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P R O C E E D I N G S

DR. EBINGER: Good afternoon, ladies and gentlemen. I'm Charley Ebinger, the director of the Energy Security Initiative. And on behalf of Brookings, we're delighted to have you. And we're particularly delighted to be hosts to David Goldwyn and Jan Kalicki on their wonderful, relatively new volume, *Energy and Security: Strategies for a World in Transition*. For those of you that have not seen the book, it is available for purchase outside the door. It is a prodigious volume, I think pushing -- is it over 500 pages? Eight hundred pages, okay. So it's quite a tome that has articles has a number of leading people in the energy field and I think makes an incredible contribution to those of us that particularly teach on energy and security issues in various colleges and universities.

Our format today is I'm not going to go into lengthy introductions on the speakers because you have them, but just to note that we really do, if you look at our speakers in tandem, have an incredible range of expertise from journalism, a gentleman who has followed energy developments, particularly in Africa for many, many years; we have people who have served in government; we have people who have served in industry and the highest councils of leading groups, like the Council on Foreign Relations. So it's a tremendous opportunity we have here for the panelists' range of expertise.

And we have, I think, very large expertise, particularly at the table, on pretty much energy markets in most continents of the world. So, hopefully, we will hopefully get involved in using that to elucidate critical issues confronting the global community.

I'm now going to introduce David, turn it over to David Goldwyn, who is going to serve as moderator along with Jan since, as a contributor to the volume; I am actually one of the panelists today. David?

MR. GOLDWYN: Terrific. Well, thank you, Charley, and thank you all for coming. There's so many friends and colleagues and former colleagues in the audience.

We're really honored by the turnout today.

The format will be this: Jan is going to introduce the concept of the book, which, long story short, is ways this new energy transformation can help the United States use energy as a tool of foreign policy and a force for good. After that, I will make the pivot to transparency, government, and energy poverty. That's really going to be our focus today. And then we'll hear from our three erudite contributors and panelists on those subjects.

So, Jan, let me turn it over to you.

MR. KALICKI: Well, thank you very much, David and Charley, for your great hospitality here at Brookings, the new home of Ben Bernanke.

With Charley's excellent Energy Security Initiative this is really a great forum to think about some key issues in the book, particularly the issue of energy poverty, and getting electric power to over 1.4 billion people who do not have it. And I think we need solutions for that which minimize waste and corruption and promote good governance. And we couldn't have a better panel to mix it up on these questions. The authors have some excellent chapters on these subjects.

In our first edition of this book in 2005, we emphasized the need for a more coherent U.S. energy and foreign policy and trying to get the energy guys to talk to the foreign policy guys, for example, things like that. And I think we've made some progress there in the government, but one can think of a lot further improvements that could be made, I'm sure.

In the next edition which just came out we emphasized not only the progress on these issues, but how much has changed since 2005, and seeing whether this 180-degree transformation of the energy system can create new opportunities not only for U.S. policy, but for moving toward a global energy system. And I'll say a little bit more about that in a moment.

But just thinking about what has changed, just to give a couple examples

-- and there are lots of examples -- obviously, thanks to offshore and shale, North American oil and gas production will soon match that of Russia and Saudi Arabia. And if anybody caught any one of us saying that in 2005 they'd probably send us to some asylum far away from D.C., but anyway, that's the way it is.

And then the second one I think that's very important is that the energy field, the energy playing field, is leveling. The biggest consumers, like the U.S., turn out to be very big producers. And the very big producers in the Middle East turn out to be very big consumers. In fact, number three after China and India. So lots is changing in this world. And what we're asking in this book in the broadest way is what do these changes mean for future opportunities for energy leadership, not only by the U.S., but by our partners and others on the energy landscape?

And just, again, to offer a few of many conclusions that we come with in the book, we feel that these new conditions and our own abundance here in North America enable us to form coalitions where we're active participants and contributors. And, for example, you need look no further than the Iran sanctions issue and the diminution of Iranian exports, who then realize that there are opportunities now in the international energy system to compensate for that. And certainly the Saudi-U.S. relationship is a very important part of it.

Another example is that as you get more oil and gas supplies, that obviously opens up the market and it helps to break down monopoly pricing, although Ukraine reminds us that it can be rough sledding, that it's not nirvana by any means. It's a question of direction and trying to move that direction further in a positive way.

And another example from the climate side is that market forces and displacement, it could be argue, even more than U.S. Government or other government policies, are reducing greenhouse gas emissions. The clearest example obviously being natural gas displacing coal in power plants. And I'm sure there'll be more that Charley and others will be saying about that.

But, you know, thinking about it in the broadest sense, the opportunity, to my mind, is to move from purely nationally based energy security policies to globally oriented policies. Obviously countries play critical roles, but I would argue that the international market is creating not only new conditions, but opportunities that are almost action-forcing to move from what we've been used. You know, its 40 years since the Arab oil embargo. We were used to the OPEC/non-OPEC issues, to almost zero-sum confrontations over and over again. It really was a situation where we had to confront real divides in the energy market. And now we think that we can move toward a more collaborative structure.

We've taken the liberty of calling it a global energy security system. In other words, GESS. And those who know about *Getting to Yes*, that wonderful book written a long time ago, well, we were talking about getting to GESS. That's the only thing that's similar between the two books. But getting to GESS for us means global energy strategies to match global energy markets. And when we think about it, you have to think about obviously in terms of building blocks, and there are many of those in bilateral and regional terms.

Just to mention a few before closing, after decades of impasse, China and the U.S. are stepping up cooperation against greenhouse gases. Anybody visiting China these days will certainly attest to the urgency that they feel on that. The U.S., the EU, and Russia are cooperating on energy efficiency, I think, in significant ways. Saudi Arabia is investing big-time in solar and cutting back consumption, something that, again, you would not be talking about in Riyadh 5 or 10 years ago.

Regionally the Arctic Council is preparing to promote energy development and protect the sensitive polar environment. That, too, is a really tricky one, although it's probably longer term in character. And globally I think it's important to see the opportunities both for combating energy poverty which the panelists will discuss and to avert the shortages and the outages that further destabilize countries like Pakistan and

Yemen or you name it.

So we think we have at hand the new energy markets, resources, and opportunities to achieve this. What remains is the need for a global energy mindset and a roadmap and, of course, above all, leadership. And we hope that our book helps us, at least in the areas of mindset and roadmap. Leadership, we'll have to figure that out.

So thanks and I look forward to the discussion.

MR. GOLDWYN: Terrific, Jan. Great start. Well, one of these opportunities that Jan was talking about where we can deal with issues of national security and climate security and energy security is engaging countries in Africa and in South Asia on energy governance and on energy poverty. For countries that have limited access to energy services, still about 2 billion people in the world, access is key for economic development, but it's also key for stability. You talk about ungoverned spaces, disappointed expectations, the lights going on in Pakistan in the middle of the summer; you got a serious problem there with stability. So that's an important issue.

And then for new energy producers, and you have world-class natural gas finds now in Mozambique and very significant finds in Tanzania, oil offshore Kenya, new developments for oil in Liberia and Sierra Leone -- countries without a great deal of experience in energy development before. So for those countries, how they manage the revenues, how they manage the resource, how they manage the expectations of their populations will have everything to do with whether or not they are stable, whether they contribute to security, or whether they suffer some of the internal divisions that you've seen in Nigeria and in Sudan and in other places.

So another issue that's connected to this is Asia's choice of fuel. Whether Asia uses coal or gas, whether it uses biomass or nuclear, that choice of fuel, their ability to access energy, the price they get that energy, and whether they're willing to make a cleaner choice will determine the fate of and their development path for climate emissions going forward. And all of that infrastructure is being locked in now, so access

to energy for them, security of supply, is a huge climate issue for us.

So part of the benefit of this U.S. energy transformation is that we don't really need other countries' gas anymore and, with limited exceptions, we don't need their oil. So our ability to talk to Libya, to Iraq, to Mexico even about energy developments is no longer colored with the perception on their part and this is really about getting access to their resources. Their resources are important for global energy security, but they're not important necessarily for us, for imports into the United States. So diplomatically, that's a big plus for us to be able to engage on those issues.

And, frankly, our self-sufficiency -- we don't say "energy independence"; we think that's kind of a bad term -- but our self-sufficiency is a big help in our ability to put these kinds of issues higher on the diplomatic agenda, and I think we've done this a lot in the last six years. We have a new Energy Bureau, we have an energy governance program where our Treasury teaches how to manage the money and our Interior Department teaches countries how to do concessions. We've joined EITI, so we're practicing what we preach. We support the efforts of the IMF and the World Bank to engage these countries. The G-20 is looking at encouraging countries to reduce inefficient subsidies.

So we're making some progress diplomatically, but it's unclear whether we're actually making progress in the countries. So that's what we're going to talk about today is what more we can do. And all of our contributors and authors here have robust suggestions on exactly what we should do.

So, Charles McPherson, let me start with you because you've traveled to a lot of these countries. You've worked with these new energy developers, Mozambique and others. So I wonder if you can talk about, given your experience at the IMF and the Bank, what have we learned about what works for these countries? And what kind of advice are you or would you give to these countries now about what they need to do to have the governance in place to manage these resources?

MR. McPHERSON: Thank you very much for the invitation to this panel and thank you for your introductions. I'm not going to talk about technical topics, reserves or production, and so I'm not going to even address what Jan did with the global energy politics, but to talk about governance and transparency and their relevance to U.S. foreign policy. Governance and human welfare, governance and stability, these are both central objectives for U.S. foreign policy and relevant to this discussion.

What's the main issue? The main issue is that developing countries contribute importantly to world energy and oil supplies. The U.S. is increasing now, but they're still out there and make very important contributions. The significant revenues that they earn ought to contribute importantly to positive development impacts in the countries where the resources are coming from. But instead, what we observe is something that's known to a lot of you, I think, is the resource curse, or what I prefer to call the paradox of plenty; namely that these countries are underperforming. They're not getting the positive developmental impacts. Rather we see low growth, bottom tier scores on human development, political and social instability, and often very violent conflict.

There are a host of causal factors in this, I think, both economic and technical, which I think are largely understood and there's a consensus on maybe what some of the solutions are. Whether you can persuade the countries to think about those solutions is another matter. And political and social causal factors, and that's where you find the really tough nuts. Very hard to resolve. I think your experience in part of the African countries will be very relevant there.

On the economic and technical side, you've got a series of them which I won't dwell on. They're discussed in the book chapter, Chapter 19, but the so-called Dutch disease -- exchange rate appreciation, loss of economic diversification -- leads to instability and loss of competitiveness. The volatility, the oil cycle is notoriously volatile and very difficult for these countries to manage. Public sector expansion, the influx of

major revenues from natural resources gives the government a lot of room to expand its presence in the economic sector, pushing out the private sector, which for a lot of people is the best hope for economic growth and development. And inefficient investment, a lot of money coming in quickly to countries which may be very weak on institutional capacity, weak on governance, is a recipe for inefficient investment and waste.

What are the political and social factors? The hard ones, as I said, I think they're fairly well understood, too, but they are extremely difficult to address and solve and practice. One is the diminished accountability people know about, too. If you have a political elite that has got a lot of income coming in from one source and so on and not the general population, they don't feel particularly accountable to the general population for what they do. And they also have the money to buy off opposition or intimidate opposition. So when we're talking about reform, you're talking to these people who may understand what you're saying, but, in fact, they might have no intention to do it and no pressure to really do it. How do you exert leverage on them?

And then, of course, the other big factor is corruption itself. These sectors, oil and other natural resources, but oil in particular given the margins of money involved, are lightning rods for corruption. And that certainly gets in the way of reform.

How have people addressed these challenges? I say "we," I mean stakeholders, but there are lots of different players involved and, hopefully, we're going to get them all working together under GESS. But several things that were done, I think, that are part of the panoply of instruments for addressing resource curse problems.

One is better policy, legal and contractual frameworks. And there are a lot of people, a number of them I know in this room, who have been helping governments on the design of their investment frameworks. Better policies, better laws, better contracts.

Better fiscal regimes and administrations. That's how does that money come in? How do you attract private investment? What are you going to do with the

money?

A lot of attention to organizational structures is important. Who does what? How is it organized in the country? What are the roles and responsibilities of the different actors in the country when it comes to managing this wealth? We can come back to it in the Q&A, but I think the national oil companies deserve a great deal of attention in this regard.

Better revenue management and expenditure policies, the save-spend decisions. Are their resource funds, which you've all heard about, I think, expenditure priorities? What do we mean by, if we're helping one of these countries, investing in investment to help them turn the corner on wealth management?

And finally, putting social and environmental policies squarely on the agenda has been increasingly, for the last 10 years, part of the agenda.

I suppose I need hardly say a political context is going to play a huge role on whether or not you're going to be successful in pushing some of these policies, using some of these instruments for reform. If you've got a country that has a very short time horizon and they've been characterized as predatory autocracies or unstable factional democracies and so on, short-term focus you're going to have a hard time. You're going to have work on a variety of things to get them to adopt the correct kind of policies, to work with them even. A longer-term time horizon is rooted democracies, much rarer in the kinds of countries we're talking about, but they obviously give you a better chance of implementing reforms. And so you have to keep this political context in mind and what you could do about the political context if you're going to work with the countries involved.

What's the role of transparency in all of this? Well, I think it's generally regarded, and I believe, it is the cornerstone of good governance. It builds trust. It promotes accountability, the kind that's missing. It limits the opportunities for corruption. It's certainly essential to macroeconomic management and forecasting. And it also, of

immediate interest to many of these countries, is the fact that transparency will improve access to finance. Investors are much more interested in a country that is showing a lot of interest itself in transparency in this area.

What are the stakeholders, we, done to foster transparency in these sectors? Well, just as some examples at the global level at least, then I'll get to the individual stakeholder level. But the global level, two -- I mentioned the Chapter 2, Major International Initiatives. One is the Publish What You Pay and the resulting Dodd-Frank legislation you've heard about here in the States. The Publish What You Pay was an international coalition of some 150 or so NGOs working very hard to promote transparency by lobbying to have a requirement for a stock exchange listing that companies then publish what their payments are to foreign governments, their payments of taxes, royalties, other required payments. And this lobbying paid off and you got the Dodd-Frank; very effective. A lot of NGOs here and local NGOs were involved in this and it paid off here with the Dodd-Frank financial responsibility legislation, which does require just that, it requires companies to -- if they're going to list, they have to publish what they paid.

The second one, which I'll only deal with these two out of many initiatives, is the EITI that David referred to, the Extractive Industries Transparency Initiative. That began a little bit after Publish What You Pay, but with much the same objective. It focuses instead on the initiative being taken by the host countries themselves. But once the host country opts in to membership in this initiative, it does require much the same results. It requires publication of the payments that all the companies make at the individual level and it also requires that the governments report on the revenues they receive, and there's an attempt to match and reconcile these.

So two important transparency initiatives. That EITI one has been quite successful globally. About 38 countries have endorsed it, but 16+ have actually reached what are called candidacy stature -- I mean, compliance stature, which means that

they've complied with the principles of the EITI Initiative.

Are there causes for concern? I think there are. I mean, it's just not going to be so simple. I think we may come up with a list of things that we can do and there are a lot of initiatives that are being made out there, but it's not going to be easy.

Can we really count up on a serious follow-up to transparency? Is what we put down to compliance -- what we see, put down as compliance to something like the EITI, is that just lip service or is it really the host country manipulating the international agencies, the international efforts, even the local NGO efforts to achieve transparency and good governance, and then going off and doing what they want because they have the money and they have the political clout and they have the force that they can use? So are we being manipulated and how do we move beyond that?

I mean, in EITI you see listing as a compliant country Cameroon, as a flagship country in compliance with EITI. Is that really serious? (inaudible) the behavior of Cameroon and other areas or are they just running up that flag and letting the campaigners do what they want and going their own way?

A lot of the key players are absent from this whole transparency debate. You don't see Russia showing any interest in it except maybe in Mr. Snowden's transparency. (Laughter) But China, Algeria, Equatorial Guinea, Angola, Venezuela, Brazil -- all big producers -- they're not in it. What does that tell you about the ability to really achieve something like transparency? You're going to need extra things.

Clare Short, the current managing director of transparency -- of the EITI, she just made a keynote address. And she said we are going to need tangible, demonstrable follow-through if we're going to be treated seriously in the transparency effort.

Let me just close now. Sorry, I've taken a bit of time. What roles do we or can we do as stakeholders in pursuit of the good governance and transparency? And obviously, I hope we're going to get a lot of suggestions from the audience. It's not all

going to come from this panel. There are going to be a lot of good suggestions from the rest of you.

The host governments, what are they going to do? Well, that's where the buck stops. And it's going to require political will at the top. And how do you get that? What kind of ins do you have for that? What kind of leverage can you exert? And that's going to require continued grassroots pressure in those countries, so civil society and so on, particularly meeting.

The home governments -- that's us, the U.S. Government -- what are we going to do? Because it takes two tango. I mean, it isn't all putting the fault on these home governments -- host governments. The home governments have a lot to do with this. They have technical assistance. They have funding. They have economic and political leverage that they can do. They can ask for higher standards from their companies. Your company, the company you're affiliated with produces excellent codes of conduct and does a lot of great stuff, but what about other international operators coming out of China or India, Korea, or even Russia?

Industry. Yes, ethical standards, codes of conduct, and so on. I should say, people talk about corporate social responsibility. I think we're going to come back to that possibly, but I think you should recognize that what companies can do in that area is de minimis compared to the responsibility of the host governments.

NGOs, CSOs, and media, very important role in holding feet to the fire and also in educating local civil society in how to deal with the information that comes out of transparency campaigns, how to use it effectively.

IFIs, the kind of institutions that I've been associated with, the regional development banks, can use conditionality of their funding to achieve transparency and governance objectives. Bilaterals can do much the same thing. U.S., UK, Norway, Germany have been very effective. And the regional and international fora have also put these things high on their agenda, which is going to require continued attention from G-8,

G-20, and so on. Fortunately, it's been on the agenda of these fora for the past several years consistently, which is a very good sign.

Finally, the U.S. Government role. I should say, by the way, I'm not a U.S. citizen, but I've been here a long time and I've formed a fondness for the United States and I will be a citizen soon. Speaking to my wife who'd like me to get myself registered. (Laughter)

These issues, as I said at the outset, all of the issues or topics I just raised have a very direct relevance to the U.S. foreign policy objectives. The economic development David mentioned at the beginning, poverty reduction, political stability has a lot to do with energy security.

What are people doing? And David, I think you can answer, and Jan, too. He is effective as I am on this one, but because you both have been so deeply involved in it, but there are lots of initiatives. The U.S. Treasury has the Office of Technical Assistance. And I've met them in the countries that I've traveled to offering support on revenue management, things like a proper audit and accounting in the energy and oil, gas, and mining sectors.

The U.S. State Department, it was your initiative, wasn't it? You were involved with the Energy Governance and Capacity Initiative, which David was very involved in and was doing a lot of good work on good governance and technical assistance for that. Department of Interior, USAID are all in the game. Millennium Challenge Account requires you to report transparently on your oil revenues as a condition for access to the challenge account.

So there are multiple objectives, multiple initiatives, and multiple initiatives in the United States. The global energy sector and good governance and transparency are clearly on the U.S. Government's foreign policy radar screen. But I think the discussion will bring out that we'd be all helped by better coordination and focus and it would produce a greater beneficial impact. So over to GESS.

Thank you.

MR. GOLDWYN: Great. Thank you, Charles. Well, Phil, that's a pretty long list of -- a daunting list of things that governments, particularly these governments who haven't dealt with energy production, need to consider. What's the outlook? You contributed the chapter on Africa. What's the outlook in Mozambique, Tanzania, Kenya, and some of these other countries?

MR. VAN NIEKERK: Can I step back just a little bit and just talk about what's at stake here? And try and understand, we're not just talking about new producers in Africa. We're talking about a fundamental change in the African economy that's being driven by hydrocarbons. You know, we talk about Africa rising as if it's, you know, about the other extractives or simply about the consumer markets. But, in fact, if you look in terms of the revenue, in terms of the investment that's going to come into the infrastructure, that's going into oil and gas in Africa, the critical point about whether Africa succeeds or not, to reach a stage of sustainable development, is whether or not this hydrocarbons thing is able to be managed properly and be able to produce an outcome that is good for Africa, not bad for Africa, because it could just as well be the other way.

It can move towards conflict, as in the Sudan and parts of Nigeria. The corruption that we've seen in some of the traditional producers and the lack of development that we've seen in some of the major producers, like Nigeria, which still comes very close to the bottom in terms of human indicators. And so just to sort of talk about this a little bit, because I don't think it's understood enough, Africa only produces 9 percent potentially of the world's production, but, for Africa, that's a big deal. For Africa, because the economies are much smaller, this is massive. Africa has the same number of reserves, same amount of production prospectively as Latin America, but is a much smaller economy overall.

And we're seeing it in three -- just to sort of, again, take a little bit of a step back, just to understand where this is happening. First of all, there's the Gulf of

Guinea, where you've got your traditional producers: your Nigeria, your Angola, Gabon, et cetera. But now it's sort of moving outward and you've got Liberia, Sierra Leone, of course Ghana being a new producer, Côte d'Ivoire, and Mauritania. So you've got a whole bunch of new producers on coastal West Africa.

Then you've got massive potential new oil discoveries down the Rift Valley. Uganda about to produce new oil. Kenya, very major discoveries in the Lake Turkana area. Ethiopia, some very exciting -- I mean, Ethiopia's traditionally been a non-commodity country. It's about to kind of enter into the club as well. And then, of course, Sudan, because Southern Sudan is actually -- the Sudan Rift is actually part of that East African -- but you can follow the Rift Valley down and everywhere that -- you know, where you see the great lakes, you know, there's likely to be something there. There certainly is exploration going on at the moment.

Then you have the Indian Ocean, massive discoveries of natural gas. Mozambique, if Mozambique goes ahead and builds two to four trains of LNG, that's larger than the country's GDP at the moment just to build an LNG facility. Tanzania and then, of course, further out into the Indian Ocean you've also got sort of Madagascar. So that's a pretty major change.

Ten years ago, if you looked at the sort of oil and gas map of Africa, you'd see Nigeria, you'd see Angola, you'd see Gabon, and you'd see the big majors. You'd see Exxon, Chevron, Shell, BP, Total, and that was just about it. Now you've had this huge opening up -- it's not just an opening up in terms of countries, and this is a very important issue to understand, also, in terms of governance, there's a huge surge of new companies, new players coming in as well as indigenous players also kind of emerging. And that's been very important in terms of the discoveries that have been made. The discoveries, the great sort of breakthroughs that have happened over the last 5 to 10 years, it's been Tullow Oil, it's been Ophir, it's been Anadarko, it's been Cobalt in Angola. You can go on.

I mean, the big majors have not actually been at the forefront, but that does change slightly. The major are still there. I mean, the deep -- you know, it's important, also, to remember that Nigeria's still the great sort of treasure of African oil. There's still offshore Nigeria. And that's where the major are still going to be once they sort out the petroleum industry bill, if they ever do, and sort out the fiscal terms of the deep offshore. That's where Exxon and Chevron and Shell, which is ultimately going through a very big divestment process to get out of onshore Nigeria, that's where they're going to be.

And they -- in Angola, as well, they sort of dominate that space. But into the rest of the space come all these new players. In Nigeria you've got dozens of new indigenous players who are going to be taking over the Shell blocks, the Exxon blocks. There's another bidding around for the marginal blocks that's going up pretty soon. So that's got to be taken into account.

Then in understanding the U.S. role, as David alluded to, you know, the U.S. is, first of all, producing shale gas, so we're not going to be a consumer of African natural gas. So the big natural gas discoveries, they're going to go to Asia, they're going to go elsewhere.

The shale oil of North Dakota, which has got a very similar light consistency to the Bonny Light oil from Nigeria, has displaced Nigeria as an exporter to the U.S. So a couple of years ago, Nigeria was selling a million barrels a day to the U.S. Now it's zero almost. So the U.S. is not buying African oil, they're not buying African gas. Asia, Europe, is buying that. But they're still involved as an investor, both in the E&P side and in the engineering and the big kind of construction of infrastructure that's going on side by side as well.

Now, whether that removes leverage or adds leverage, I don't know. Obviously, because no one can point a finger at the U.S. and say, well, you're just here for our resources, you're just here to steal our oil, that obviously gives them a little bit

more sort of comfort in order to engage. But overall, does it -- the fact of the matter is that those that are consuming have not really used much power politically or influence to change things.

I mean, China, two-thirds of China's imports from Africa are crude oil, nothing but crude oil, and it comes from Angola and Sudan. So this figure of Chinese trade with Africa is actually massively inflated. But even when it comes to a country where China is very kind of involved, like Sudan, when it comes to a crisis like we have right now, there's no Chinese involvement, engagement. Obviously they would like to see peace, but where is the Chinese diplomatic influence or diplomatic strength to kind of try and, you know, kind of resolve things? It's non-existent. I can't think of a single dispute, single major issue in Africa where China has actually had any real sort of diplomatic influence, if you look at it overall.

So the question is then -- I think, also, in general, the Chinese influence in the African oil sector has been overstated. It's a fairly light footprint. They come in and they participate just like any Western country, Western company does. CNOOC is in East Africa; Sinopec is in West Africa; CNPC. You know, they're there, but they're not the big -- they're not the ones who have made the big breakthroughs. They're not the ones who are technologically leading the way in the deep water. They're there as investors. They help capitalize once companies have already established or already made the discoveries and want to bring in extra capital.

Anyway, all of this is, I guess, leading to the question of what exactly is happening on the ground right now in regards to transparency and corruption? How is all this, the story that I'm kind of telling you, how is it kind of affected?

And I think, first of all, that in the last 10 years, the environment for corruption has become very much narrower. I think that, you know, a lot depends for Africa that it actually sorts itself out. But I think that if you go back to the '90s, when you look at Abacha in Nigeria, Bongo in Gabon, the ease with which rulers in Africa were able

to extract, take the loot, and put it in Swiss banks, or even Riggs Bank on Dupont Circle or whatever, was actually very, very easy and it's not that easy anymore. And there are several reasons for that that one has to get one's head around. And it's not just the NGOs that have actually done that.

I think, first of all, one foreign policy initiative that's often kind of underplayed and not understood fully is the FCPA, Foreign Corrupt Practices Act. It had a major impact because it's actually at the deal level, so the companies go in and buy blocks, you know, where they auction, where they deal with local partners, where the corruption really starts. And by having set up a legal system which makes it very, very difficult to bribe or to even find other kind of ways around -- to kind of take a cut short, because that's where a lot of the corruption starts. And I think the Department of Justice, particularly in the last five to eight years, has actually been very active. And in Africa, certainly it's a precautionary tale for, you know, the big and little companies.

I mean, Cobalt, I don't know what's happening with their case in Angola, but in Angola, for instance, the difficulty is any company coming from outside has to form a relationship, a partnership with a local company. And the local company is usually tied to the ruling party, to the president, to, you know, kind of officials of Sonangol. It's almost impossible to think of a scenario which doesn't actually create problems with the FCPA.

And because the Angolans need the American companies, it's not a case of, well, we'll just walk across the road and go and speak to the Chinese. That's not actually -- it doesn't actually work that way. The American companies and America's sign-on is actually very, very important. Even in sort of fairly corrupt situations, you know, like sometimes we find in Nigeria, it's quite important. And I think the FCPA has had a big role in that.

The other thing you've got to understand for many of these new companies coming on, they've got to and they've got to source their -- they've got to get their capital in London. They've got to come here to New York. And so, again, FCPA or

the regulations on this side actually make it very difficult, you know, for people to go (inaudible). And that includes the African companies that are coming up, that are going to have to go and list in London or got to go and -- right now there's a big Shell divestment on the go. And you've got, you know, one of the biggest blocks in Africa is up for sale, OML 29, it's about a billion barrels, by Shell. There's four major companies that are fighting for it; a local operator's going to get it. They're all in London right now trying to get capital in order to do that, in order to be able to bid against each other.

So it's not a simple thing that you can just simply bribe or do something in the darkness because the darkness is not so dark anymore. You know, there's a lot more light. There's a lot more journalistic focus on corruption. There's a lot more of the NGOs.

But I think at the end of the day, what matters for Africa to make this thing work is going to be local Africans themselves. It's not about telling Africans how they should regard corruption or sign on to this initiative, sign on to that initiative. It's an understanding that Africans have that this bounty, this new hydrocarbon sort of revenue that's going to be coming in, should be for all and not just for the elite.

And we've already seen it to a certain extent. The big protest in Nigeria around the oil -- the fuel -- scrapping of the fuel subsidy was about corruption. It was about people feeling that their benefit was being taken away before the much deeper sort of problems of corruption by the elite were sort of being dealt with. And so, ultimately, at the end of the day, it's a question of African democracy actually working. Otherwise, it's not going to work. You know, it's going to have to be Africans that deliver on it. And I think they have the message. I think that Africans understand very well what it actually means for them.

MR. GOLDWYN: That's great. And a little bit of encouragement there, at least for my government colleagues, that we're doing something right, that some of these policies have an effect, so we'll talk at that one.

Charley, you contributed a terrific chapter on energy poverty, but you've also done a book on India and Pakistan. So I wonder if you can unpack this problem a little bit. You've got countries in Africa, like Nigeria and Angola and Congo, that are rich in resources, but they don't have electricity; and countries like Pakistan that have coal and have gas, but can't manage to produce it economically. So is this problem getting worse or better? And what are sort of the core things that countries need to do to get a handle on it?

DR. EBINGER: David, it's certainly getting better, but not good enough. Jan mentioned 1.4; numbers vary, but 1.2 to 1.4 billion people in the world who have no access to electricity. It's estimated there are probably another 2 billion that have access to very limited electricity, maybe a light bulb, maybe a fan in their home if they're lucky. But that also -- when we look at the figures coming out of the donor institutions about how the world is being more electrified, this is certainly true. But when you look at the reality of how much of the power is lost, how much of the power is undelivered, how much of the power is not paid for, I would argue that the number of people suffering energy poverty is far greater than any international or bilateral institution has calculated.

Let me just quickly, for those of you that aren't familiar with the issue, show you how important electricity is when it comes into a village, say in Pakistan or anywhere else, but I have firsthand experience seeing this in much of the subcontinent. For the first time when there's electrification and you can have a pump down to the river, women and children that may spend up to 10 to 12 hours a day in the past carrying buckets down the hill and up the hill all of a sudden are freed up. That time can be spent on education for the girls in school. For the first time when electricity comes into a village you can have refrigerated vaccines rather than worrying when someone is desperately ill whether they're going to arrive along a treacherous mountain road. Similarly, refrigeration allows crops that may have rotted in the fields because the trucks broke down, didn't get there on time, can now be refrigerated. Children and women traditionally

working in the out of doors can study at night.

For the first time you have the opportunity with contact with the outside world, even if this is only a small community center, but a radio contact, a TV contact, maybe one Internet. And a small rural village that may not even have an identity to the national government or, for that matter, even the provincial government in which it's located, knows there's a bigger entity out there, something called the nation or the province. And I would argue this can lead to enhanced social integration.

But the reality is the World Bank -- I mean, excuse me, the IEA estimates that by 2035 we're going to have a 90 percent growth in electricity demand in the emerging markets. Just the infrastructure for that is projected to be \$23 trillion. When you think if you take all the bilateral and multilateral assistance going -- and even private sector investment going into the electricity sector, it's too late and not enough. We've got to find a way to step up the pace.

But I would argue that one of the problems we've seen, and it's heavily seen in the subcontinent, but is seen elsewhere, is the donor community itself for many years has been schizophrenic about energy poverty as a key item of the international agenda. And by that I mean back in the 1980s, when we first started talking about climate change, a very legitimate concern, and one if you take what we've been talking about of enhanced fossil fuels emerging throughout various parts of the world, it does not exactly give me solace even though I'm generally a supporter of fossil fuel utilization. The reality is for too long the donor community with the threat of climate change went on to say we've got to develop clean energy. Not energy poverty, clean energy. But they've been schizophrenic about what is clean energy. Is clean energy renewable: solar, wind, hydro, biomass, geothermal? Maybe energy efficiency and conservation? Or does it include clean-burning natural gas, advance more thermally efficient coal plants? Which even though it's coal, an investment from a plant that gets 18 percent efficiency to 35 or 38 can be a staggering change in the overall energy mix. And god forbid that you

mention nuclear power at the World Bank, or for that matter big hydro, which one day is up, one day is down. We have to decide what we're going to do and we have to get on with the job.

Now, in Pakistan and almost every country I worked in for 33 years before Brookings, we don't need to put another dime in institutional development in Third World economies to help develop regulatory regimes, to help reform state-owned energy sectors. Hundreds of millions of dollars have been put into this. Study after study by some of the best consulting firms around the globe have diagnosed the problem.

Regulatory regimes have been created, but they have -- in very few places do they have any real teeth. Oftentimes, the donor agencies, as long as you get the presidential edict or the law enacted, we've put in a regulatory regime. There's no sense of a regulatory process. This is a joke.

Pakistan. I was involved directly with trying to develop an independent power program in Pakistan. We set up two institutions, well-trained people, so they could evaluate the IPPs that came forward. And they built the capacity to do that without any of our technological assistance. But what happens? All of a sudden, the powerful minister says, hmm, 3-, \$400 million power project? There must be 15- or 20 million there on the side that will get lost in the noise. And so that project, rather than being in the queue that had been established for evaluation, all of a sudden gets put to the front of the line, whether it's a good or bad project, because someone's getting a bribe.

I tell you, I think it's time for the global -- and India, Pakistan, the big single problem in all these countries in the power sector are subsidies. You cannot sell power at the mass for less than it costs and not, when you have explosive population growth and explosive economic development growth rates, at least in comparison to what we see in this country, expect not to have a cataclysm down the road. And when you combine that with the fact that people do not pay their -- sure, poor people steal power. You go into any major Third World city you can see illegal wires. That isn't the problem.

The problem's the rich landlord that's powerful enough not to pay his bill; the rich industrial that doesn't pay their bill; the people that pay off the meter readers to misread the meter; the outright theft by the military.

In Pakistan, the military does not pay one cent for electricity. There is no government ministry in Pakistan that pays one cent for electricity. And so you get this circular debt crisis where the producers don't get paid by the transmission company, don't get paid by the distribution companies. And these were all things we unbundled -- we unbundled -- because we were going to have competition. All competition has done was create more people taking money off the top. And it's a tragedy because Pakistan now has massive power shortages in its major cities. Many cities don't have power 16, 18 hours a day.

I somewhat joke with my strategic colleagues here at Brookings, who are AFPAC people, you know, get bin Laden, all this stuff, but I say if every terrorist disappeared from Pakistan tomorrow, it would be a failed state because there's no electricity. You know, it's a textile-oriented economy. If you lose power in the middle of a textile run, your whole run's lost. So the textile industries collapsed. Because of, again, subsidies, gas is no longer available. So gas is not available. Pakistan wants to import gas from Iran. If Pakistan's a great ally wouldn't you think we'd want Pakistan to have gas to run its factories, to employ people, maybe be more stable? But no, Iranian sanctions don't let us do that.

Instead we talk about bizarre projects, supporting a pipeline from Turkmenistan across Afghanistan and across Pakistan to India. And I was startled, just in the last week the Indian power minister says the pipeline will be running in 2017. I'll bet my life a shovel of dirt hasn't been lifted in 2017. (Laughter)

So these -- I'll cut off here, but these are the kinds of problems. Subsidies have got to be eroded. We've got to be much more critical about transparency of where our money goes. And when we've supported studies of reform of a sector, 10

and 12 times in some cases, and no sector reform, don't give another dime. Give it to maybe a Ghana or somebody that is actually doing something constructive.

And I know for foreign policy reasons we continue to pour good money after bad, but you won't solve the energy crisis doing that.

MR. GOLDWYN: Terrific. Thank you, Charley. Well, there's lots of expertise in the audience and questions, so we've taken up the first hour. If you've got a question, raise your hand, give us your name and where you're from. And this lady have on the left, you have the first question.

MS. FRIEDMAN: Thanks so much. Lisa Friedman from ClimateWire.

Charley, I think you got at the sort of space between climate change and energy poverty really well and I was wondering maybe for you and maybe for David, also, you know, what do you think of the U.N.'s efforts to end energy poverty by 2030? Is that working? You know, the sources that are discussed here, all hydrocarbons. You know, I haven't heard off-grid discussed at all. Is that -- I'd love to hear somebody discuss that and how viable that is.

But ultimately, I mean, is it possible to bring energy to 1.3 or 4 or however many billion people it is without substantially raising emissions? Is that the wrong question to ask? Can we talk about that space? Thanks.

MR. GOLDWYN: Charley?

DR. EBINGER: There are some tremendous successes with off-grid energy, and you can cite them in many different parts of the world. India has done a tremendous job with off-grid power, but it's still a very, very small part of the total energy mix and is likely to remain so for many, many years. It's not to say you don't do it, but it's not the core of the problem.

When you have power demand, you know, some of these countries still growing at 6, 7, 8 percent a year, small solutions, even though they're very important for the people to benefit from them, don't solve the problem. So at one level I'm torn

because we do need some big energy forms, but, on the other hand, that is contributing further to climate change since in a lot of these countries, when they do us more conventional fossil fuels, they don't always employ best state-of-the-art technology.

But I think it comes down to the question of dollars and cents. How much is the global community really willing -- and then, of course, it has to be spent wisely, but how much are we really willing to put in? You can't fault the secretary-general or UNDP's initiatives on this. They're tremendous and they call attention to the issue. But they don't bring one kilowatt to a village. An entrepreneur brings that or a government committed to transparency brings that. And that's where we're sorely lacking.

MR. GOLDWYN: I'll just add, Charley, I mean, I think the U.N. secretary-general's effort is a great galvanizing initiative, but I think that Charley's first point before, getting prices right, is essentially the core of it. You will never get investment anywhere in these countries unless you can have a cost recoverable tariff for the electricity.

And I think for countries in Africa you also have to look at scale. They need base load electricity. I think -- and realistically you're talking about gas versus coal because coal is cheap. Gas is cheap for us. It's not cheap for anybody else. So ways to bring gas into these countries to provide base load electricity I think is probably job number one. And it's unclear, frankly, whether it raises emissions very much globally. Maybe a little bit. Compared to burning biomass, probably not. Compared to not having electricity, you know, that's the only choice.

You know, even the United States' new rules on coal, that you can't have a coal-fired plant, some of these have technology which rival gas. But to say that the poorest countries of the world are not entitled to government money for a project which is going to bring significant amounts of electricity, I think, is an error. Because if you bring that base load and you have an economic activity, then you have opportunities for distributed generation. Then you have opportunities to bring somebody in who can

provide a small project where people locally will be paid for it.

So it's framework first. And it's kind of depressing, although true, that we put a lot of money and political will into encouraging countries to have these frameworks. But ultimately, whether it's governance or transparency, or putting these systems in, this doesn't really happen bottom-up. This happens top-down.

DR. EBINGER: And if I may just make -- the other problem with coal that no one ever looks at is coal is one of the biggest generators of employment. In India, it is the single biggest generator of employment if you count production, transportation, and use. So if you kill coal, and its terrible coal in terms of climate change, but if you kill coal, throw those people out of work, you have political riots in the street.

MR. GOLDWYN: Yes?

SPEAKER: In West Virginia or in -- (Laughter)

MR. FLAVIN: Chris Flavin from Worldwatch.

MR. GOLDWYN: Chris, the microphone's coming right behind you.

There you go.

MR. FLAVIN: Thank you. Chris Flavin from Worldwatch.

You know, I think the balance in terms of how many of these 1.3 billion are going to get their electricity from the grid, from conventional sources, versus new technologies. I think you've got it about reversed. In terms of, you know, looking at the real infrastructure that's required. Most of the investment is not going to be in the big power plant. It's building out the transmission lines, the distribution system. If you simply look at the geography and at the population density of most of the areas that have the 1.3 billion people, I think -- and then you look at the latest economics of new technologies which have -- you know, solar has fallen 80 percent in the last 5 years. I mean, that's a game-changer just as the way that the decline in silicon chips was a game-changer for the software industry.

We've just been looking at Colombia. A really interesting example.

There are 1,400 communities in villages and towns. The largest is 60,000 population in Colombia that are not on the main grid. They're mainly served by microgrids, 1,400 microgrids, almost all of which are now powered by diesel.

Well, you say, great, except when you get to the question of what does it cost to get diesel into these remote areas? The price they're paying goes generally from about 50 cents a kilowatt hour to well over a dollar per kilowatt hour. In a recent analysis using GIS and big data shows that some mix of renewables added to the system, anything from 30 percent up to 90 percent or more renewable, with some diesel for backup, is going to give you a better solution than sticking with the diesel.

You know, you're talking about corruption. I mean, a large part of the reason that these guys have been using diesel for the last several decades and haven't considered alternatives is that the uncle or the president owns the concession to supply the diesel fuel. And of course, you know, when I talk about those prices of 50 to a dollar, the people aren't paying that. That's coming out of government subsidies.

Just a final thing. You talked about, you know, sort of the reliability and availability of renewable. Most of those 1,500 villages in Colombia are getting electricity for about 4 hours per day because that's all they can afford even with the subsidies.

MR. GOLDWYN: Thanks, Chris. Gentleman here on the left and then the lady in the front.

MR. KERNER: Dave Kerner, The Troy Group.

Without energy, it's hard to get water. Without water, it's hard to get energy. Africa has quite a mixture of where water is available in the quantities necessary to make distributed power or local power or anything else. Could you address that, please?

MR. GOLDWYN: Phil or Charles either? Areas of expertise, so. I don't think we have a lot of expertise for you on that one. I mean, it's pretty varied. So far for -- certainly for oil and gas exploration, you're not talking about shale gas exploration in

most places in Africa. You've got deepwater onshore, so water is not that significant issue for energy production.

For electricity it's a different issue. You've got DRC, which has enormous amounts of water, but you can't really generate electricity from it. I think if you look at the future of unconvensionals in Africa, that's where water starts to be a serious issue, where you have areas of scarcity and you're not going to use -- you know, have competition for water with agriculture. But I don't know if the traditional producers --

SPEAKER: It's a huge --

MR. VAN NIEKERK: One exception, I mean, on the shale gas (inaudible) South Africa, where there's probably upwards of 300 TCF in the Karoo, which is a very dry area and which is -- that's going to be a very interesting and very keen issue because for the South Africans that could be a game-changer for the South African economy.

But at the same time, because it's such a dry area, it could be a devastating -- and that's with, you know, the kind of fracking which we've seen in Pennsylvania or, you know, in the U.S. will be much more destructive in South Africa. But my sense is that the victory will go to those who want to develop the gas because it's going to make such a difference ultimately to the South African economy, which doesn't really have a new -- which is basically running out of gold, platinum, whatever. The natural gas is one of the ways forward for the South African economy.

As for the rest, I mean, there's a fair amount of hydroelectric power in Africa, whether it's the Sutu Highlands, Cahora Bassa in Mozambique. There's a big disputed issue at the moment in Ethiopia with the Gibe Dams, obviously a big bolt. There are -- you know, I mean, I'm not talking about the Sahel, but there are parts of Africa where there's a substantial amount of water and hydroelectric power. Inga Dam in the DRC, which has, I guess, got its own issues, but water is very much part of the mix when it comes to, I guess, the power situation, the power solution, if you like.

DR. EBINGER: This is a huge problem in the subcontinent and for two reasons. One, of course, you have, particularly in Pakistan and Nepal, two systems based overwhelmingly or significantly on hydropower. But now we have the Himalayan glaciers melting. There's the prospect of some more huge dams that would make a major contribution to Pakistan's electricity crisis, but do you want to build those if in 20 or 30 years there's no snow in the mountains? That's a big policy debate.

And the same in India. India has tremendous capacity, particularly -- well, in the north, but there are people in the way of building dams up there. But in the northeast of the country there's huge hydroelectric potential, but it's in areas not only disputed with China, but also the Chinese are diverting the rivers on the Tibetan plateau that flow into the subcontinent, and the Ganges and Brahmaputra.

And if you really want a scenario nightmare you can make a case that 15 to 20 years from now the subcontinent has almost no water. And you honestly hear Indian defense planners say our next war will be with China over water.

MR. GOLDWYN: Lady in the row here and then we'll go to the back.
Third row.

MS. CARRUTHE: Thank you. I'd like to thank the panel for a wonderful set of presentations. I look forward to the book. Very quickly, my name is Riva Carruthe from Georgetown University. I have two points I'd like to raise for anyone on the panel.

The first point that came across from all the speakers is what can the United States do to help move this issue forward? The one thing that I think based on your presentations and what's been building over time is that we have to get the public goods in place universally by a certain date. So that means taking a Max Weber approach, goal-directed approach, now, using the regional bodies, using the excellent South African Standards Bureau, whoever you need to enlist. But really, have a beginning date and end date, which is what you used for the Marshall Plan.

I think the time when we could continue to sort of rationalize how all the

people are different or their cultures won't let us do it, I think that's gone. And also, it's because of our own security that we need to be seeing this as well. So that's number one, how can America help?

And I think the most important thing is our transition from a colonial entity to an industrialized nation through use of science, public administration and management, and industry. So here, again, I think that that has to be not only revisited, but for each of the regions this is where I think the movement of the governments, the industry, the capital, and even the civil society groups -- because I don't think the project thing is going to be accepted much longer in these countries because you can't do things with countries with just a group of projects.

The other thing is, very quickly, I think one thing that has to be done or needs to be done faster is to engage the American and German and Japanese business and industry communities. Because they are very strong on energy technologies for efficiency, energy efficiency, and also environmental sustainability. That's across the automotive industry, that's across a whole range of things, so that's what I think. And the Japanese have now identified Africa as a priority region for them going forward, so (inaudible) --

MR. GOLDWYN: Your first issue was governance or energy poverty?

MS. CARRUTHE: In terms of governance and energy poverty --

MR. GOLDWYN: Governance and energy.

MS. CARRUTHE: -- it's the public goods. It's getting the roads, the infrastructure in place by a certain date, whether it's three years, five years, or whatever. And the second thing is the mobilization of the industry community with the regulators.

MR. GOLDWYN: Great, thanks.

DR. EBINGER: If I might just say a word about the role of the private sector, you know, as I see it through a company perspective. Some of the most successful initiatives, I think, have been ones where you focus on a specific region where

you are operating and try to mobilize resources not only to relate the infrastructure on the one hand or the skilled employment on the other hand that you need, but also the overall health and well-being of that community.

For example, the Angolan Partnership Initiative, which started as a very small U.S. company to a national oil company to a specific regional focus, has broadened out into a large-scale partnership involving the multilateral financial institutions, AID, microfinance through entrepreneurship, and the rest. So you don't say, well, we're going to try to reform all of Angola. Maybe somebody will have that magic wand. But you do say, look, in the environment in which we operate there's such strong private sector-driven reasons for doing what we're doing that we can do that and then, hopefully, that can be emulated in other parts of the country or the continent, not only in the energy sector, but other resource sectors. And now we're trying to do the same thing, believe it or not, in Nigeria, which will certainly be a challenge.

But, you know, the short answer is no single resource or institution can do it. And we have to find, as you suggested, a short list of goals to which we can subscribe and then really put our shoulders to the wheel and make it happen concretely on the ground in a way that it demonstrably is successful and can then be replicated over time.

Now, I freely admit that's only part of the answer, but I think it is significant in that it's concrete and you can see what is happening and you can take it from there. And if you can then do, as David suggested, some more top-down efforts which are just as or even more challenging, maybe you get part of the answer to your question.

MR. GOLDWYN: Charles, can we, should we as the U.S. Government take these on by a date certain?

MR. McPHERSON: Well, you know, just listening to the given-and-take here I was struck by the fact that we've gone back to talking about a number of very

interesting technical solutions and a number of interesting solutions at the policy level again. And yet, in each case we hear stories about, "but the big man stopped it." And something happened, a political elite with personal or political ambitions, put a spanner in the works.

And it comes back to this, I think: You have to do something at the top level and what are you going to do? Maybe it's something like GESS that's going to be the way to do it, but you have to get the big international players to really put pressure at the top. Do things like the French did for -- starting to sue some of these people in court. Take all their property away from them.

So that's something really serious at the top because we can't -- your impassioned plea for please don't present another model for regulatory frameworks (inaudible). I am completely sympathetic to that. There's so many of them on the shelf, you just pull one off, and you turn it over to the government. The guys probably that you're talking to, the ministry that you're talking to, have probably read several of them. He might. But he's certainly not going to do anything about it unless you get this other pressure.

MR. GOLDWYN: Or domestic political incentive.

MR. McPHERSON: Or coming off the (inaudible), yeah.

MR. GOLDWYN: The one story is Nigeria under Obasanjo, where you had the desire for debt relief, conditionality -- soft conditionality, but, nonetheless, conditionality -- on the part of the IMF and a President who was running on transparency. And so you had EITI. You had the Polity Reduction Strategy Programs. You had leaders like Ngozi and Obia Saquisili, who were there, but there was a political motivation from the top to be seen as doing something. And, of course, when that term ended, so did all of the reforms with it. So it wasn't sustainable, but it was one of those rare circumstances where you had external pressure and internal desire. I think the challenge as much as we have the external pressure, we don't have the tools in terms of debt relief so much

anymore and we have -- it's hard to exert that pressure and have it be effective.

The person in the back row who's been very patient. The second from the last.

MS. SEGERO: Good afternoon, ladies and gentlemen. My name is Rosemary Segero. I'm the president of Hope for Tomorrow, an organization based here in Washington, D.C., and I'm from Kenya.

I've been following up on Power Africa since the President Obama initiative and also supporting the bill on the Hill on electrification of power. I'm more concerned, as you said, in the rural areas. I'm more concerned about the rural areas of Africa. As much as we talk here, as much as we talk about Africa energy, how do we get the power and how can we be supported? As you said, leave this to Africans alone. Yes, you can leave this to Africans, but Africans, the big Africans, are concerned about the big Africans. But I'm a small African, like a woman, born and raised in Africa, who has carried firewood on the head, cooked with firewood, which is all sickness. How do we make a common woman in the rural area a farmer? A clinic, as he said, and schools to get electric?

As much as we are fighting to pass the bill, the Power Africa, as an African I'm trying to talk about it, but how do I do it? We need people. If the Americans are doing (inaudible) how to get, I don't know their (inaudible), but I know how to get to the rural area. Working with us, how do we do it? How do we make it? How do we make that happen and how do we work together as much as we are fighting for it?

But thank you for your presentation. We want to see all African women in the rural areas, schools, farmers, even water is all about power. We can never do that without power. How do we make it happen as much as we have those bills and getting to the African leaders? How do we convince them that the rural area want power?

So we need your support and your help to appeal to peoples, the power to get to the rural areas, and the women to have good life with power. Thank you.

MR. GOLDWYN: Thank you. Great questions.

SPEAKER: Great.

MR. GOLDWYN: So how do you do rural electrification? And is Power Africa likely to have that as a goal?

MR. VAN NIEKERK: I think that's a perfect -- Africa is a perfect place for the development of sustainable -- I mean, Africa is a hot continent. So much of Africa is in the village. So much of Africa is off-grid. All the thoughts -- all the energy that's gone into Power Africa or into Nigeria, Kenya, wherever, into electrification is in the urban areas, and very little thought is given to the rural areas. In fact, it's only South Africa which has actually spent a lot of money on -- and, in fact, it's just had a third bidding round on sustainables where, in fact, the smallest percentage of the population is off-grid, but South Africa's actually developed some of that.

I mean, the point is absolutely valid. I mean, anybody who flies over Africa and sees, you know, how dark it is at night knows that, you know, that's where Africa lives. Africa lives in the villages and there's no power.

DR. EBINGER: I think one of the things that's actually been tested in the urban areas of South Africa, but I think it has applicability for the rural areas because, again, the question is who's bringing in the power and how is it going to get paid for? I don't know if you're familiar with it, but the whole use of prepaid electric meters. So you install the meters in the homes or the huts in the rural areas and you pay, you know, I want 25 cents' worth of electricity or however much you have. You know, this obviates the needs for a fixed monthly surcharge like we all have on our electric bills. And it could be a very effective way of at least beginning to bring power, not enough, but beginning to bring power into areas that had been previously unserved.

Because there is no private sector entrepreneur, however much they wish to help or see a market opportunity in a rural village, that's going to invest unless there is some revenue stream to begin to pay for it. And that is at least one way to begin

the process, and its works -- from what I understand secondhand, it has worked very well in some of the urban centers and some of the townships in South Africa.

MR. GOLDWYN: The gentleman here and then the lady on the right.

MR. VICKERY: This is Ray Vickery from Hogan Lovells. This is for Jan and Charley.

MR. KALICKI: Hello, Ray.

MR. VICKERY: How are you? LNG, we talk a lot about the political problems in developing countries and the right path forward is known, but for politics somehow or bribes it gets cut off. On our own side it seems to be manifest that exports of LNG are in the national interest both from a security perspective, development perspective, and yet we are slow-walking that and nothing really is happening on a scale to make an impact. How does the panel see exports of LNG and the role that it might play in security policy?

MR. KALICKI: Well, thank you, Ray. That's a great question, especially, again, with the investments that we're involved in, the company that we work for. (Laughter) LNG is a major thrust and I think of Australia, for example, as providing a tremendous new source of gas to customers who really need it, want it, are prepared to do the long-term contracts for it.

And from a foreign policy point of view, the fact that you have a major LNG partner in Australia is, I think, often overlooked as a tremendous opportunity to try to shape in a more positive way the Asian energy landscape. With a partner like Australia working with us not only to supply the energy needs, but also to encourage the transition to a gas-based rather than more of a coal-based future over there, that makes a very big difference.

As far as U.S. export policy, I think that the outlook is a little bit better than it was, you know, two or three years ago. First of all, the policy is based on the premise that you can export LNG to free trade agreement partners. That leaves one

ENERGY-2014/02/05

major exception out, as you know, and that's Japan. And I think it's important to try to be more flexible about our export policy, not just try to tie it to trade agreements, even though prospectively one hopes that if TPP goes forward, then, you know, everything falls into place.

But, you know, consider the political challenges where the Japanese as well as other countries have been very, very helpful. Think about Iran sanctions policy, for example, or asking the Japanese to cut back on their imports from Iran. Well, where's the quid pro quo? I mean, are we simply going around telling people how to support U.S. sanctions policy or are we talking to them about their energy security? And I think the dialogue with the Japanese would be much the better for the latter. And our own effectiveness, working collectively on these national security goals through using major energy instruments, would also be much improved.

MR. GOLDWYN: Charley, very briefly, Brookings has done a lot of work on the LNG export issue. Do you want to --?

DR. EBINGER: We've done a lot of work and we're kind of in the middle of the road, Ray, in the sense that we say the U.S. plans to get in the market between now and 2020. We think we'll do quite well because of the arbitrage play on prices in Europe and the Far East. But after 2020, we're far less -- we're far more somber about the latter projects in the U.S. queue and that's because we'll see competition from a number of countries, including Australia. We think there'll be more intercontinental movement of gas from Central Asia maybe to China, maybe from Eastern Siberia to the Koreas and Japan. And we believe coal will be very competitive with LNG in the Asian market. So maybe the Project 7, 8, up through 19 or whatever it is right now, I don't think will ever be able to be financed. They may get a license, but they won't be financeable.

MR. GOLDWYN: Last question to the lady here on the aisle.

MS. NORTON: Erica Norton, 1776. You mentioned entrepreneurship a little bit previously, but what would you say the role is of entrepreneurs and startups in the

future of energy and if they have a role in helping to start solve some of these problems that you've brought up?

MR. McPHERSON: Well, if I could just make a quick comment. I'm sure everyone will have a view. You know, just think of the big shale revolution. Is that a big company contribution to knowledge or is that the result of entrepreneurs moving forward, showing that it could be done, and then monetizing it, making it available to the larger players? I would argue it's the latter.

And, you know, there are tradeoffs. On the one hand, I'm all for small entrepreneurs in all areas. On the other hand, asking somebody who's a wildcatter to apply all of the EPA standards that larger companies might apply is a challenge. So I think you really have to have a view of strongly promoting entrepreneurship, for example, with regard to renewable, all kinds of things going on which, you know, should be encouraged.

But on the other hand, thinking of sort of the chain of scale, you know, once you find something, how do you scale it up and how do you scale it up safely and responsibly?

MR. GOLDWYN: Terrific. Well, I think we've come to the end of our time. You all have been patient listeners and terrific questioners. We appreciate you coming today. If you're interested in the book, there are copies outside.

MR. KALICKI: At discount.

MR. GOLDWYN: At discount, right. And we'd be happy to initial them if you'd like. Otherwise, thank you to the panelists and thank you to Brookings for having us today. (Applause)

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