# SIEW 2012 Opening Keynote

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Developments such as the emergence of unconventional gas, safety concerns with regard to nuclear energy and rising importance of climate change considerations are challenging long-held assumptions about the world's future energy mix. Maria van der Hoeven, Executive Director of the International Energy Agency (IEA), shares her perspective on "Shaping a New Energy Landscape."

SIEW 2012: Maria van der Hoeven (IEA) on the ne...

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Good afternoon, Excellencies, ladies and gentlemen.

It is a pleasure to be here at Singapore International Energy Week. I would like to thank the hosts from the Energy Market Authority, and Minister Iswaran for having me here today.

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I would like to discuss the global energy economy today, with a specific view to Asia and its impacts. The slowing growth we see in Asia adds new uncertainties to demand forecasts for energy - but uncertainty is a mark of today's energy economy, and particularly of oil markets. That was a major finding of our latest Medium Term Oil Market Report, released earlier this month. We are living in a new reality of risk, economically and geopolitically.

But the same report also found bright spots, and indeed they exist for more than oil.

More crucially, another major point is that the global energy map is changing, even in the next several years. Asia's new global role is a primary reason.

So today I would like to talk about oil but also gas and power. And I want to touch on moving the energy economy toward sustainability in the context of those rapid changes.

First, oil - the founding focus of the IEA.

The IEA released the 2012 Medium-Term Oil Market Outlook on 12 October. It is part of a series of such 5-year outlooks devoted to each of the 4 main types of primary energy: oil, natural gas, coal and renewables, and their development to 2017.

The report has mixed messages - both for the world, and for Asia in particular.

The good news is that OPEC spare capacity looks like it is rebuilding to more comfortable levels from the thin cushion of recent years. On the demand side, growth expectations have been reduced after this year's weak economic performance and as expectations of economic expansion have diminished. On the supply side, there is a lot more new oil expected from North America, where high prices and new technologies have unlocked light, tight resources that were long thought to be impossible to tap economically. Iraq is also touching new production highs, and a special IEA report released on 9 October highlighted Iraq as a game changer going forward.

The bad news is that this cushion is thinning in the context of heightened demand and supply risks. Political unrest has recently disrupted production in several Middle East and North African producers, and sanctions on Iran have already removed about 1 mb/d of 3Q12 supply from international markets. And unplanned outages due to maintenance delays or glitches in mature non-OPEC fields reached an all time high last year - to the point of cancelling out North American increases.

But overall, balances seem to ease over the medium term.

All the more reason for co-operation on oil security.

This graphic shows how changing global consumption patterns require global co-operation for emergency response. Asia is a key region in this regard thanks to its growing share of demand.

That is why the IEA is stepping up cooperation with IEA partner countries in Asia. In practice, that means participation of countries like China, India, and ASEAN members to our own Emergency Response Exercises in Paris. But it also means tailored exercises in-country upon request - so far in India and Thailand. And regular joint seminars and workshops on oil security have taken place this year with China and Thailand.

We also work directly with regional organizations such as ASEAN. In this case we encourage ASEAN countries to continue the operationalization of the ASEAN Petroleum Security Agreement, which we see as an important building-block to advance energy security and emergency preparedness.

In addition to oil supply security, it is worth noting that we have started to incorporate gas and electricity security on our energy security agenda - so let me move to those fuels.

The fossil fuel which is really on the rise in Asia is natural gas.

Domestic supplies will be an important aspect, but for many countries, LNG will play an essential role in meeting additional demand. This is notably the case for Singapore, which is planning to start importing LNG by mid-2013.

LNG trade has already expanded markedly in the past few years. We are now looking forward to a second wave of LNG supply coming online by 2015. And the good news for Asian customers is that most of it will come from the Pacific basin, particularly Australia, Papua New Guinea and Indonesia. In our Medium-Term Gas Market report released this past June, we foresee LNG trade growing by one third over 2011-17.

Another new source of LNG supply will be North America, where the unconventional gas boom has freed up both conventional Canadian and unconventional American gas for export. At least two US trains at Sabine have been cleared for export, and many other projects are competing for authorization. In Canada, some projects are advanced - Kitimat was cleared for export in late 2011. Unlike US projects, which are mostly on the Gulf Coast, Canadian projects are concentrated on the Pacific, offering a logistical advantage vis-à-vis Asia.

But competition within Asia for these new supplies will be fierce - from mature markets such as Japan and Korea, but also from emerging ones like China and India. And others are also in the game - Thailand, Malaysia, and West Java are seeing imports to new terminals in the past year. Singapore is expected to import LNG in 2013, Vietnam in 2015, and the Philippines are looking at the possibility.

But despite the volume of its gas consumption and trade, one fundamental thing is missing in this region: trading hubs, where natural gas would be priced not in relation to oil but depending on regional supply and demand fundamentals.

Japan imported LNG at $18/Mbtu this summer, compared to $3/Mbtu prices in the US, and $10 to $12 in Europe. This considerable price gap is raising questions in Europe and Asia about appropriate gas pricing.

Europe is responding by developing gas-to-gas pricing on trading hubs, with some progress in the UK and on the Continent.

But Asia is lagging.

The IEA has been studying this. In September in Beijing we released a report on China's pricing and regulation challenges, and how the OECD experience could help. And a broader report on developing a gas trading hub for all of Asia will be released early 2013.

IEA experience suggests that structural and institutional change is a step-process.

- First, to establish rules for third-party access and to set up an independent tariff regulator.
- Second, to introduce non-discriminatory access to pipelines, overseen by transmission operations which are transparent and unbiased.
- And finally to introduce spot and future markets, bringing in a large number of market participants, including financial institutions.

Singapore's efforts in this area, particularly for future LNG imports, are commendable. Its key location, experience with oil trading, and advanced institutional development are all major advantages.

Other hubs, particularly in China, may in the future provide liquidity on a greater scale. But Singapore's advanced progress is a milestone for Asian gas.

But let's remember why gas is so increasingly important - because of its role in power generation. Massive electrification is a hallmark of the modern energy economy, in Asia and around the world.

The challenges of meeting energy demand and providing security will revolve around electricity. But how that power is provided and used will also have a major impact on sustainability.

Coal is currently growing in importance in ASEAN electricity. That is unsustainable.

Energy Technology Perspectives 2012, a major IEA report released in June, looks ahead to 2050 and maps out a viable, affordable and efficient path towards a clean energy future. It also includes a specific chapter on ASEAN.

As agreed with ASEAN member states in Brunei in 2011, we are aiming to provide a further study to take a closer look at the energy technology perspectives for the ASEAN power sector. The results from this study would provide specific insights for policy-makers concerning technology adoption and promotion to meet projected electricity demand-growth and the underlying infrastructure investment needs.

ETP 2012 shows that putting us on a truly sustainable path, which limits long term temperature rises to 2° Centigrade (what we call the 2 degree scenario or 2DS), will require a truly global commitment. But each region faces different challenges and opportunities.

Rapidly growing Asian electricity demand could increase the role of fossil fuels, and especially coal, if current trends hold. To break those trends and achieve the 2DS, natural gas and renewables will be decisive. Together they represent more than three quarters of the electricity mix in 2030 under our 2DS scenario, and 80% in 2050.

Achieving those levels will be very challenging, especially in the context of such strong demand growth. Fortunately, the ASEAN region has large untapped potential in renewables.

Hydropower is already important in several countries and can grow much further. Indonesia and the Philippines have excellent geothermal resources, and geothermal power alone could provide 15% of $CO_2$ reductions in the ASEAN power sector.

Hence it is encouraging to see regional progress in promoting geothermal.

Indonesia's reform of its feed-in tariff scheme not only raises the tariff, but adds flexibility. The tariff will vary according to where the electricity is generated to reflect the "different need" of different areas. And the government's $367 million investment on 4 geothermal power plants can help to kick-start geothermal exploitation.

The IEA's Geothermal Power Roadmap can help other countries to enact sensible policies to promote this resource.

Let's have a look at what energy efficiency could bring in. Significant technology changes will have to be made in the transport, building and industry sectors. Energy efficiency accounts for more than half of the carbon reductions needed to achieve sustainability.

The technology mix in the transport sector will become more diverse with increased biofuel use and the introduction of electric vehicles, and also more public transport.

But energy efficiency and the switch to low-carbon fuels will also be crucial in the Asian building and industry sector.

Reduced energy consumption is not just a question of emissions. They also have implications for energy security by reducing import dependence - the most secure barrel or kilowatt will always be the one we don't use.

And there are a range of other 'silent' benefits shown here which are often not included in the debate, but which usually rank high among the concerns of policy makers. Those include better health, jobs, and new services.

So while energy efficiency may not be as politically enticing as new-build projects, it is often the most affordable and most effective tool to achieve policy goals.

The good news is that when it comes to low carbon technologies, and particularly renewables, progress is happening now. As a portfolio of renewable technologies matures, global renewable power generation is forecast to increase 40% over 2011-17. Those advances are made on the basis of falling development and capital costs, as well as new infrastructure and market frameworks in emerging markets.

Indeed, renewable deployment is spreading out geographically, with increased activity in emerging markets in Asia. China alone accounts for almost 40% of global renewable generation growth. Other emerging Asian countries such as India and Thailand also play important roles.

New deployment opportunities are spurring economies of scale in some renewable technologies, creating a virtuous cycle of improved global competition and cost reductions. With the scale up of deployment costs are falling, therefore allowing cheaper deployment in countries that could not previously afford it.

However, there is still a high level of economic and policy uncertainty in some countries when it comes to clean technology. The lesson is that, while many technologies are making great progress, and in some cases already competing openly, it is policy which lacks behind. Clean energy goes beyond installing solar panels and wind turbines.

It is also about putting the right infrastructure in place to support not only clean energy technologies, but also to assure electricity security. Transmission and distribution infrastructure is the backbone of a resilient power system.

The ASEAN Power Grid (APG) is a key energy infrastructure project in this region. It aims to enhance cross-border electricity trade to help ASEAN member states more efficiently meet their growing demands for electricity, while saving on deferred investments in the power sector.

In this context, Smart grid technologies can optimise the planning and operation of the APG in facilitating markets and improving grid efficiency. Smart grid technologies could also facilitate peak demand reductions in end-use sectors, offering further power sector investment deferrals in local systems.

As we have analysed the financial benefits arising from smart-grid investment we have found that these benefits outweigh the total cost of investment in all situations, making a strong case for smart-grid technologies.

But in some cases, the benefits accrue more widely than to the sector that needs to make the investment. This complicates investment, since all benefits may need to be monetised and accounted for in order to create a positive business case.

These points emphasise the needs for well thought-out regulation and policy in both renewable deployment and electricity system development. Evaluating the entire electricity system from generation to consumer - using a system approach will allow for targeted investment decisions in various ASEAN countries.

And concurrent energy access goals mean that the region is ripe for leap-frogging. Let me give you one example I had a chance to discuss on the ground recently.

Cambodia currently has no national grid but under the National Grid Development Plan aims to build interconnections to serve all villages. It has been estimated that Cambodia will need about US$1 billion to expand its electricity grid to communes and villages still in the dark, or about 60 per cent of the country. By constructing a modern grid, it also positions the country well to benefit from renewable integration and substantial savings down the road.

Today I have discussed some very large investment needs. It is true, that the current global economic outlook is marked by uncertainty. Problems in the developed markets are now having a visible effect on Asian growth. I am cautiously optimistic that the slowdown we see in the largest emerging markets is relatively planned, and that the landing will be soft, but it shrouds the outlook for the energy economy.

To the degree that uncertainty discourages the significant investments that are so needed in fossil fuels, clean energy, and energy efficiency, it does not bode well for long-term economic health. And we cannot expect those uncertainties, both geopolitical and economic, to go away any time soon. We see a "new reality of risk" in the oil market, but the same could be said across the energy economy.

But the good news is that for fossil fuels like oil and gas, there are significant supply bright-spots on the horizon. And for clean energy, technologies are progressing quickly, costs are falling, and deployment is happening more widely around the globe.

Market and policy frameworks will need to catch up. That is the case for renewables, but also for natural gas, where the lack of an efficient regional gas market keeps Asian prices very high, favoring coal in particular.

And policy frameworks will also be key to encourage energy efficiency - in the end, it will do the heavy lifting when it comes to carbon reductions, but it also benefits energy security, local pollution, and economic development.

In ASEAN joint policy frameworks and increased cross-border cooperation are crucial to achieve functioning and liquid energy markets. This is especially true for the development of a regional gas market but also for the establishment of a regional electricity market. The ASEAN Power Grid is an important start.

While policy can set the framework, capital and investments will need to be provided overwhelmingly by the private sector. Cooperation with the private sector, among regional actors and stakeholders, and globally between emerging economies and developed ones, will all be necessary to sustainably meet rising energy demand and provide supply security. The global energy map is changing, and we need to work together to change with it.

Thank you.

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