

Regional Agenda

World Economic Forum on East Asia Energy Summit Report

Nay Pyi Taw, Myanmar 5 June 2013

Introduction

In the context of the World Economic Forum on East Asia in Nay Pyi Taw, Myanmar, the Forum's Energy Industries Community hosted an Energy Summit for senior energy leaders from government, business and civil society that was chaired by:

- U Than Htay, Union Minister for Energy of Myanmar
- Pailin Chuchottaworn, President and Chief Executive Officer, PTT Public Company, Thailand
- John Rice, Vice Chairman, GE, Hong Kong SAR

The summit offered an intimate platform for strategic dialogue on key dynamics in the energy sector in East Asia. The goal was to create insights and foster common understanding of important energy developments, challenges and opportunities in the region, with a focus on supporting Myanmar's energy reform.

Lunch: Regional Energy Dynamics

Myanmar and Regional Energy Security

A representative from the Government of Myanmar opened the dialogue by linking Myanmar's ambitious reform agenda with the country's role in regional energy security, such as through natural gas exports.

Participants learned about the formation of Myanmar's National Energy Management Committee and Energy Development Committee to streamline and accelerate energy policy decision-making in the country. A key component of these reforms will be the creation of an integrated energy policy for the short, medium and long term that supports Myanmar's transformation into a developed nation – democratically, economically and socially.



Realizing ASEAN Energy Integration

Participants discussed ASEAN energy integration in the context of the development of Myanmar's new energy architecture. However, significant progress needs to be made to realize the ASEAN economic community (AEC) by the end of 2015 and to further integrate ASEAN energy. Although most stakeholders accept that a common, level playing field is ideal, many political challenges must be overcome. Notably, several countries within ASEAN are not truly open-market economies, which hinders investment flows.

The role of energy sector subsidies across ASEAN countries illustrates this challenge. Some participants recommended that blanket subsidies be removed in favour of outcome-oriented subsidies that are tailored to local demographics.

Although there are many challenges in the creation of the AEC and wider regional integration, participants agreed that there is an urgent need to resolve differences and implement the bloc;

otherwise the region may lose its economic advantage as it competes in the global marketplace.

Looking beyond ASEAN towards increasing integration with China and India was also recommended. For example, connecting energy infrastructure between India, Bangladesh and Myanmar could bring strong advantages. Myanmar can – if more connections are built – act as a bridge between ASEAN and China if this is done in a way that benefits Myanmar and other countries.



Participants also agreed that increasing ASEAN integration would support the already strong growth and progress in the region. There is, however, a need to ensure that growth and progress are managed responsibly in a transparent manner and at the correct speed.

This is especially true as energy demand in Asia is forecast to increase 3% per year until 2030-2035. If today's energy mix remains the same, this will result in a 25% increase in coal usage. As a result, participants recommended that alternative energy sources and energy efficiency be actively pursued to create a balanced regional energy architecture.

Participants also highlighted that ASEAN's regional energy architecture should develop quickly, but in the right way. To do so, the right processes and institutions to support the development of ASEAN energy integration must be implemented, and energy literacy programmes put in place to communicate energy policy and demand-side management to the populace.

Safe, Reliable and Affordable Energy

Overall, ASEAN countries are net importers of energy, and import dependency will rise rapidly hand-in-hand with economic growth if demand is not kept in check. This puts ASEAN in a vulnerable position. To counter this risk, participants highlighted several dimensions on which to work.

First, diversity must be leveraged and optimized at the regional rather than national level. More energy interconnectors are needed to benefit from the comparative advantages of each country, diversify supply sources and create an integrated energy market. Infrastructure connectors for gas and electricity need to be implemented to reach the target of an integrated ASEAN energy infrastructure by 2020.

Second, several fuel sources must be called on to meet demand. Although many agreed that governments should take an agnostic approach to energy sources, some participants commented that long-term sustainability is key given mounting pressure on the environment.

Third, energy demand must increasingly be decoupled from economic growth through various demand-side measures that can reduce the energy intensity of ASEAN economies, hence helping energy security and sustainability.

Leapfrogging and technology was debated with reference to the shale gas revolution in the US and the subsequent transformation of domestic industry and international trade flows. From an ASEAN and Myanmar perspective, participants debated opportunities for distributed energy systems to improve energy access, an option that state-of-the-art technology has made feasible. The energy infrastructure ASEAN needs includes not only large-scale megaprojects, but also small- and very small-scale distributed generation. Myanmar could use its low base to implement new technologies and leapfrog developments in energy access in a sustainable way; and the country could become a role model for the region.

New Energy Architecture: Myanmar

Introduction

Blessed with significant energy resource potential and strategically located in Asia, Myanmar can meet its increasing energy needs and ensure that the energy sector benefits the country while playing a key role in regional energy integration. Developing its oil and gas potential as well as significantly increasing the access to electricity from today's 26% will be fundamental to the country's development and the prosperity of its people.

A number of challenges remain for Myanmar to reap the full benefits of its energy potential, and the country has recently initiated an ambitious energy reform process. In support of this reform, the World Economic Forum, Accenture and the Asian Development Bank have undertaken a New Energy Architecture Myanmar consultation process in collaboration with the Ministry of Energy of Myanmar.

This session examined the key insights and recommendations from the study and Myanmar's priorities for energy reform. The goal was to provide input to Myanmar's energy reform and catalyse action to develop a new energy architecture for the country.

New Energy Architecture Insights

"Four Pillars" of an enabling environment

● Policy Initiatives ● Technology & Infrastructure ● Market structures ● Human capacity

	Policy Initiatives	Technology & Infrastructure	Market structures	Human capacity
1. Effective and Transparent Governance and Institutions	●	●	●	●
1.1 Create an integrated energy plan (IEP)	●			
1.2 Establish institutions and frameworks to deliver the Integrated Energy Plan	●			●
1.3 Strengthen public participation and support, and improve energy literacy	●			●
1.4 Strengthen regulatory framework for environmental and social standards	●			
1.5 Increase transparency of extractive industries and implement Extractive Industries Transparency Initiative (EITI)	●			
1.6 Strengthen the capabilities of Myanmar Oil and Gas Enterprise and consider the appropriate National Oil Company model	●	●	●	●
2. Investment Frameworks to Enhance Supply and Efficiency				
2.1 Reform energy subsidies	●	●		
2.2 Establish energy efficiency standards and regulations	●	●		
2.3 Expand rural energy access	●	●	●	●
2.4 Develop a clear vision and legal framework for private investment	●			
2.5 Create an investment framework and reform state enterprises to expand domestic energy supply	●	●		
2.6 Assess power generation options and integrate these into a power development plan	●	●	●	
2.7 Strengthen transmission and distribution networks		●		
3. Strategies Generating Long-term Value				
3.1 Assess options for building local industry				●
3.2 Improve human capacity within energy sectors				●
3.3 Identify "green growth" opportunities	●	●		
3.4 Strengthen the macroeconomic environment	●		●	●

Government's Reaction

Representatives from the government outlined the progress on reforming Myanmar's energy sectors, e.g. with the formation of

the National Energy Management Committee and an Energy Development Committee to help streamline and accelerate energy policy decision-making in the country. Other steps include commitment to join the Extractive Industries Transparency Initiative (EITI) and the future creation of an integrated energy policy for the short, medium and long term that will support Myanmar's democratic, economic and social transformation.

Through these and other reforms, the government aims to address the following priorities in the short term:

- Balance electricity supply and demand to prevent blackouts
- Attract foreign investment in oil and gas exploration, notably through the ongoing licensing round
- Improve transmission and distribution infrastructure
- Resolve the shortage of natural gas available for domestic consumption

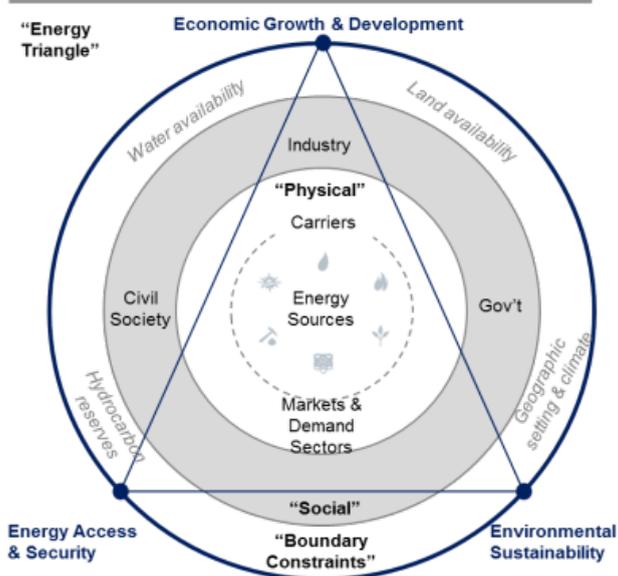
Governance and Policy

Stakeholders commended the government for its energy reform initiatives and progress made. Improving governance and further policy reform are required to create an energy architecture that balances the three dimensions of the "energy triangle": economic growth and development; energy access and security; and environmental sustainability.

Myanmar needs to strike a balance between advancing fast enough to attract investments and demonstrate progress to the population and taking the right decisions for the long-term, responsible development of its energy sector. No country has a perfect energy policy, so Myanmar need not seek perfection, but it should continue putting in place fundamental building blocks of its energy policy. Sequencing reforms, starting with high-priority areas, is important given capacity constraints.

First, the formation of an integrated energy plan (IEP) and streamlined and efficient institutions to deliver the IEP was highlighted as a necessity. The IEP should incorporate a regional component to ensure it considers the interconnected nature of countries' energy systems.

Energy Architecture Objectives



Second, a clear vision and legal framework for private investment are required to support the private sector by creating a stable environment for investment to help companies evaluate

appropriate payback periods and rates of return for potential investments. Myanmar's commitment to joining the EITI was commended.

The ongoing revisions of the electricity and petroleum laws will also take the country a big step in the right direction. Moreover, a clear process and regulatory framework for environmental impact assessments are called for to provide transparency both for investors and to the population, while safeguarding the environment as energy infrastructure is built.

Third, the role of subsidies in Myanmar's current energy system was discussed. Participants understood the political nature of subsidies, but pointed out that they do not always support those in need and can disincentivize investment. As a result, some participants recommended that blanket subsidies be removed in favour of outcome-oriented subsidies that are tailored to local demographics.



Social Inclusion and Ethnic Tension

Although progress is being made in bringing peace to the ethnic regions, managing social tensions will be critical to avoiding significant damage to the reform process. Some participants highlighted that social inclusion to resolve ethnic tensions is of paramount importance to the development of Myanmar's energy sectors and the country at large. It is a considerable task and will be a formidable challenge to expanding energy access, especially as the sites of many resources – hydropower dams, coal reserves and pipeline developments – lie close to or on the route to ethnic borderlands.

Some participants highlighted the need to balance local energy demand with exporting requirements and how increasing transparency may help reduce ethnic tensions and improve social inclusion. They also noted that local benefits should be ensured and appropriate environmental and social impact assessments – including rules and procedures – developed to balance potential trade-offs, resolve potential social issues and ensure that energy infrastructure can be built in a responsible and effective way.

Leapfrogging, Distributed Energy and Sustainability

The priority should be safe, reliable and affordable energy for all. While the overriding priority is increasing access to power and energy, the long-term environmental sustainability of projects should be carefully considered.

Participants agreed that energy access is crucial to wider development and reduction of poverty and that Myanmar might learn from the experience of countries such as Laos and Vietnam. Some participants highlighted that the current energy mix is unsustainable due to its high reliance on hydro power, which is problematic in the dry season. A more diverse supply – consisting

of different fuels and projects of small, medium and large scale – is called for.



Many agreed that Myanmar should take an agnostic approach to the size of projects and fuels. Technology options have multiplied in recent years and Myanmar could use its low base to implement new technologies and leapfrog to improve energy access.

One such opportunity is the use of distributed energy systems in areas where the grid cannot be easily extended. These small-scale distributed power systems, incorporating modern technology, can be cost-effective, scalable and financeable. They could also be temporary if desired until the grid is rolled out to a specific area or another energy source is preferred. They can leverage the locally available energy sources, such as solar, mini-hydro, biofuels or fossil fuels. Participants also made the point that fixing the existing infrastructure is a necessity and can quickly contribute to mitigating current power shortages.

Energy Literacy and Energy Efficiency

Demand-side management, such as energy efficiency, was also emphasized as a significant opportunity for Myanmar. Since Myanmar will expand its energy supplies significantly in coming years, building efficiency into its infrastructure while educating consumers on energy efficiency can make a significant difference for the country.

However, improving energy literacy is a necessity, as are new and good standards for electricity equipment. Participants discussed how improving the understanding of energy by people is of great importance. One example given was of those who ask for improved distribution and fewer shortages, yet who are not prepared to pay a higher tariff.

Breakout Session Recommendations

1. Expanding Domestic Electricity Supplies and Infrastructure

- Three pronged strategy should be taken to expand domestic electricity supplies and infrastructure
- Short term: refurbish existing capacity as an immediate priority
- Medium term: agnostic to sources of power; role for all energy sources and a diversified energy mix
- Long term: develop the right policies to incentivize investment in electricity across the value chain
 - Tailored subsidies for the poor
 - Set progressive tariffs
 - Look at smart grid and metering case studies from the region

- Identify where losses in transmission and distribution are and rectify them

2. Developing Myanmar's Oil and Gas Potential

- The potential for gas is considerable, but not a guarantee for proven reserves and production; attracting international investors with offshore capability will be crucial to developing these resources
- Market price and a stable investment environment are key to developing oil and gas potential
- Potential for developing two scenarios as part of an integrated energy plan
 - As-is development
 - Fundamental and disruptive development plan
- IEP should be updated regularly and consider three time horizons: short, medium and long term
- Balance between attracting foreign investment and local content requirement is needed; Myanmar should look at leading practices from other countries; Indonesia is an example of a country that has succeeded in attracting more gas for domestic use, a goal Myanmar is pursuing.

3. Sustainability and Energy Efficiency

- Focus on accessible, affordable and sustainable energy supply and demand
- Improve energy literacy and create an education academy/platform to improve the understanding of energy
- Actively pursue energy efficiency measures such as standards and join the UNEP's En.Lighten programme, an international platform contributing capability and best practices for efficient lighting
- Capacity building at all levels of the government is important not only for sustainability and efficiency, but also for shaping and implementing energy reforms



4. Creating Models for Off-grid Rural Energy Access

- Create an IEP, ensure energy access and efficiency are incorporated into these plans
- Investigate energy efficiency measures, such as LED lighting
- Focus more on renewables and models for distributed generation
- Create an enabling environment for the private sector with appropriate market frameworks to support development (tariffs/pricing and the ability to set the right price are key)

- Energy literacy and consulting all stakeholders are key

The report, *New Energy Architecture Myanmar*, is available at: www3.weforum.org/docs/IP/2013/EN/WEF_New_Energy_Architecture_Myanmar.pdf

Leading Energy Policies: ASEAN

This session was hosted by the Forum's Energy Industries Community and the Global Agenda Council on New Energy Architecture.

In a changing regional and global energy landscape, countries are reshaping their energy policies. Using case studies, participants debated lessons learned, good practices and pitfalls to avoid that are applicable to ASEAN countries.



A historic energy transformation is underway across the world. The transformation is driven by factors such as: the shift in the economy and energy demand from developed to emerging economies, with ASEAN among the fast-growth countries; climate change concerns and the resulting push for lower carbon energy solutions and demand-side management; and rising energy costs and prices as well as new technological possibilities in areas such as unconventional gas and renewables.

To create an effective energy transformation delivering affordable, sustainable and secure energy at the scale needed, countries in South-East Asia must find effective policy instruments. While every country is different, important lessons can be learned through exchange of experience. Few, if any, policies are perfect, and participants agreed that the search for perfection should not stand in the way of progress towards better energy policies. One dilemma is that policies can be contradictory with unintended consequences.

Energy Efficiency and Demand-side Management Policies

A case study from Japan, which has significantly reduced peak electricity demand post-Fukushima, was discussed. In conjunction with the weather forecast, Tepco and other utilities have been allowed to display the real-time power capacity versus demand. The same information is displayed on company websites. It raised public awareness on the real-time power balance, and consumers reacted by reducing demand considerably at critical moments.

It shows the power of active demand-side management and “energy literacy” – through simple information. If consumers act, it pays off with a decreased energy bill – “money talks”. The results materialized quickly in Japan and, together with other

initiatives, it allowed Japan to avoid power blackouts with the totality of its nuclear power capacity at a halt.

Participants agreed that this experience is relevant for ASEAN countries, many of which suffer from energy fluctuations, blackouts and runaway energy demand. A representative from the Myanmar government said they would consider implementing a similar measure.

The measure does not cost anything for the companies and governments. By lowering the peak energy usage, companies can avoid pricy investments in peak load capacity, save energy and reduce risks of blackout at the same time. Once one company starts, others are likely to follow because of the positive media response and popular demand.

Investments in renewable energy are increasing significantly in Japan after recent policies were enacted to stimulate renewables through feed-in tariffs. Today, however, the carbon footprint of Japan is increasing because of its increased consumption of natural gas to compensate for the nuclear shortfall.



Policies to Create Efficient Energy Markets and Attract Investment

ASEAN countries need tremendous investments in energy infrastructure to meet demand. Business leaders underlined that companies will invest if private capital is given a reasonable risk-adjusted return. Other important factors for investors are macroeconomic stability, a level playing field and respect for the rule of law.

Australia was highlighted as an example of a country that has established a good investment framework for oil and gas. The government is very supportive of resource development when done in a sustainable way. Long-term certainty, including on fiscal terms, transparency and clarity, are important features of Australia's success in attracting investors in the oil and gas sector, as is the fact that there are highly skilled workers.

The recognition of the complexity of the situation was key to forming the right policy. Working together to help outside interests understand what is required to excel has been crucial for Australia's success.

Participants highlighted the importance of open energy markets, where large buyers and sellers can source and supply energy. In the gas sector, long-term sales contracts are still very important to justify the considerable investment required.

Local content requirements are sometimes established to help local industry grow, but should not hinder competitive sourcing of the best talent and resources – otherwise it can add to costs and

create a bottleneck. Hiring locally and training workers to do the job can, in many instances, be cost-effective and demonstrates the value that companies can bring in capacity-building once the right climate for investment is created.

Opening markets too quickly will create winners and losers and can create large disparities, so carefully managing the market opening is important.

Renewable Energy Policies: Thailand Case Study

Thailand established an energy ministry in 2004. Since oil prices jumped in the last decade and Thailand's oil and gas production reached a plateau, the country has made considerable efforts to develop renewable energy. Thailand also has ambitious targets to increase the share of renewables in the energy mix from 10.2% today to 25% by 2025 and to become a hub for biofuels.

The country has a significant and growing biofuels industry. Key pulls have been blending requirements and pricing incentives for gasohol and ethanol. Information campaigns have been instrumental in overcoming initial consumer scepticism. Today, Thailand is moving towards E20 and E85 and has created an industrial plan for the biofuels industry.

On the electricity side, Thailand has had a positive experience with "adder" schemes, varying the support depending on cost profiles of solar, wind, etc. The adder element is financed by the consumer through an addition to the price of electricity.

In addition, Thailand has made progress towards phasing out fossil fuel subsidies, a major challenge in many ASEAN countries.



The views expressed are those of certain participants in the discussion and do not necessarily reflect the views of all participants or of the World Economic Forum.