

THE BROOKINGS INSTITUTION

"GLOBAL CHALLENGES FOR U.S. ENERGY POLICY"

Economic, Environmental and Security Risks

[TRANSCRIPT PREPARED FROM AUDIOTAPE RECORDINGS.]

Friday, March 5, 2004

OPENING REMARKS:
U.S. ENERGY POLICY GOALS

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Daniel Yergin, Chairman, Cambridge Energy Research Associates

THIS IS AN UNCORRECTED TRANSCRIPT.

PROCEEDINGS

MR. TALBOTT: [In progress] -- but also on behalf of the two other co-sponsors of today's event, the National Commission on Energy Policy, which is going to be represented during the course of the day by two of its co-chairmen, Bill Reilly and John Holdren, and its executive director, Jason Grumet, and there are going to be some other members of that Commission here during the course of the day.

The other co-sponsor is the American Enterprise Institute represented by its president, Chris DeMuth, and also Bob Hahn who is going to be here, the executive director of the Brookings AEI Joint Center on Regulatory Policy.

The topic of today's event, global challenges to U.S. energy policy, could hardly be more timely. There is unrest in oil-producing states ranging from Iraq to Venezuela. Congress has been unable to pass an energy bill. The price of oil is up dramatically, and there is, of course, widespread concern about global warming and biodiversity loss as connected to energy consumption and extraction.

So we have got the right set of subjects. We are talking about them at the right time, and we certainly have the right assembly of people to address those subjects.

We are going to have during the course of the day five current and former agency administrators and deputy cabinet secretaries, including the Deputy Secretary of Energy, Kyle McSlarrow, who will be here in the early afternoon.

We also have a former Member of Congress, Phil Sharp, who is here this morning, and Bill Reilly mentioned when we saw Phil arrive that he was always one of the most constructive and substantive people that Bill dealt with in the United States Congress. So we are very glad to have him here.

We have five presidents and directors of thinktanks or research institutions from around town.

We also have over a dozen scholars, including eight from Brookings, and I want to express a word of thanks to two of those in particular, Nigel Purvis and David Sandalow, who are helping to build this institution's capacity in environmental studies to wit this is the first of three conferences we at Brookings are going to be having on the general subject of the environment between now and June.

Nigel and Paul Bledsoe of the Energy Commission conceived of this conference, and many thanks to them and to Josh Busby for all the hard work that went into preparation for today.

The event is going to be simulcast live on the Brookings website and will be viewable for the next year.

So, with that, I think we should get started. Our first two speakers are Bill Reilly, former Administrator of the Environmental Protection Agency and current chairman of the World Wildlife Fund, and then Dan Yergin, president of Cambridge Energy Research Associates, an Pulitzer Prize-winning author, a Brookings trustee, and an old and very dear friend of mine.

Bill, would you please get us started.

MR. REILLY: Thank you, Strobe.

It is very nice to be in a nearly full room on the subject of energy policy. One of the discouraging realities of the times is the degree to which distractions have precluded serious attention I think on the part, certainly, of the broader population and many experts as well to issues of energy and environment and particularly the relationship between the two of them, which is of most concern to me.

I co-chair the National Commission on Energy Policy. We are a bipartisan group of experts developing recommendations to address the major issues facing U.S. energy policy. My co-chairs include John Rowe, chairman and chief executive officer of Excellon Corporation, the large energy company headquartered in Chicago, and the distinguished Harvard professor, John Holdren, former Congressman Phil Sharp.

And I really did say that to Strobe Talbott about Phil. Phil whispered to me, but you dealt with a lot who weren't in Congress. I want to emphasize that I don't consider that compliment, the tallest building in Manhattan, Kansas.

[Laughter.]

MR. REILLY: He is every bit as good as I said to Strobe.

And CIA director, Jim Woolsey. I wonder, is Jim here yet? Jim is speaking later in the day. I happen to pass in my taxi this morning the Saudi Embassy on the way to the meeting, and I am sure that both the Saudis and Jim will take comfort in how close the embassy is to this conference this morning.

Some of you who have read his foreign affairs articles and others will get the point.

[Laughter.]

MR. REILLY: A full list of our group appears in your materials this morning, the program materials.

We are here, I should say, as a commission to listen and to learn from you. We have had several workshops and quite a number of informal consultations with people around this city and around the country issued in these issues.

I am sure that my fellow commissioners here will strive to overcome their natural shyness and diffidence to at least hint about some of their own views, but I do want to make clear that the Commission itself has not at this time taken positions on the salient and controversial issues of the day and doesn't expect to during the political season. We expect to report sometime after the election this year.

The Commission is focused on three central energy challenges: security issues related to energy, including the vulnerability of domestic infrastructure and the increasing U.S. reliance on oil and other fuels from abroad; environmental issues and especially global climate change; ensuring a reliable and affordable supply of energy essential for economic growth and maintaining our quality of life.

One reason the Commission helped organize today's conference is to benefit from the views of outside experts as we begin to write our final recommendations. We expect to release our report in December. So we are not just feeding into the campaigns or the electoral debate, though I would hope that the issues we will discuss today will find their way into the national dialogue during the campaigns.

I should hasten to add that the Commission enjoys the very generous support of the William and Flora Hewlett Foundation, a very substantial major venture

for its president, Paul Brest, former Dean of Stanford Law School, as well as other support from foundations, but the bulk of this support is from Hewlett, which I understand is also a significant benefactor and supporter of Brookings.

You can tell I have spent a certain part of my career raising money, and if they were in the room, I would lay it on with a trowel.

[Laughter.]

MR. REILLY: Well, let me sketch out broadly the formidable array of global challenges facing U.S. energy policy. Each of these issues is a major challenge in and of itself.

First, the United States continues to rely on imported energy. We now import 55 percent of our total for oil from a relatively small group of suppliers. Imports have risen from 37 percent in 1980 and are forecast by the Energy Information Administration to increase to 70 percent by 2025.

Where are these sources? We have been, as a nation and an economy, diversifying, but the Mideast is the largest supplier. We get more than 20 percent of our total oil, both domestic and imported, from there.

This number will rise significantly over the next several decades as other sources become less plentiful.

You need not be a student of world geopolitics to grasp quickly that many of these places have been characterized by a basiotic instability and politically have been unstable, and that the Mideast represents an especially complex challenge, given the threat of terrorism and U.S. military action in the region. You will hear more about that from Jim Woolsey later in the day.

We spent about \$600 billion a year on energy, \$200 billion for oil, of which \$120 billion goes overseas and a healthy chunk of that to the Mideast.

Now, oil is fungible, and the Middle East is the vital swing supplier for the world oil economy and a direct source for America's allies in Europe and Japan. Such interests are strategic and can lead, have led, to blood-for-oil decisions.

At the same time, rapidly developing countries, notably China, are consuming more oil and importing from some of the same sources. China has begun its steady rise as a major new consumer of imported oil with huge consequences for world energy demand. India will follow along later.

The market for oil and increasingly natural gas is a global market. In other words, U.S. energy policy will affect and will be affected by the actions and policies of other countries, including our allies.

The Economist has heralded "The End of the Oil Age." Well, tell that to the Chinese or tell it to Los Angeles.

Second, our economy over the last 30 years or so has become much more energy efficient, and that is good news. In 1970, it took almost 19,000 btu's to generate a dollar of gross domestic product. In 2001, it was less than 10,000 btu's per dollar, which is a remarkable achievement. So not all the trends in U.S. energy demand and use are negative and discouraging by any means.

Improvements have come over a time when GDP increased more than 160 percent, energy consumption by more than 40 percent. Vehicle miles driven grew by 150 percent, and population grew about 40 percent, but -- and this is critical -- our

primary mode of transportation, automobiles, is still almost totally relying on oil, more and more of that, of course, as I have said, imported oil.

Our very mobility, in other words, depends on consuming oil in growing amounts until such time as we can develop more efficient vehicles or alternative fuels or some combination.

Third, environmental impacts caused by energy use have been substantial, and none are more complex and vexing than the prospect of global climate change.

Finally, U.S. standing in the world is greatly influenced by our energy decisions. The image many abroad have of us is one of gas guzzlers and unilateralists who walked away from international climate change negotiations. Surveys have shown that most of the world believes that the U.S. invaded Iraq primarily for its oil.

Energy is at the heart of each of these stereotypes. The world's perception of our energy habits and actions has consequences far beyond the energy we use per se.

While addressing this array presents an enormous challenge, we need to define the problems and develop realistic policy alternatives, and we need to do so with a healthy dose of humility. I expect Dan Yergin will speak much better to this point.

We have all been struggling to get energy policy right for decades. A changing world with many uncertainties has made this a substantial challenge for a lot of very well-informed experts in energy policy.

Without going into too much detail, something my colleague, Phil Sharp, and others will do later, let me suggest a few general approaches which the U.S. and other countries will need to employ to ensure affordable, reliable energy supplies.

First, I think we have a consensus, something close to it at least, on the Commission. We need to make maximum use of market mechanisms. This will be very distressing to Bob Hahn.

I worked with Bob on the Commission's trading program, the Clean Air Act. So I look forward to hearing him today.

The power of markets must be employed to help make efficient decisions about energy use, about investments, and other matters. This means we need to internalize the cost of the externalities and the price of energy to the extent we can; for example, pricing the economic, military, and diplomatic cost of oil reliance.

Markets will -- they must -- play a key role in finding substitutes for oil if appropriate policy incentives are created. Likewise, markets must play a role in fighting climate change by providing incentives to reduce greenhouse gas emissions.

Second, government and industry technology programs must be strengthened. Energy R&D investment, both public and private, has fallen sharply in the last 10 years in Europe, Japan, and the United States. For a \$600-billion industry, not much is spent on energy R&D. U.S. Government spending fell from \$6 billion in 1978 to \$1 billion in 1997, and private expenditures also fell.

None of the long-term issues can be addressed without deploying at least some new energy technologies and developing a generation of additional technologies. This includes not only new sources like biomass, hydrogen, and others. It also means

increasing energy efficiency and finding ways to make current sources like coal more environmentally acceptable.

Third, these problems require a greater level of global cooperation. Climate change, the science of which John Holdren will be discussing shortly, cannot be solved by any one country. Although given our level of greenhouse gas emissions, the United States is positioned to influence the issue far more than any other country today.

Meeting global energy needs to alleviate poverty in the long run is of direct interest to all nations. Reducing the world's dependence on oil can provide benefits to many. I signal, relative to that, the recent article by Fred Bergsten in Foreign Policy magazine.

The United States must take action domestically on many of these issues regardless of international considerations, but America must also participate fully in global solutions if we are to see tangible and lasting results.

To play a significant role in international deliberations affecting climate change, we must have a more credible and effective policy here at home.

That concludes my remarks. Let me now turn to the "Commanding Heights," whose author is here, the outstanding television series on energy which set records for viewership.

I think, Dan, we need to figure a way to reach the country yet again with something like "Commanding Heights" in this era when the issue is receiving far less attention.

He has been one of the major luminaries in the field of energy policy for as long as I have been following these issues, and at the conclusion of Dan's talk, we are going to take a couple of questions and probably not more than that, given the press of the schedule and the need to move on to the next session.

Dan Yergin.

[Applause.]

MR. YERGIN: Thank you very much, Bill. I am really very pleased to be here and certainly want to thank AEI, Brookings, and the National Commission. This is a very timely and important conference and a very outstanding group of speakers. I am also certainly happy to see so many friends and colleagues here in the audience.

Bill has sketched out the overall framework for the discussion and with a focus on energy and environment, and I am going to pick up on, in a sense, part of those themes and focus on the energy and security questions.

I think it is clear to say that energy security is on the agenda today again. We have had disruptions over the last year that have been very significant. We lost more oil from Venezuela when it went down than from the interruption of supplies from Iraq, and certainly, we have a very tight oil market today, witness current prices, and a tight oil market is vulnerable to shocks and perhaps there is great concern about future shocks near term coming from Venezuela again as well as from other regions.

Iraqi production is still plagued by security questions. Regional and social turmoil continues, of course, to unsettle the Middle East, while global terrorism threatens the entire system.

Consumers are seeing higher prices in their home, heating bills, and certainly, right now, as everybody knows who has pulled into a gas station at the gasoline pump, and I think over the next 2 months, at least through Memorial Day, we are going to see a lot of political turmoil in this country about gasoline prices and energy prices.

Also, as Bill signalled -- and we were recently in China together -- we see China trying to develop its own new concept of energy security as it moves so rapidly away from its traditional self-sufficiency.

As Bill said, if we went back to the 1970's, we would see that we were importing a third of our oil at the time when the crises began. We are really now edging towards 60 percent, and as Bill pointed out, those numbers are going to increase.

This comes at a time when at least we at Cambridge Energy Research Associates look out and see over the next 10 years, world oil demand rising by something on the order of 20 percent. That will happen unless there is real problems in economic growth in the world, and that poses big questions, challenges in terms of supply, big challenges in terms of security.

If I might as a side note say that anybody who is concerned about reducing world poverty and increasing standards of living should recognize that perhaps the biggest single threat to that right now is not what is the amount of money that is spent on foreign aid and so forth, but it is the new protectionism, and if you are looking for something that could be a major setback for the world economy, that is here and now.

Of course, issues of security, energy security restricted to oil as per the blackout from last August not only in this country, but a series of blackouts around the world pointed out the complexity of the transmission systems that support modern industrial society.

The high natural gas prices, which get even less attention than what is happening in oil, really do point out to the fact that we have a very tight situation, natural gas in this country. I almost am tempted to use the "S" word, "shortage," but we do face a very difficult situation there.

But there are compensating realities, new sources of oil and gas, new technologies for energy production and consumption, new technologies altogether combined with the institutional lessons that have come from previous energy shocks that may help us weather whatever storms are ahead.

Bill talked about the decreasing dollars being spent in energy R&D, but I think we can see we are in a kind of upsurge period in terms of new energy technologies really across the spectrum, and it is something that I tried to follow several years ago.

I chaired a task force for the Department of Energy on energy R&D, and you see it wax and wane, but we are in a period now where there is a lot of commitment coming not only from the public sector, but certainly in a variety of ways from the private sector.

I think also we could say that relations between producers and consumers with some notable exceptions are, for the most part, better than they have been in years past, more based on interdependence and cooperation.

Energy security has also taken on a wider view because it is not just the flow of oil, but it is the security of the entire infrastructure of supply. All of this is accentuated by, in a sense, social and political turmoil combined with this rise in demand that brings us all into focus.

So let me just build a little bit on the framework for thinking about things. America's \$11-trillion-plus economy rests on an energy foundation. Oil, natural gas, coal, and nuclear account for about 93 percent of that foundation, and to get the dimensions right, wind and solar, while growing, are less than two-tenths of 1 percent.

Then, on top of that, of course, is that our imports of oil have been rising. The reasons are simple, that demand has been increasing more rapidly than what domestic production can provide, and all of this means that we have a system that is, from time to time, periodically vulnerable to disruptions of one kind or another.

So we are not going to cease importing oil or being dependent upon energy. So our questions become how do we manage such dependence and stabilize supply and how do we ensure that there is sufficient resilience in the system to absorb shocks.

There is no single answer to how the U.S. becomes less vulnerable. I think Bill pointed out something very important that gets lost in the discussion. In fact, on conservation, we have done a lot. There is a lot to do, but we have done a lot.

We use only about half as much oil for every unit of GDP as we did in the 1970's, and a lot of this has been what? It has been the turnover in the capital stock. It has been greater efficiency.

I think stabilizing production, domestic energy production, is also important, and it is particularly acutely brought home by what we are seeing in terms of natural gas.

We are in one of those periods, too. You get these cycles when the world is going to run out of oil, and they started in about 1859 when the first oil well was drilled. In the 1880's, one of the founders of Standard Oil, the successor in fact to John D. Rockefeller, began selling at a very rapid rate his stock in Standard Oil because the engineers had told him that no oil was going to be found outside Pennsylvania. I think he bought it back later, but there is that concern, and it is a very legitimate and important debate.

What I am struck by is that often you get into these periods. After all, it was a fear of shortage of oil after the first world war, which led to taking the three eastern-most provinces of the Turkish empire and putting them together and creating Iraq, one of the big reasons for that.

But what changes is that new areas open up and new technologies, and we see a whole panoply of technologies, what we call DOFF, the digital oil field of the future. Applying those could be major technological breakthroughs. We think it could expand world oil reserves over the next 10 years by about 125 billion barrels. What is that? That is bigger than the current proven reserves of Iraq.

Also, as part of the agenda, of course, is renewables. We see the renewables industry with new vitality. We see particularly with wind, a new commerciality, and of course, longer term, and I would emphasize longer term, hydrogen and the other alternatives.

But that means we are talking those are farther out. The question is what about now, what about the next few years, what about energy security that is critical both for the United States and the rest of the world.

My colleague, Jim Placke, will be talking a little later this morning about some of the particulars of energy security. What I would like to do is just lay out to me what seem to be nine principles of energy security and would be very interested in responses, is this the right list as you all see it, but these are the nine key ones that I think about.

The first one starts with Winston Churchill who converted the British Navy from coal to oil on the eve of the first world war in order to gain speed over the Germany Navy. That led to a problem, no longer reliant on Welsh coal, but rather on Persian oil, and Churchill was challenged on this.

He laid down what I think is still the fundamental principle of energy security. He said, "Safety in oil lies in variety and variety alone. That is diversification," and I think that is the fundamental starting point. We have seen it again, clear with the development of non-OPEC, and the ability to weather the interruption of Iraq, Venezuela, and Nigeria, all at about the same time.

Secondly, I think we have to continue to recognize that there is only one oil market, one that moves about 80 million barrels a day of oil around the world, and U.S. security resides in the stability of that market. It is not practical to consider not being part of that market.

I think the third is the importance of the existence of surge capacity that can replace disrupted supplies. This takes two forms. One is the spare capacity that

some producers will have, and the other is the importance of strategic petroleum reserve in this and other countries. It is an insurance policy against major disruptions and the resulting threat to GDP and, in my view, should not be used as a tool of kind of market management because it will devalue it.

I think a fourth principle to keep in mind is that the oil market is much more flexible than it was in previous years, and that that enables adjustment.

Right now, to give one example, the tight California market. Bill, I think the price out there is \$2.19. I think Guy Caruso got beat up a little bit in the hearing the other day. It was part of a hearing on these questions.

Well, right now there are supplies from the East Coast of Canada that are being moved to California to meet that market demand, and I think the lesson Phil Sharp and others will so recognize is that the short-term intervention and controls can be highly counter-productive, hindering the ability to adjust, which is what we have in this flexible market.

Fifth, of course, it is important to build cooperative relations with nations that produce and export energy, understanding the importance to their national revenues, and for them, what counts is security of demand.

Sixth is the importance of the ongoing dialogue and cooperation with other major industrial countries and other consumers, and it is not only the traditional-always CD countries. It is the new globalizers, the countries like China and India.

Seventh, when markets become tight or disruptive, the public's fears rise, and those fears through panic buying can, in extreme, turn into self-fulfilling prophecies. We have seen that before.

Right now, as I say, we are certainly in one of those periods again when it comes to gasoline, and so often, it is hard for people to focus and understanding that it is problems of new regulations, switching regulations, logistics, and, of course, the high price of oil in the crude markets that is driving all of this. I think it is very important, both from the public and private sector, to just try and have good quality information to address this.

Eighth, sometimes we forget it, but a healthy technologically--and I emphasize technologically driven domestic industry is necessary to energy security.

Ninth, fundamental point and I think a fundamental concern of the National Commission is that commitment, that ongoing consistent commitment to R&D and innovation that goes across a broad spectrum and takes into account current and future environmental consideration, and you need a steadiness, not an up-and-down.

Let me say a word about supply. It is interesting to note that, for a long time, it was said Iraq was the second-largest country in terms of reserves. The other day, I saw an article in the newspapers that said third, and it put it after Canada, which by some estimates--by some estimates, it is now the second largest.

It depends how you view the Oil Sands, but with that said, of course, reserves are concentrated in the Middle East, although the Persian Gulf share of world oil production has declined by about 25 percent over the last 20 years as non-OPEC has come into this situation.

But what about the future? What about meeting? How are we going to meet that 20-percent growth in demand?

Well, when we do our numbers, we see the Middle East here, about over this decade increasing somewhat over 7 million barrels a day, but almost even with it, surprisingly, is Russia and the Caspian, reflecting the transformation in the Russian oil industry as well as the development of the Caspian. And somewhat far behind, but not too far behind, is West Africa, another major source of growth of supply.

But, of course, all of those, those are numbers, those are projections, and those of us who do projections know that they get changed by events, and what will be critical is the decisions governments make in terms of what kind of investment environment they have, the decisions that governments make both consciously and inadvertently in terms of the timing of investment. So, a year from now, those numbers may look somewhat different. If you are looking at where is the focus of activity going to be, that is going to be from a global point of view.

And it is being driven by demand. When Bill and I were in China, a couple of months ago, it was very interesting. There was a conference called by the state planning commission, and their issue, their concern was how was China going to manage this transition to being depending upon world markets, having built of so much of what it has done on self-sufficiency, and that it is happening fast.

China is now the third-largest new car market in the world. Last year, 4.4 million cars were sold in China, an increase of 35 percent over 2002. That is where they are in the income stream, electricity demand growing at 15 percent a year, and you found a leadership--I don't know if you carried that away, Bill, but I certainly did--that was almost preoccupied with almost its own notion of an internal energy crisis.

Five or 6 or 7 years ago, if we had read the Foreign Policy, the international affairs magazines, we would have seen people talking about resource wars in Southeast Asia. I think the Chinese have moved in a different direction to try and meet their energy needs through the same kind of global markets that have so benefitted their overall economy.

I want to just talk about two other points. One is a whole new dimension of energy security, which is the development of the liquified natural gas business.

Five years ago, the door seemed to be shut on that industry. The facilities were literally shut. Plans had closed down. Today, we are seeing the emergence of a new global energy business built around natural gas, built around LNG, which will link Asia, Europe, and North America, if not in a single market, in a series of interconnected markets. I think it is leading to kind of a new concept of gas on the move, gas on the high seas that can change directions in response to market questions.

What is driving, what has turned around the gas business to create this? I think there are four things that have happened.

Number one, world gas reserves are as big as oil's, and countries and companies want to figure out how to monetize those, particularly for countries as a source of revenues, but it has been up until now a kind of point-to-point rigid, primarily, Asian business.

You may remember the old ad, the High-Priced Alternative, but no longer. First, costs have come down 30 percent over the last few years. Second is rising demand because natural gas has been the fuel of choice in electric power around the world, not just the United States.

Those of you who follow the U.S. business know that we added 200 megawatts of new capacity in the last 4 or 5 years, almost all of it gas-fired. That is like increasing our total supply of electricity capacity in this country by 25 percent, and this has happened around the world.

Thirdly, governments want to monetize it, and fourth is we have a kind of tight situation in the United States. Our reserve base seems to be we can, more or less, keep it level, but demand is set really to grow.

So we may indeed see a much larger, more flexible global business. There are three big questions. One is finance; how do you pay for it. Secondly is development in the United States, will it go forward in a timely way or not, and the third is what does it mean in terms of relations with exporters, creating a new set of mutual interdependence and that will be worked out over time.

The other issue that I just want to mention is this wider dimension of energy security. If you think about it, since the rise of industrial society, the energy system has been a target in warfare.

When the U.S. bombers started attacking the German synthetic fuel plants in the second world war, one of the German generals said at last they have stopped their lunacy and they are doing what counts, but I think from '73 onward, we mainly thought about it in terms of the security of the flow of oil. But now, it is this wider dimension again.

When Osama bin Laden threatens to attack what he calls "the hinges of the American and world economy," he presumably means the critical infrastructures

that run our economies: transportation, communications, IT, finance, and, of course, energy.

Energy is a very big picture in terms of infrastructure. The numbers on every dimension, from pumping stations, gathering plants and terminals, a system to move 11 million barrels a day of oil into the country, 160,000 miles of high-voltage transmission lines, you could go down it.

So this is a focus, and I think people are coming to grips with it, but it is complex because it means private companies. It means Federal Government. It means States and local governments. It means kind of new ways of operating and protecting a system that really wasn't designed to deal with these kind of threats, and I think it is a fruitful question to explore how well we have done, what have we done, what still needs to be done in this area.

I think that there is a question about the cost of it and who pays for it, and I think ultimately, if we are going to build a higher degree of security-into-energy infrastructure, that ultimately will need to be folded into the price of energy. That will be a requirement for enhanced energy security that we require in this new era.

When we look out on energy, both Bill and I and many other people will talk about the trends, which you can see happening. Some things that happen in energy are very clear, and you really can see the trends unfolding. Others come as surprises and only after the fact, and you look at them, you see why they were inevitable, just not clear beforehand.

I began by quoting a former British prime minister, Winston Churchill on the subject of energy security and would like to end by quoting another. Bill

mentioned the "Commanding Heights." When I talked to Margaret Thatcher for that book, which then became a TV show, she said at the very end of it, after a very long discussion in which I asked very few questions--

[Laughter.]

MR. YERGIN: She said, "Remember Thatcher's law." Not being familiar with that axiom, I hesitantly asked her, "What is 'Thatcher's law'?", and she said, "It is the unexpected happens, and you'd better prepare for it."

[Laughter.]

MR. YERGIN: These days, we are very mindful of surprises, whether in the Middle East, Venezuela, Nigeria, or in places that we are not really thinking about today. Yet, it seems to me that Thatcher's law remains a very good principle, indeed an essential one, to keep in mind both now and in the future when it comes to the critical matter of energy security and the challenge of energy in this 21st century.

Thank you.

[Applause.]

MR. TALBOTT: Thank you, Dan. There is a microphone here right now that it took me a while to find.

The schedule doesn't permit too many questions. We are running a little behind, but a couple--I am going to start them off.

I have two questions for you, Dan. One is what ever happened with respect to our expectations from the early 1990's that gas was going to be the environmentally optimal, plentiful source of supply on into the indefinite future, against

which we programmed so many decisions in the Clean Air Act, in energy policy and the rest.

Unless you take too long with that answer, I will ask a follow-up simple one.

[Laughter.]

MR. TALBOTT: Is it in the economic interest of Russia, which you have said is now an emerging major energy producer, oil producer, to sign the Kyoto and ratify the Kyoto Protocol, and why haven't they, if it is?

MR. YERGIN: On the first question, I think gas was plentiful and cheap, and we had this gas bubble that went on. As they call it in the industry, it became eventually known as the "gas sausage" that went on and on, but as I said, we built 200 gigawatts of new electric capacity, almost all of it fired with gas. Demand built in future demand growth.

But in terms of gas, I think starting around 1999-2000, you started to see the maturity of the gas reserve base combined with the fact that a lot of errors are closed off or very slow or difficult to work in, and demand started to run ahead.

It got hidden by the economic downturn, but it has come back again. So we are, in a sense, in a state natural gas today, but without the geopolitical overlay where we were in the early '70s, where we went from being largely self-sufficient in oil to being importing. Also, we are a continental. It is Canada, the U.S., Mexico. Mexico imports 20 percent of its gas from the United States.

MR. TALBOTT: Which is really appalling.

MR. YERGIN: It is really the nature of the political system.

Your second question, we recently had our CERA conference in Houston, and we had Andrei Illarionov, who is the economic advisor to President Putin, and he gave not one, but two speeches on Kyoto and he was very consistent between the two of them, which was arguing why it was not in Russia's interest to sign it.

MR. TALBOTT: Well, he is well known for that point of view, but it has never been clear that he speaks for more than himself. He hasn't, or has he?

MR. YERGIN: Well, I think we will know after the Russian election. A lot of it has to do, I think, with Russia's bargaining with Europe. I think it is very much caught up in that.

MR. TALBOTT: Thank you.

Questions? All the way in the back.

MR. CURTIS: Thank you very much.

I am Mike Curtis with the Department of Energy.

On your nine principles of energy security, one point that was not on the list is the linkage between poverty and energy security, particularly U.S. energy security.

We were talking about 1.6- to 2 billion people in the world who don't have access to electricity. I am just wondering if you could share some of your thoughts about how poverty, lack of economic opportunity, hatred terrorist acts towards the U.S., and I wonder if you could comment on that. Is that an important issue for these principles that you discussed?

MR. YERGIN: Well, I think poverty described on that scale is a major source of instability of which energy is just part of it.

One of the great tests of globalization is, indeed, what does it do about global poverty.

Also, we have seen in the last few years in the bust in the electric power business that backing off, as Bill knows from a commitment to developing and an ability to develop infrastructure, to bring energy supplies to the poorest people. And that is a conundrum for governments as well as international organizations.

I would also go back, that if you look at the record and you look at the success of East Asia, the single most important thing that seems to--look at the growth you are getting in India now that it has decided to integrate and open itself to the world economy. So I would go back to the concern about what I call the new protectionism right now. It is a really urgent question for development.

MR. TALBOTT: One more? Sir.

MR. HERSHEY: I am Bob Hershey. I am a consultant.

Could you comment on oil from Central Asia, particularly what might happen with the Baku Tbilisi Ceyhan pipeline?

MR. YERGIN: The major pipeline, which I guess is supposed to be finished by the middle of 2005 is the Baku Ceyhan pipeline that some people--you know, there has been a long project to get it done, but the problem from Central Asia right from the days that oil was developed there in the 19th century is that it is not located near the high seas.

I think the development of that pipeline is a big contribution to energy security and energy diversification.

I think that if we look beyond, there are two other pipelines that need to be built. One is a Russian pipeline that will go to Myrmansk, and the other is a Russian pipeline that will go to Asia.

The major bottleneck now, one of the major impediments to development of Russian supply is the pipeline bottleneck, and resolving that is going to be really quite important.

MR. TALBOTT: I think we need to clear the platform for the next session.

Thank you, Dan. This could obviously go on with fascination for quite a long time.

[Applause.]

MR. TALBOTT: The president of the American Enterprise Institute, Chris DeMuth, is here, one of our three co-sponsors.

Chris, I turn it over to you.