallah, I'd like to ask you, but also as the Chief Executive of the world's largest national oil company, the world's largest oil company, and also, I don't know whether you want to comment about the changing relationships between national oil companies themselves, the relationship with the IOCs and the NOCs, but there's also the relationship between the NOCs and the NOCs.

Abdallah Jum'ah: I would like to comment first on this, the -- What you allude here is that the international oil companies have a very limited resource capability I think when you look at, when you pluck the reserves of the different countries, and you look at Saudi Arabia, you look at Kuwait and Iraq and Iran and Libya and others, and you calculate, then you take a percentage of the areas that are open or semi-open, you know there is a lot of resource that's open to the international oil companies. If you just take Saudi Arabia and Mexico, for instance out, and you look at the rest -- If everybody else is open, you have just under a trillion barrels that is open.

So I think the issue of access is probably more apparent than real, this is number one.

But on the issue of the relations between the NOCs and the IOCs, I think we continue to operate, we continue to have joint ventures. I think there must be a new paradigm in the relationship, though. If the issue is just we want to have access to reserves there are other areas, you know. Downstream today is one of the biggest problems and here is an area of opportunity where we can work together, and we are working together actually.

Exchange of technologies, this is an area where we can work together. But I think if we just stress on the issue of accessibility, first, I don't believe accessibility is that tight. Yes, it's tight for Saudi Arabia but it's not tight in general. There is a lot of resource that is open for my friend David and his fellow IOC companies, but there are lots of opportunities for us too. And we are working together actually today.

J. Robinson West: What about the national oil companies working together?

Abdallah Jum'ah: The national oil companies, let me go back. The notion of somebody's idea of a national oil company when you hear it is that this is a government owned and so on, but the national oil companies have different. Saudi Aramco, we are not your typical national oil company. Yes, we are owned by the government, but we are totally operating at the commercial, on a commercial basis. And the government wanted us to operate on a commercial basis.

We do work with our friends in the national oil companies. We just had a conference in Rio de Janeiro together. Really, we are working for the improvement of the oil industry as a whole. We are looking for opportunities. We have teams working with each other, but we've just put three teams -- one team is really looking at the environmental issue and Saudi Aramco is going to lead this team. We are talking about sustainable development, and I think sustainable development among other things were resources and so on but it really needs a concentration on the environmental issue. We have a technology task force and there is a gas task force, so a lot of work is going on.

I think it's not a question, yes we are competing in the market, but also we have challenges that are facing all of us, IOCs and NOCs, and I think you see now there is a convergence. We are trying to work together because there are challenges facing us all. Not necessarily in our day to day, but the people are looking at us and saying, because we would like to improve the image of this industry.

The problem today, if I might take a minute, this industry is being bashed. But what people don't realize, this industry is giving us transport, giving us warmth, giving us food, giving us clothing, taking our children to school, making them warm at night, so we need also to -- And we have also problems. We have environmental problems that we must work for. . That's why I'm saying that we need a lot of work with the [inaudible] community, with the learning institutions and so on so that we can allay the fears of our customers.

J. Robinson West: Abdallah, a question. If you look at OPEC's spare capacity and refining capacity, one of the most striking trends is the market acceleration of growth in oil demand. And Frank Verrastro pointed out how it's grown. It took 18 years for demand to go from 60 to 70 million barrels; eight years for it to go from 70 to 80; and five years it's estimated to get up to 90. So demand seems to be growing.

OPEC's spare capacity is tight and then if you look at this refining situation as well.

If all these estimates are correct, in the absence of additional refining capacity, as demand continues to increase, are we moving really to a crude production capacity constraint, or is it really going to be more of a process transformation cap?

Abdallah Jum'ah: A couple of things. One, I will comment on the refining but I think I have a problem of your assessment of that tipping point.

The problem with tipping point is you take the resources as of today. I think what we should be looking at, we should look at what are the potential for the world --

J. Robinson West: I did say given existing technology. That's my caveat.

Abdallah Jum'ah: No, no, not only technology. It is the resource itself. What we should be looking at is what is the ultimate recoverable resource. And we have numbers of the whole resource in the world, of like 3 trillion, and maybe 700 billion have been already produced, so we do have the potential. The world has the potential. We may never find another Ghawar or Safaniya or even Khurais or even a Shaybah, but we will be discovering a lot of small fields. So this is one aspect.

J. Robinson West: Do you think the world, and I'll ask the other two, do you think the world petroleum system can have sustained production above 100 million barrels?

Abdallah Jum'ah: I think it will, and I'll tell you why. Don't look at the conventional. Why don't we also look -- We have 30 years or 40 years or 20 years. We have also the nonconventional. You have around, if you believe the IEA numbers, you have seven trillion barrels of nonconventional. If technology can only produce ten percent of that reserve, you know what we would be producing? We would be able to produce exactly the amount of oil that the world has produced in its history. So there isn't a shortage of oil, conventional or otherwise. So I think the capability is there. His Excellency the Minister said capital is going to follow opportunity.

David O'Reilly: I think there are resources -- I don't know the answer to the question, actually, because I can't project how far technology will advance, but history suggests that technology will advance and the resource, the raw resources are not the issue.

You also have to look at what's going to happen to the rest of the energy supply system. It's quite clear that coal and nuclear, we shouldn't be wasting oil, for example, on power generation, or natural gas for that matter. We should be focused on as much coal and nuclear as we can so we conserve oil for what it does best, which is transportation.

So I think you've got to look at the whole picture here. I don't know the answer, but I'm an optimist when it comes to how we deal with this long term. We are dealing with a shorter issue now because we've gone through an extended period of over-capacity. And without seeing the response to the next round of investment and without understanding what technology drivers will emerge from this round of investment, it's very hard to predict.

Luis Giusti: Let me start with the arithmetic. If you take proven reserves which is about 1.2 trillion barrels, and you take the IEA forecast and you will find that it will last 28 to 30 years. On the basis of availability so the growth can be linear, straight line extrapolation. If you take the range, including probable, you will go to about 1.7 to 2.5. That means your number will grow according to the same premises to something like 48 to 50 years.

However, the capital to flow will depend, and how it will flow will depend on the perceived risk. We already spoke about price but there are other risks. Certainly technical risk, geological risk, for example, in some of the cases, but also political stability or instability, I should say, and the taxing system. And in the case of gas specifically, perhaps critical would be the lifting of restrictions on foreign investment. So there are some conditioning variables that would determine if this oil and gas are really going to be available, but there is, certainly there is the amount of oil and gas required.

J. Robinson West: Dave, let me turn to you for a second. You had talked about the industry investing, companies like yours investing. To get these projects done, this is an enormously complex project but things are moving also too. You have rising labor and rig costs, steel, there are a lot of factors here. How is Chevron responding?

David O'Reilly: I mentioned that we had quite a substantial number of projects under management currently, $50 billion worth that are on different phases. Some are near production, some are in the construction phase, some are in the engineering and about to be in the construction phase. It's a lot of work.

My point is that there is investment occurring here, but there is a lag time. Let me just give you an example. I'll give you two examples. One from the Gulf of Mexico. A discovery, Tahiti, 2002. It's taken a few years to get the appraisal wells and a test well. This is in multiple thousands feet of water. It's 30,000 feet down to where the oil is. Through many thousands of feet of salt on the way. It takes a lot of effort to get there. However, the wells have tested, we're now in the early construction phase and so total cycle time from discovery to production for that project is about six or seven years. That's at the low end.

We have other projects where the cycle time, depending on the complexity of partnering, the negotiating, the production sharing terms and the like, it can take closer to ten years.

My point is that it takes about seven to ten years from the point you start to the point that you actually have production coming on.

I know a little bit about Saudi Arabia since we were an early visitor to Saudi Arabia, as the Minister pointed out, in 1933, and I think the cycle time there is shorter, but nevertheless it still takes time, even in a very oil-prone province like the Eastern Province. I know Abdallah can probably address this. Just to gear up for the expansion beyond just moving rigs around, but to build new facilities and the like takes a number of years, even in an environment like that.

I just see today's environment, we're not doing incremental things today to add capacity. These are step changes in capacity that occur because they're large facilities and they don't approach millions of barrels at a time like Abdallah is talking about, but there are projects we're involved in that will add a quarter million barrels a day. Step change. Once it comes on-stream. I think there are quite a number of those in the world and I'm confident that it's going to add to supply.

J. Robinson West: Abdallah, if I can turn this question slightly. The world is trying to ramp up to meet Asian demand and all this kind of thing. You're increasing production. But is there the infrastructure there? Are the service companies there? Are the people there? Rigs and everything are rushing to Saudi Arabia but they can't go everywhere at the same time. And is that capacity there to support the industry? Or is this going to be a real constraint for the industry?

Abdallah Jum'ah: No. I mean yes, I mean this is a huge, what you are seeing is a huge construction program not only in Saudi Arabia but you have also in other areas.

But again, this is a business and this is an opportunity and as we said, capital is going to follow these opportunities. These opportunities for investors, for service companies and so far we have not seen a constraint. It's difficult. It's not something easy. But so far we have not seen anything that will impair our ability to get to our objectives and put the resources that the world needs.

J. Robinson West: Luis, from your perspective how do you see it? You see the service sector. Are they ready to --

Luis Giusti: I think the service sector has evolved significantly in the last few years and in fact it has assumed different roles. In the past you would contract Halliburton or Schlumberger only to run a log or cement a well. It's completely different now. They have this wide scope for new technologies and they really come to assist the companies.

I see it up to a challenge, but once again it will depend on how much they can invest in developing the capacity, depending on the opportunities that arise as Abdallah has said.

J. Robinson West: We have some questions from the floor now. The first is a question for Mr. Jum'ah.

Undiscovered resource base for Saudi Arabia is estimated to be substantial but under-explored in recent decades. Please comment on plans for oil expiration in Saudi Arabia to renew the reserve base.

Abdallah Jum'ah: We have 260 billion barrels of recoverable reserves and then we have around a hundred billion barrels in the probable and possible, and actually what we have been doing over all these years is to turn this probable and possible into a recoverable reserves and that's what I talked about of producing around three billion and adding to our reserve three billion.

Our exploration program for many years was geared more for the gas, non-associated gas discovery. Recently we have come now and we have put a lot of funds to really improve and expand our oil exploration and in the lat two months we actually discovered two new fields in Saudi Arabia.

Saudi Arabia today is still unexplored. We are looking at probably additional oil in place in the coming 25 years as probably of 200 billion, so 50 percent of that is one additional billion.

So the potential for Saudi Arabia is big and therefore we are working, we are expanding our exploration program. Saudi Arabia is really, a lot of it is under-explored.

J. Robinson West: This is a question to Mr. Jum'ah and Mr. Giusti. Wall Street believes that producers are in the process of making the same mistake as June 19 -- This is the question from the floor. This is not my question.

Wall Street believes that producers are in the process of making the same mistake as June 1998, overflowing an already full storage system, collapsing the oil price, chilling investment, and teeing it up for an even larger oil price spike to come. Do producers understand how important it is not to repeat this mistake? Mr. Jum'ah and Mr. Giusti.

Abdallah Jum'ah: Mr. Giusti, do you want to go ahead? [Laughter].

Luis Giusti: I should remind the person that asked the question that in the middle of 1997 began the collapse of the economy of Southeast Asia. We probably had it wrong in the oil industry but I guess perhaps 80 percent of the world or 90 percent of the world had it wrong. And Minister Naimi, by the way, was a central actor. I remember we had a meeting in Indonesia, in Jakarta, and we were trying to assess what was going on and the only thing that the conference in Jakarta did was simply sincere the levels. Come with real levels and amounts. We did not change the volume.

The fact that the price collapsed only a month later today is still recorded in the texts as the result of the big mistake by OPEC. I think the economy was going to collapse, it was already on the way to collapse, and the prices were going to collapse anyhow.

If the economy continues to grow healthy what we are seeing is totally the contrary now. We are seeing that there is not that ample spare capacity, it was clearly pointed out his morning, and only now we're seeing inventories recovering. So I don't see at this moment any concern for an over-supply of oil. On the other hand we have learned from the past two years or so that OPEC has been able to also intervene managing the price to keep it at a level that is good for both ends of the equation.

Abdallah Jum'ah: It seems we can't win. No, I'm not -- We really, I'm coming here to say we are going to put the resources. Is the price going to collapse? No one can say that the price can't collapse, you know? We have seen cycles. We have seen over the years the very highs and the very low, but that's the risk we take in the business. I think we have borne that risk and we took that pain in the past, and if it ever happens, I hope it does not, you know, we will take the pain again. But we are in this business for a hundred years.

J. Robinson West: Dave O'Reilly, you gave a speech in Houston on the outlook. Do you want to comment on that?

David O'Reilly: I want to just second the point we're in the long term business. Last year was our 125th year and you don't make decisions based on one year or two years in a business like this.

First of all, the cycle time that I mentioned earlier from decision point to new production is in that seven to ten year range, so how can you get hung up about this year's price?

I was looking around the room and thinking how many people would show up if it were 1998 and we were having this meeting. Probably not too many. Maybe creditors. [Laughter]. But there's a big crowd here. A couple of years from now it will be a small room again because the pendulum will have swung back and we'll be in a better balance somehow.

Let me just make the point again, it is a long term business. I do believe that, I don't believe we're in the same situation as we were in the late 70s where we had a completely different phenomenon going on, in my view, that led to a prolonged period of regret, if you will, and over-capacity.

I just think when you look at the world today we're so tightly integrated there is a growing demand for a growing middle class in the world. There are 1.5 billion people that are still living on $2 a day or less. There are billions of people that have no access to electricity. Even simple things like electricity. These people aspire to improve their quality of life. That will require energy of all types. And I'm an optimist for the long term for our business, and I think it's a fool's game to try to project near term price volatility. We have to make decisions beyond that.

J. Robinson West: One of the questions that came up was mentioned in the first panel chaired so ably by Secretary Schlesinger. Diesel has been mentioned this morning as an alternative to improve efficiency. What about the use of gas to liquids (GTLs) technology? Is this something that is going to be transformational or is this a marginal play in the business?

Luis Giusti: I think it's beginning to look at something very significant for the future. If you look at first of all, take some of the reserves of gas in Qatar, Iran, and Russia, and perhaps the real important point now is Qatar where a lot of things are happening.

We're seeing already two large-scale projects. One, 145,000 barrels a day, a Shell project; and the other one about 65,000 or 70,000 barrels a day from Sasol.

David O'Reilly: Sasol Chevron.

Luis Giusti: Sasol Chevron, yes. [Laughter].

This is reality, and the quality of the distillates that you get out of that process is so high that you can deal with this not only at a premium but also it will have an immediate market. And these projects are going to be crucial but I think now we're reaching a level where the economics are also there, and that will add up, together with LNG to a large usage of gas reserves in the world. So I see this as a new reality.

David O'Reilly: Obviously Luis is on the Shell board and naturally he would talk about a project that is still not under construction. [Laughter].

Ours is under construction, it will start up next year, and another one underway in Nigeria.

I do think it's transformational in two respects. One is bringing gas to the market in the form of transportation fuels again for the long term I think is an important addition to future supplies if one takes a sensible approach to energy.

The other is the quality. The quality of gas to liquids products, extremely high. They're clean, they have no contaminants, high cetane numbers in the case of diesel, and I think they will help with dieselization and long term efficiency, in improving the efficiency of the transportation system.

Having said that, we still need the internal combustion engine, we still conventional oils and the like. But this I think is going to add a new supply source for the world's energy needs.

Abdallah Jum'ah: I agree with David. There is nothing wrong, if you bring that energy at the right price and this is adding additional BTUs that the world needs.

We in Saudi Arabia and Saudi Aramco have not gone into this technology because really we are now consuming all the gas that we are producing to fuel our own local economy. So I think when the day when our new investment now, our new acreage that has been given to several international companies including Saudi Aramco as an equity holder in these, if we hit a big like a North Dome of Qatar in Saudi Arabia you will see us going into GTL and LNG (liquefied natural gas) and everything else.

J. Robinson West: Let's talk about another country for a minute. Mr. Giusti, Venezuela is believed to have large resources of oil and gas. What's a reasonable estimate of the production profile going forward? Is their market the U.S. or Asia? What is their market?

Luis Giusti: Let's start by reserves. Reserves in Venezuela proven are about 78 billion. Out of that probably 30 billion belong to the Orinoco Belt extra heavy. The rest is what we would call conventional oil. Although Oronoco oil has proved to be something conventional also, in terms of production, the technologies there. The upgrades are in place. So they can be added in the 78 billion.

Production capacity has fallen, really, and right now it stands at about 2.6 million barrels a day. Out of those, 1.1 are produced by the oil companies through different formats, operational agreements, strategic association, so that leaves about 1.5 which is we believe a proper production and that reflects a significant fall due to lack of investment and of course the things that have happened in the country that you all know about.

If we would presume what I call an optimistic scenario, perhaps you could have something like 200,000 barrels a day per year. It would take at least five years to add up one million barrels a day of production. Again, go back.

There are no clear indications of how this would come about. There is some confusion about some of the dealings with the international companies, and I guess that no matter what is said, the United States will continue to be the prime destination of the oil. When things are said like there's going to be suspension I think you have to understand that that's really not going to happen, at least not in the medium term. The reason being that the United States government does not have refineries or terminals or pipelines, doesn't even buy oil. This is the result of an intense commercial activity that has taken place for 20 years with many many clients, and that is not easy to change. Especially if you think that you're going to ship that oil to China with a refining network, as we know is very primitive. There is no way that is going to happen. It could happen of course in the long term. It would require planning, but I don't think it will happen, at least not in the foreseeable future.

The critical point would be how are they able to build the capacity except for what the companies can do.

J. Robinson West: Dave, do you want to comment on Venezuela?

David O'Reilly: I agree that the U.S. the natural market for Venezuelan oil, as it is for Mexico and Canada. This makes good sense from a logistics standpoint, and also from a processing standpoint. The complexity levels of U.S. refineries are well suited to heavier oils and in contrast in Asia the refineries are typically more suited to oils that come from the Middle East or are native to Asia itself.

J. Robinson West: Let me turn back. Obviously central to the entire international petroleum system is Saudi Arabia. Abdallah, what steps has Saudi Arabia taken to increase security on its energy infrastructure?

Abdallah Jum'ah: Safety and security are issues that we don't take them in a reactive way in the sense that we are not reacting these days to incidents here and there. We do have, basic to the design of our facilities, to the operations of our facilities, is the issue of safety, loss prevention and security. Therefore our critical facilities are really protected by multiple systems, technology, people, access control, special lighting, special fencing, our own security. I do have on my payroll, I've always had on my payroll over 5,000 people , these are security guards, they have always been there, and behind that is the government security. We have patrols, we have helicopter patrols, we have boat patrols, we have foot patrols, we have bicycle patrols and so on. And we have always done that. We are not reactive, because we take care of our facilities.

But I think one other important aspect is that our system is built with a lot of redundancy. I remember His Excellency the Minister, when he was a CEO he was taking a visiting Secretary of Energy and he was flying him over the pipeline corridor going from Abqaiq to Rastanura, and there were 12 or 13 of those pipelines and he was telling him, I was sitting with him and he said every one of these is an Alaska pipeline.

So we have a lot of facilities, a lot of redundancy, and we can ship, if we can't ship from the East, if God forbid the Gulf is closed, we can ship five million barrels per day from the West.

We are in a volatile industry and we always think about what if. We have drills on what if. And by the way, an industrial accident in an industry like ours can be far more devastating than a terrorist act which is localized. But we have never in our history failed to deliver one barrel that we promised a customer on a day certain that was not delivered because of either a terrorist act or an operational problem.

So I am convinced that our facilities are under control.

J. Robinson West: Abdallah, again for you, and maybe this is from one of the suppliers in the audience.

Could you be specific about the $50 billion Saudi Arabia is going to be spending? The details of the proposed plans do not match the $50 billion. I don't know what that means.

Abdallah Jum'ah: I didn't mention anything. What I am saying, I have not mentioned any figures, myself I haven't mentioned the figures. However, what I am going to say is we will do what it takes to always put between 1.5 to 2 million barrels of excess capacity so that the world economy does not see any hiccup. Whether it will cost $50 billion or $70 billion, so be it, we will do that. I have a mandate. Yes, of course money is not all -- I'll fight with my Board and I'll fight hard, but I have always won when I go and ask for additional capacity.

J. Robinson West: I'll make this the last question I think. This is kind of a meaning of life question for the panel. If oil demand continues to grow as projected by the IAEA to over 120 million barrels a day by 2025, 2030, aren't the environmental transport infrastructure and investment implications so significant to warrant a change in the way we use energy?

Who wants to take that question?

David O'Reilly: I'll go first since everyone's kind of gasping up here.

I have got a confidence, I guess, in the system and in the human system here that we adapt to our environment and this can be managed. I don't think anybody knows whether 120 million barrels a day is the right number. There are too many moving parts. We don't know about economic growth, we don't know how efficiently people will use energy. We're not sure yet how other supplies will come on from things like nuclear power and the like. So I think the answer is behavior will change and supplies will adjust over that period of time.

I am confident, though, that the resource base from an oil and gas perspective is there and that oil and gas will play a very important role in meeting this demand, but I do believe we're going to need more than oil and gas. We are going to need renewables, we are going to need coal, we are going to need nuclear, and we're going to need more efficient ways of consuming energy as well. Beyond that kind of, since it is kind of one of these big questions, that's a big meaning of life answer.

Abdallah Jum'ah: I agree. [Laughter].

J. Robinson West: I told Abdallah to be brief when this thing started. That's brief.

Luis Giusti: There is a publication two year ago by the World Bank. It's called Fuel For Thought and it speaks about what we can expect 30, 40 years from now. There is a summary of scenarios that show that some of these environmental trends in favor of renewables, they have their own dynamic inertias. We're going to see some kind of a substitution coming about as a result of the environmental concern.

A lot will depend, of course, on what will happen with the market of oil and with the price. It's been said very clearly you want oil to be competitive and that will push forward into the future some of this substitution trends.

I think a lot will be needed in terms of oil. We're seeing a resurgence of coal. We're seeing that already and perhaps even nuclear is beginning to show signs of resurgence. So a lot will depend. There are too many moving parts. I think all of them are going to play a role. Oil will continue to play the major role unless there is a big shock that I don't think we can anticipate.

J. Robinson West: On that note, I think we move on to our next proceeding. I just want to thank all the panelists for coming and being so candid. Thank you.

[Applause].