



## National Council on U.S.-Arab Relations

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### 23<sup>rd</sup> Arab-U.S. Policymakers Conference

*Framing and Charting the Region's Issues, Interests, Challenges, and Opportunities:  
Implications for Arab and U.S. Policies*

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### **"ARAB-U.S. ENERGY COOPERATION"**

*Chair:*

**Ms. Randa Fahmy Hudome** - President, Fahmy Hudome International; Member, Board of Directors, National Council on U.S.-Arab Relations; former Associate Deputy Secretary, U.S. Department of Energy.

*Speakers:*

**Dr. Paul Sullivan** - Professor of Economics, National Defense University; Adjunct Professor, Security Studies, Georgetown University; Adjunct Senior Fellow for Future Global Resource Threats, Federation of American Scientists.

**Dr. Anas Alhajji** - Chief Economist, NGP Energy Capital Management; former Professor of Economics, University of Oklahoma and Colorado School of Mines.

**Mr. Jamie Webster** - Senior Director and Head of Market Intelligence Service, IHS Energy; former Project Developer, Beacon Energy.

**Dr. Tamara Essayad** - Director of Strategic Infrastructure Advocacy, CG/LA Infrastructure, Inc.

**Dr. Sara Vakhshouri** - President, SVB Energy International; author, *The Marketing and Sale of Iranian Export Crude Oil Since the Islamic Revolution*.

*Remarks as delivered.*

**[Ms. Randa Fahmy Hudome]** Good morning, everyone.

Your Royal Highness, your excellencies, ambassadors, distinguished guests, officials, former officials, and attendees, particularly members of the military, we're honored to have you with us this morning.

As Dr. Anthony mentioned one of the most important issues we are focusing on today is our cooperation with the Arab world and how U.S. policymakers can implement policies with respect to that. This morning, of course, our focus is going to be on U.S. energy cooperation, but as many of you know our cooperation with the Arab world isn't just focused on energy. As reflected by the rest of our panels today and tomorrow, you will see U.S. defense cooperation with the Arab world, the geopolitical cooperation, of course the finance and business cooperation, and not to be undone by the GCC cooperation with the U.S., which makes it all the more important, as Dr. Anthony mentioned, the U.S.-GCC Corporate Cooperation Council that I've agreed to chair with my colleague Elizabeth Woosen, who's here in the audience as well.

So in setting the stage for our panel today and our distinguished guests that we have on our panel, I just wanted to talk a little bit about the state of affairs with respect to U.S. energy today, and how that might affect our relationship with the Arab world.

This morning, crude oil is at \$81 dollars per barrel. Yes, you heard that right. That equivalates to \$3.00 a gallon gasoline. I was taking my dog for a walk this morning at 5:30 in the morning, and I looked up - I look up every morning at the gas station by my house and I couldn't believe what I saw, but indeed, \$3.00 for a gallon of gas.

Where is the state of U.S. domestic production, what you've heard about, the shale and oil gas and petroleum revolution here? What about this talk of lifting the ban on exporting domestic crude oil from the United States? Do we, here in the United States, have the right domestic infrastructure to support the growing production of our natural resources here? What about our relationship with some of the more unstable OPEC producers like Iraq, like Libya? And what about our long-term relationship with Iran? Where is Iran on the production levels today?

And finally, while some people's favorite holiday may be coming up this Friday - Halloween - my favorite holiday follows three days later, that would be the U.S. elections. And what affect will those elections have on a variety of U.S.

policy issues with respect to energy like the approval of the Keystone Pipeline, like the regulatory environment that allows more domestic production not only in the L&G but in the fracking area? What affects will that have on U.S.-Arab energy cooperation, particularly if the “NOPEC” legislation starts to move through the House and Senate? And what about the state of renewable energy and alternatives?

So with us today, our distinguished panel – I will introduce them very quickly, and then have them one on one give comments. And then I allow all of you and invite all of you from the notecards on the table to please write your questions down so we might address those questions in the end. We have about one hour for this panel, so we’re going to try to quickly have the panel make some comments and then take a lot of your questions.

First will be Dr. Paul Sullivan, and we’re honored to have Dr. Sullivan on many of our panel discussions at the National Council. He’s a professor of economics at the National Defense University, an adjunct professor of security studies at Georgetown and an adjunct senior fellow for future global resource threats at the Federation of American Scientists.

Following Dr. Sullivan, we’ll have Mr. Jamie Webster, who’s the senior director and head of market intelligence for IHS Energy. He’s the former project developer for Beacon Energy.

Following Mr. Webster will be Dr. Sara Vakhshouri. She is the president of SVB Energy International, and most interestingly the author of *The Marketing and Sale of Iranian Export Crude Since the Islamic Revolution*.

Following Dr. Vakhshouri will be Dr. Tamara Essayyad, a fellow lawyer, and who is presently the director of Strategic Infrastructure Advocacy for CG/LA.

And last but certainly not least, Dr. Anas Alhajji, who’s the chief economist for NGP Energy Capital Management. He’s a former professor of economics at University of Oklahoma and Colorado School of Mines.

So Dr. Sullivan, we’ll begin with you. Thank you.

**[Dr. Paul Sullivan]** Salam aleykum. Good morning. I have to give a caveat before I give any talks, at least for the meanwhile. These opinions are mine alone; do not represent those of the National Defense University, Georgetown, or any other organization I might be associated with. So now I can get myself into trouble and it won’t be connected with any institution.

When people think about shale revolution they usually think of the oil revolution first. The biggest changes will likely happen in natural gas. There is approximately 7.3 quadrillion cubic feet of shale gas in the world. That's quadrillion, what we know about so far, and these are just from geological studies. There could be a lot more there. In the oil and gas business one of the main things that you should take away is you don't know until you know, meaning you need the appraisal wells, you need the sonograms, and you actually need to produce the stuff before you can figure out what's going to be there. Quadrillion BTU.

Now, in the United States our imported gas has been going way down. We hardly import anything from the Middle East anymore in LNG. It used to be quite a bit. We're exporting more LNG. We're importing mostly from Canada, but those imports have gone down. We're now increasingly exporting to Canada from the Marcellus Field. We're increasingly exporting to Mexico from the fields in Texas and Oklahoma and Louisiana. The U.S. market has been pretty much closed off for some time for the Arab exporters.

The Arab exporters should also consider the following: with all that shale gas in the ground more competition is coming around the bend. It may take a while - five to ten, possibly 15 years, but you can look at what's going to be happening in places like Australia, Indonesia, Malaysia, East Africa. Russia - the biggest source of conventional gas - has massive shale gas reserves. And then there's Canada and also the United States, and we will be exporting LNG. I'll be visiting the Cheniere facility in Texas in two weeks. So does this mean that we should turn our backs on the region? Absolutely not.

One of the main reasons for that is virtual energy - how many things do we import from China, South Korea, Japan, the E.U., which rely on natural gas and oil from the Middle East, the GCC in particular? Quite a lot.

When someone asks me about whether the Iran sanctions are effective, I ask them whether they have anything they have used from China, and I point out that that oil from Iran was used to produce that product in China, therefore these sanctions are hardly working on that angle.

Another part of this reason why we should not turn from the region, meaning lose interest in it. Of course we have terrorism, we have alliances in the region, but it also gets back to something that was mentioned a little bit earlier by our distinguished guest from Qatar, and that is that Qatar is 25% of the LNG market in the world. The north field off of Qatar is the largest single conventional gas field in the world. It shares this gas field with, of all countries, Iran. There is no border. Gas flows. I think we might have an interesting future here.

All of Qatar's LNG exports come out of one facility, Ras Laffan. This is very important to consider. The entire world LNG market is pretty much determined by a critical facility at the tip of a small country in an unstable part of the world - 25%.

Qatar has also made a considerable number of enemies along the way by its funding of certain groups, support of let's say the Morsi Administration in Egypt, having offices for people who collect money for various groups in the country. It has also joined the anti-ISIS coalition, which by the way I really shouldn't be calling it ISIS. The usual term I use is psychopaths and sociopaths in Iraq and Syria. This has nothing to do with Islam and a lot to do with psychopathy and sociopathy. These actions, this joining up, has brought considerable risk to this island, and we should all be concerned about the security of Qatar and Ras Laffan.

The biggest market for LNG is Asia. Asia is a growing place. It relies heavily on Qatari LNG from Ras Laffan. Most of the gas coming out of Ras Laffan travels in carriers called QMACs, which one ship contains enough natural gas for 75,000 American households for an entire year. If anything happens to one of these ships the LNG market is thrown off.

See, we're focusing a little bit too much on oil. If we're going to focus on the Suez Canal, much of the increase in traffic through the Suez Canal is actually Qatari LNG heading for Europe. About 45% of the LNG imports to Europe come from Qatar. About 85% of the LNG imports to India come from Qatar. About 35% of the LNG imports to Japan come from Qatar. About 35% of the LNG imports to South Korea come from Qatar. And it all comes from Ras Laffan.

Ras Laffan is one of the Achilles heels of the world LNG markets, and hence for the world energy markets because if the world LNG markets are disturbed, the world pipe gas markets will be disturbed, oil markets will be disturbed, coal markets will be disturbed.

One of the most vulnerable states is Japan. It relies tremendously on LNG from Qatar. It is the largest importer of LNG in the world. Qatar is the largest exporter. Japan had to shut down all of its nuclear power plants between 2011 and 2012. Its import of LNG has gone through the roof. It really doesn't have an alternative. If Ras Laffan or a certain number of the 363 LNG carriers are not in service, that's it. Three hundred and sixty-three LNG carriers in the world - that's it. These are numbers you have to think about. Major LNG export facilities - maybe a dozen or so in the entire world. A lot less than for oil.

Now, let us consider what would happen if something happens. I work at the National Defense University. A lot of what the Defense Department does, a lot of what this city does is think about the “what ifs.” The “what ifs” could lead to the price of natural gas for Asia going from its now let’s say \$12 to \$15 per million BTU to \$25 to \$30. If it goes to \$25 to \$30 we have a recession in Asia. We also have inflation in Asia.

Anyone remember “stagflation” during the 1980s and the 1970s? That is something we could be facing. Qatar is an extremely important state in an unstable part of the world with a very complicated and sometimes incomprehensible foreign policy. The closest producer to Qatar in volume is Malaysia, with less than one-third of Qatar’s production. Then we have Australia, Indonesia, Nigeria, and our major source of imported LNG, Trinidad. Then you have Algeria. That’s the top seven. If you added the next five after Qatar it would add up to just a little bit over Qatar’s LNG exports. Again, it gives you another sense of the concentration of the market.

If Ras Laffan or some of the ships were knocked out, even for a few days, the world will be thrown into turmoil. The regions that would be hit hardest would be Asia and Europe, and the effect in the United States would be long-term. This would also disturb tanker and container traffic throughout the world, because many countries would have to adjust to not having this LNG coming out of Qatar. For Europe, there are massive pipeline systems connecting the E.U. and other parts of Europe to Russia, Norway, Libya, Algeria, but there isn’t enough capacity to make up the shock. There is excess capacity in Rotterdam to bring in more LNG ships. It’s only at about eleven percent capacity, but there aren’t enough LNG liquefaction plants in the world, and there aren’t enough ships to move it around to adjust to what might happen.

Electricity, petrochemicals, and many other markets that need natural gas would also feel the price shocks. There could be factory shut downs in Asia and Europe as companies scramble for alternative sources of energy. The debate about exporting LNG from the U.S., which me as a security person and as an economist seems as a no-brainer – we just do it, that’s it. An investment will adjust to price increases. This will end.

Our allies in Europe and Asia, most particularly Japan, will have to focus on greater diversity of energy supply. LNG facilities, pipelines, and large LNG carriers take a long time to build. The energy industry often faces very quick shocks, but it can take a long time to adjust to them.

I can see there’s one fellow in the room who spent eighteen years working on a refinery project. Think about how long it could take to build a LNG facility with

the lawyers and the NGOs trying to stop it in Canada and the United States. It would have to be fast tracked.

The immediate and medium-term shocks would continue possibly unabated for a long time. Does anyone in the room have any further doubts about the importance of LNG, the importance of Qatar, the importance of energy diversification, and the importance of thinking about the “what ifs” that we all have to consider.

Thank you.

**[Ms. Randa Fahmy Hudome]** Thank you, Dr. Sullivan. That was a great overview. And now we’ll hear from Mr. Jamie Webster of IHS Energy.

**[Mr. Jamie Webster]** Thank you very much for having me here today.

I have the distinct pleasure in my role of being able to cycle between Washington policymakers, OPEC, and producers around the world. I’ll actually be at the OPEC meeting on our U.S. Thanksgiving this year, so I will have a turkey club I guess in the lounge.

I want to talk with you today a little bit about the ongoing and I think at the thin edge of a wedge in terms of what OPEC and shale oil mean with each other over the next several years.

In 2012 and 2013, prices were remarkably stable, perhaps one of the most stable prices we’ve had in many, many years, but those who had not been paying attention to the market didn’t perhaps realize just how much tension actually existed. The only reason we did not go to prices well above the high levels we saw in 2008, when we reached prices of \$147, is actually first because of strongly increased production out of Saudi Arabia, and then from 2012 on actually significant production out of the United States.

These last couple of months where we’ve moved away from the risks associated with Da’esh, with prices hitting \$115 in mid-June, and now international prices are now around \$85. That was caused because of a move from geopolitics and geopolitical risks, which certainly still exist and are arguably even higher than it was a couple of years ago, and moving towards fundamentals, which is Libya production went from in June around 150,000 barrels a day to now around 800,000 to 900,000 barrels a day. This has been enough to really bring down the price quite significantly, which has also caused earlier this month. Saudi Arabia in their official selling prices slashed prices quite dramatically into Asia. Many in the press and others immediately, because everybody likes excitement, said that

the Saudis were starting a price war and were ready to do battle with, depending on which article you read, just about everybody that you could imagine from the Russians, the U.S., to those in Asia, to everyone else within the Gulf.

I have the distinct pleasure of actually working with a gentleman who actually used to work in the OSP program, so I had him do an independent analysis on how he would have adjusted them, and he actually would have made them slightly more discounted than they were in this last one. So actually they were very much market driven. This was not something that was put out in terms of some sort of market share battle, or anything like that. But this also has brought forth a lot of discussions, and you've seen it in the last couple of years as the U.S. has really changed its relationship with its producers.

Nigerian oil into the United States used to be around 1.1 million barrels a day. We now receive approximately zero, and instead we export gasoline and diesel and all sorts of refined products from our refineries to Nigeria, supplying them between 40% and 60% of their refined product import.

It's dramatically changed a lot of the flows that you've seen around the world going forward, and so there's been a lot of discussions within the United States – well, this is great. This is the death of OPEC. We can finally get rid of Saudi oil and Algerian oil and Nigerian oil out of the United States, and this will be really good for us.

Unfortunately what a lot of these analysts fail to remember is that oil is a global market, and so even if we actually didn't receive any oil in the United States from an OPEC country, China and Asia do, and so if those supplies were cut off the price of oil globally would rise quite dramatically and end up impacting the United States quite a bit.

So we actually really need those volumes to be there, and so OPEC and OPEC producers, Middle East producers have a valuable role going forward in terms of that production, whether or not it continues to come here to the United States, which I actually expect it will in quite some quantity.

The other is that there's a lot of discussions on the latest round – I think this is the 15th or 16th attempt – at a NOPEC legislation. I think a lot of people actually fail to remember what the role of OPEC is, that it's actually needed.

It's been said before that if OPEC didn't exist you would have to invent it, and it actually has been invented in the past. I'll do a quick – we'll call it a parlor game – that I run with all my energy nerd friends. So right now oil prices are around \$85. I'll give you a couple of points here. One hundred and forty-seven dollars



was the highest we reached in August of 2008. Just a few months later we were around \$37. Earlier this summer we were \$115. Ten years ago or so we were at \$20, \$30.

What – just think this through in your head – what do you think the price of oil was in today’s dollars – I won’t push you back that far – say 18 months before Edwin Drake struck oil in Pennsylvania? So just think through what it would be in today’s sort of dollars.

A lot of times when I work this with people the normal guesses range between \$50 and \$200, with a couple of outliers, and a couple dollars up to \$500 or so. The real answer is \$2,500. That’s what it was. Edwin Drake then sold his first barrel of oil for \$680 because his drill, his well actually doubled global production of oil. Eighteen months later, global prices for oil in today’s dollars again were around three dollars.

So you had this huge volatility. While it was great for a short period of time for consumers as prices started to go down, then the price started to rise quite dramatically again as a number of producers had to go offline and shut in and stop producing.

Since that time you’ve had various types of OPEC as it were. You had Rockefeller, you had the seven sisters, you had the European Petroleum Union, you had the Texas Railroad Commission, and for the last 40 years we’ve had OPEC. If you end up displacing OPEC, which is entirely possible because of how the shale oil actually has this greater responsiveness than you’ve seen in any other sort of production over the last couple of decades, it doesn’t necessarily mean that everything is all great and we’re going to have nice cheap low prices.

Producers constantly want the highest price they can get. Consumers want the lowest price they can get. But both sides actually want very stable prices.

So you’re actually moving to a time with this discussion between shale oil and OPEC and those larger producers. This isn’t suddenly a panacea where we’re going to have much lower prices or much higher prices, but we’re likely going to be moving into a time of much greater volatility. So we need to really understand what the potential responsiveness out of shale oil and how that can impact and influence what the global market ends up going forward.

Anyway, I will speak with you all in the discussion.

Thank you very much for your attention.

**[Ms. Randa Fahmy Hudome]** Thank you. Next we'll here from Dr. Sara Vakhshouri.

**[Dr. Sara Vakhshouri]** Thank you Randa. It's a great pleasure for me to be here at this conference, and I would like to thank the Council for inviting me here and to share the company of such great delegates and speakers.

Randa asked me to speak about Iran today, and the current downward price of crude oil prices, the ongoing nuclear talk with Iran and the P5+ 1. Combined with the turmoil in Iraq to say it's a timely topic it's a masterful use of misunderstanding.

Of course the downward trend of oil is going to have a significant effect on Iran's economy, energy industry development, politics, and foreign policy too. And as Jamie mentioned, Washington, D.C. never lacks the discussion on policy, and many start to argue this is a oil price war and this is against Iran and Russia to put more pressure on it.

Some went further to say this is Washington's pressure on Saudi to lower the prices. Neither do I agree with this story nor the evidence is terribly compelling that this is an oil price war or anything against Iran and Russia. However, I would say the timing has been chosen so carefully that it makes me believe that Saudis are now the master of chess.

I don't think necessarily this is a war and I think this is expected market dynamics that was bound to happen sooner or later.

In fact I believe that this price plunge in the market that happened sooner than our expectation creates a great opportunity for both consumers and producers, both conventional and non-conventional producers, to rethink their market strategies, their market share strategies, how to secure their demand more than they can, or how to fight in this current market share fight.

Depending on your position of course you're going to have different - be influenced by these prices differently. The current prices has created concerns for title producers over their cost and profit. It's going to make an alarm for oil-dependent economies to adjust themselves for the new reality of the market and lower oil prices. Also it could have a positive psychological effect on the demand side.

But how does it exactly effect Iran - this is the big question for me - that to discuss it, how the oil prices are going to effect Iran. Well obviously Iran is an oil-dependent economy and lower oil prices is going to effect the economy of Iran

more than – Iran is already hurting from the sanctions in its economy, and Iran because of the sanctions and limitations on its oil exports cannot increase its export of course to reduce this fiduciary gap that it has currently.

Also it's not in the interest of Iran to push for controlling the prices in the next OPEC meeting to suggesting reducing the production by OPEC members because obviously maintaining the lowest and minimum export capacity that Iran has current is really vital for this country.

So Iran cannot really afford to reduce its production further than it is. Upon his appointment, Bijan Zangeneh Iran's current minister set its highest target to increase Iran's production capacity to a level of four million barrels a day, before the pre-sanction level, and also to once again redirect Iranians' focus on the shared oil and gas field with its country particularly Qatar, Iraq, and Saudi Arabia.

Now Paul mentioned a great deal about Qatar's sharing the LNG market and gas market. Iran has more natural gas reserves than Qatar but Iran's share in the gas market is less than one percent.

So this was the target, the main target of Iran's oil minister. However, there is a great need for significant sanction reduction for Iran to be able to increase its production capacity and export capacity, because Iran needs to have access to international investment technology. And the current lower oil prices have been hurt and will reduce the domestic resources that the Iranian government was once planning and counting on to put in developing its energy resources.

Therefore in light of current lower oil prices, having higher export capacity and production of course is now more vital for Iran than before, and the stakes for Tehran to reach an agreement with Washington and other western countries over its nuclear program of course is at highest ever.

Iran has already announced new investment regulations, Iran petroleum contracts, IPC, that unlocked the previous one, the buyback contracts are involving the IOC's international oil companies in the production process. But for Iran that jealously was guarding its oil production and wealth since the 1979 revolution, it is a great deal of change to offering IOCs to be involved in its production process for a longer term.

However, again there is a huge need for Iran to have significant reduction of sanctions, and at this time Iran is going to have a higher problem with lobbyists in Washington, D.C. that are preventing further increase of oil production in the market.

If Iran succeeds to reach a complete agreement with P5+1 and the sanctions relief on Iran, we are expecting that shortly Iran is going to expand its production to about five to six hundred thousand barrels of oil more. It will take Iran, if it has access to international investment and technology, to increase its production to the level of four million in two years. But we don't think that really Iran is going to reach for more than four million at this point because of the refinery capacity and the type of refineries in Iran already are not allowing this country to really produce more demandable products, more light and middle distillate. Also there is a competition for gaining market share in the oil market.

However, Iran has since ten years ago or more was looking for increasing its natural gas production and export capacity, particularly from South Pars a shared field with Qatar, and Iran is going to have under this scenario that there is no sanctions on Iran gas would be the future of Iran and the focus of Iranian energy industry to put more focus and attention on their natural gas production. Well that would be it from me, and I'm looking forward to having more discussion later on.

**[Ms. Randa Fahmy Hudome]** Thank you. Next we'll hear from Tamara Essayad from CG/LA.

**[Dr. Tamara Essayad]** Good morning. It seems our discussion this morning has been very oil-heavy. I hope to be the voice of reason. It's a pleasure to be here today and I promise to be as swift as possible and to the point, and get everyone to the much anticipated networking session.

Doing business in the Middle East is a challenge, and not just politically. The natural resources dichotomy, major energy resources against limited water resources creates tremendously challenging opportunities. Challenging, but opportunities nonetheless.

The Arab world is one of the least economically integrated regions with the interregional trade making up only five to ten percent of total trade and non-oil exports sitting at less than one percent. I'll repeat that. Non-oil exports sitting at less than one percent.

This is problematic when the disparity between oil producing and non-oil producing countries is so vast. With over 60% of the population under the age of 25 and population expected to double every 25 years, the high unemployment rate will only increase, and rapidly. This expanding generation of youth also brings with it an era of technological innovation and creative entrepreneurship. While speaking of diversifying our GDP, trade, economic portfolio,

infrastructure, and energy sector as a segment of these sums we must also discuss those dynamic minds, which will be leading these efforts, the youth themselves.

The rise of social media has allowed for start up integration initiatives and platforms for accessing a host of markets and sectors. It is now a reality for a wind power engineer in Amman to send an instant message to a solar energy engineer or CEO she has never met in Abu Dhabi with project details and specs, asking for real time assistance and advice, and getting an immediate response through a project facilitation program “Global VIP.”

The great innovations and dynamic infrastructural marketplaces that oil producing countries have enjoyed have allowed them to be leaders not only regionally but globally, and petroleum energy advancements have been key in allowing for this great boon and has been at the forefront of the energy discussion until now. With this great innovative leadership also comes with it a great responsibility, first and foremost to continue leading the next generation by giving them the tools and opportunities they need to be relevant and inventive. But there too sits a great responsibility of oil producing countries to be the guiding light to the region, bringing these pioneers to the next level of energy and towards a localized, sustainable alternative energy development. For example, the Jordan wind project featured on our strategic top 100 report for MENA and South Asia has already partnered with the U.A.E.-based project Masdar to begin one such energy leadership collaboration. With Jordan’s electricity needs expected to increase by five percent each year until 2020, such a step towards reducing its carbon footprint ensures both long-term energy as well as economic security.

Localization is an opportunity not a hindrance to U.S.-Arab energy cooperation. As the U.S. itself moves towards energy independence in oil and natural gas, we see novel and exciting alternative energy projects popping up across the Middle East showing promise of imaginative vision and sustainability.

Energy independence of the United States and that of the Arab world are not mutually exclusive - on the contrary. Regardless of when the U.S. ultimately achieves its own localized energy infrastructure, Middle East energy stability will always be on the U.S. agenda. So why not contribute to the region’s achievement of such stability through localization, training, education, and promoting dynamic alternative energy projects that will increase future economic competitiveness.

It is absolutely essential for countries to emphasize the creation and support for local capacity for any long-term and systematic infrastructure project

development. This is particularly true where private investment is involved and any hopes of attracting private capital and growing a creative expert base. In the IMF's most recent report we saw that unless we invest more globally in infrastructure we will be looking at a decade of mediocre growth, something that tomorrow's youth and our economy cannot afford.

By looking at eight distinct criteria CG/LA Infrastructure has created a framework for insuring that economic competitiveness through alternative energy infrastructure development is not nearly an illusory hope, but a tangible goal. If you take anything from the following criteria, the one that drives all of this is projects. Great projects. Projects that redefine infrastructure and push the engineering envelope, and yes often times the financial envelope, and what contribute to overall competitiveness.

The ability to present a compelling consensus on a vision for the future of a country's infrastructure with a focus on competitiveness, the ability and skills necessary for public agencies to assess project design, engineering, finance, and performance. Public sector strategic capacity moves those projects forward and expeditiously. Long-term project performance, the quality of local engineering procurement, and construction firms working in an individual market as local companies best understand how to navigate a country or region.

Local equity capacity, and finally leadership. The institutional framework involved in projects and the management of the politics and finances necessary to complete projects on time and on budget. With \$4 billion of alternative energy projects featured in the Arab world just as a part of our report in just under two years, coupled with an exponentially growing youth population hungry for change and more creative than ever before, global technological innovation and energy sustainability starts as a project in just one person's imagination and has the ability to grow from vision to reality.

Thank you.

**[Ms. Randa Fahmy Hudome]** Thank you, Tamara. Just one more reminder to the audience, if you have your questions this will be the final opportunity to send them up. We have some good ones already but always welcome more. Our last speaker is Dr. Anas Alhajji.

**[Dr. Anas Alhajji]** Good morning.

Given this time of the day I think I'm going to be everything but serious. Dr. Anthony, if you think that Randa, being half Egyptian, half Iranian is interesting then listen to my story. I am half Syrian, half Italian. I used to say that until I

heard the stereotyping by Fox News and HBO and I stopped. I was afraid to be labeled half terrorist, half Mafia.

My grandfather was diagnosed with TB when he was 36, and doctors gave him six months to live. And I'm telling you this story for a reason, because they say that God created economists to make the weathermen look good, and I'm going to prove to you that God created physicians to make economists look really good. So my grandfather was diagnosed with TB when he was 36, he was given six months to live. He died when he was 105 from an accident not from natural causes. When he turned 100 he decided to turn his life to a movie and a book. In his book he said that he witnessed 15 killings in his life, and he lived long enough to see every killer being killed.

Policymakers, listen to this story. The long run is different from the short run. So if we start thinking in the long run, will that change lives? It definitely changed mine. I live in northwest Dallas. My property is on the Barnett Shale. There is a shale well that is .7 miles away from my house, that is 1 kilometer away from my house, and they drill horizontally under my house, they take the gas under my property, and I get a check every month. Now, why am I telling you this? The takeaway from this is the shale revolution in the United States was not designed by policymakers. It was not the result of an energy policy or a foreign policy. It was the independent producers and the medium-sized companies that brought the shale revolution to you.

Now, where the government policy is going to work is whether we can export or not and whether this policy's going to align the interests of everyone or just one group.

The final thought, that to explain what happened in the oil market, think about an equation where you have production disruptions on one side along with demand growth, and on the other side you have all the net production additions from around the world that includes of course U.S. additions, Canada's additions, and the Saudi additions. Since 2010, the market would have been balanced by the end of 2010, and it would have experienced oversupply in 2011 if it wasn't for the Arab Spring.

So whatever we are experiencing today in terms of low prices it should have happened in 2011 but on a smaller scale. But the Arab Spring delayed those events until today, so what we have today is the disruptions are getting smaller and productions continue to increase.

But there is a problem. For the first time, the issue of crude quality becomes an issue. We did not have it before. Why? Because all the current surplus, which at

NGP we estimate at .6 million barrels a day, 600,000 barrels, is light sweet crude. The Saudis cannot cut, to balance the market because the crude, most of the crude, is sour. It was normal and logical for the Saudis to lower prices simply because they need to compensate for that quality issue.

By early 2015, in the first quarter of 2015, the surplus would be about 1.5 million. It's only logical that several countries, including OPEC members and OPEC members in West Africa, North Africa, to cut production because that's the only way the market can be balanced. We need to cut the light sweet crude to balance the market.

So for those of you who are in academia and for those students who are studying, who are doing their dissertation, here is an idea for you. We've been working on OPEC modeling for the last 40 years. We never paid attention to the quality of crude. Now everything changed.

The U.S. shale revolution brought in the light sweet crude in massive quantities that replaced the imports from West Africa and North Africa, and we have that surplus and for OPEC to balance the market they start or they need to start looking at the quality of the crude. That changed all equations that we've been looking at before.

Thank you.

**[Ms. Randa Fahmy Hudome]** Thank you, Anas. Now I understand why you wanted to go last. Leave it to the Italian-Syrian to come to Washington and tell policymakers that they are irrelevant.

So thank you for that.

We will now spend the next ten minutes on the Q&A. What I'll suggest is that our panelists stay seated, speak into the microphone, and I have one question for each person I think.

So why don't I start, Tamara, with a question on infrastructure. One of our audience members wants to know in what areas in the Arab world, or specifically what country, has had the most success for energy infrastructure development?

**[Dr. Tamara Essayyad]** Well I don't think any one country has gotten the infrastructure plan right. I think there have been a lot of great projects and there have been a lot of great people involved. Yet the execution or perhaps the initial process hasn't completely been fulfilled. I think we can all agree that we've seen



plenty of really great infrastructural projects coming through the GCC, some coming across from North Africa. Specifically Algeria, has been a great example, and now booming I think is Jordan, coming from the Levant. So I think the importance isn't to focus on which country has been the best at doing infrastructure, it's taking those resources and inter-regionally collaborating so as to build up infrastructurally the region as a whole.

**[Ms. Randa Fahmy Hudome]** Thank you. Sara, there has understandably been a lot of interest from the audience on Iran, but I think one of the most interesting questions is if an agreement is struck with Iran what are the first two energy projects that Iran might engage in, that ostensibly they can't do now because of sanctions?

**[Dr. Sara Vakhshouri]** Well of course I would say Iran has very much interest in Farzad B, and Farzad B would be one of the projects that they would put efforts. They try to attract investors in Farzad B, projects for a long time, offered even production sharing during Ahmadinejad, which they were not successful still to bring. Although there were sanctions on investment in Iran they announced that they are not going to give the production sharing offered to Chinese that they wanted. So this is one of the highest priorities, but particularly those projects that are going to increase Iran's production capacity on the shared fields.

**[Ms. Randa Fahmy Hudome]** Great, thank you. Paul, this question is for you. There's an extreme interest in renewables, which we haven't touched on that much, and the relationship between the U.S. and Arab world, and particularly in the areas of solar. There's also a question on nuclear – maybe we could wrap that up too, in the advancement of nuclear in the Arab world.

**[Dr. Paul Sullivan]** Oh, you gave me the easy one. With regard to renewables, I had an interesting visit to the U.A.E. and Qatar, Qatar Foundation and the UAE Masdar city. And I noticed something interesting. There's a lot going on with regard to renewable technology development in the GCC. The Saudis are putting a lot of money towards that as well. The King wrote a rather big check on this.

Can the United States and the GCC cooperate on the development of renewables? Absolutely, yes, and we are. ENR and the State Department – Energy and Natural Resources – could do a lot more with the Arab world to help develop that sort of interrelationship. They're doing this with China and India – I can't see why not with the Arab world.

With regard to nuclear, we get into some pretty dicey prospects. The U.A.E. has a "123 agreement" with the United States. It's building a nuclear facility with the

Koreans just southwest of Abu Dhabi. Most of that's going to be used for water desalination, but also to produce electricity.

Egypt has some idea of developing nuclear power. For some reason it makes me slightly nervous right now. Libya - I think we should forget about that.

The Moroccans are focusing very much on renewable energy. I was in a meeting with some Moroccan businesspersons and leaders a couple of months ago and they're focusing a lot on solar, but with regard to this part of the world or any part of the world focusing more on renewables they have to understand and I'm sure they do that this is intermittent power. There has to be a development of energy storage to make this happen right, otherwise the electricity system could be unstable on days with not much wind. The problem with sun really doesn't exist in this part of the world.

The nuclear situation and proliferation - I think that would be something that would need to be worked out, but clearly the Koreans, the Chinese, the Japanese, the Russians, and others are also interested in developing that in this part of the world.

**[Ms. Randa Fahmy Hudome]** Great. Jamie - question for you regarding domestic U.S., particularly oil production, as U.S. consumers remain one of the largest consumers in the world. Do you think that this increase in domestic production is enabling U.S. consumers? And how do you explain, coupled with that, the lower prices at the gasoline pump in light of the geopolitical stress and turmoil going on in particularly the largest area of production today?

**[Mr. Jamie Webster]** Well certainly Americans are benefiting from both lower prices in terms of the consumers, lower gasoline prices across the board, but actually for the last several years economically, the U.S. and consumers and businessmen have been benefitting quite dramatically. We've got royalty owners that are getting a check every month. My brother graduated with a master's degree in history and surprisingly could not find a job in anything but the energy industry, so I was happy for that. So there's been a real benefit kind of across the board.

In terms of why we've switched from kind of geopolitical risk to the fundamentals is largely for the last couple of years it's been more about the risk, meaning will Iran do "X" or will this happen, not actually impacting the actual supplies or demand.

What has happened since June is actually not a risk but an actual volume, which is Libya production coming back on quite strongly. Realize that for the last

couple of years we've been dealing with global outages of around 3-3.5 million barrels a day. This is on a global market of around 92 million barrels a day. So that always represented significant downside price risk, and actually more downside price risk remains. If Iranian barrels come back into the market you could have prices go much lower if Libya, which is in what in my mind is a rather unsustainable situation and there production goes offline you could quickly see prices climb back up in short order.

**[Ms. Randa Fahmy Hudome]** Great. And finally Dr. Alhajji, because your expertise is in the capital management and investment area there's a question regarding all of the LNG facilities that have applied, the applications that are in the process, and those that have been approved, will the U.S. be able to build all of those facilities, and is there the capital financing able to support those facilities here in the U.S.

**[Dr. Anas Alhajji]** If we look at the LNG facilities around the world there are a couple of conclusions. The first one is they never come online on time. So that's the first conclusion - the average delay is about two years.

We've seen many cancellations over the years, so it's typical basically to see delays and cancellations. Based on our forecast at NGP we believe that the world LNG market can handle about five BCF a day by 2020. Any more exports than five BCF a day is going to create a competition among various LNG exporters.

So there is a potential. Experts do not agree on the amount that will be exported. We heard numbers between four BCF a day and 16 BCF a day by 2020. So we will see what number will be the correct number by 2020.

**[Ms. Randa Fahmy Hudome]** Terrific. Great. Well thank you.

I'd like to thank all our panelists. Interesting discussion, interesting topics, and I'm sure we'll continue those conversations.

Thank you.

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