Day 3: The Energy Trilemma: Policy Solutions to Secure Prosperity

Energy Ministers: Active government policy, investment key to solving 'Energy Trilemma'

Energy Ministers from China, Russia, and Canada said on Wednesday that proactive government policies and robust investment are key pillars in ensuring a steady supply of energy amid soaring global demand, while dealing with the "Energy Trilemma" of security, sustainability, and access. Vice Administrator of China's National Energy Administration (NEA) Wang Yumin, Russian Energy Minister Alexander Novak, and Canadian Minister of Natural Resources Joe Oliver each addressed delegates at the World Energy Congress about the so-called "Energy Trilemma."

Wang Yumin
Vice Administrator, NEA, China

"China's energy development challenges are dire," said Wang. "There are new challenges because new sources of demand are being created." He said consumption is growing 5.8 per cent annually in China when China needs to sustain 10 per cent economic growth per year in order to realise the "Chinese dream" of stable development. Wang said China had managed to provide heating to 70 per cent of the country's rural population, and has used advanced turbines and other technology to help disadvantaged groups. He pointed out that China's energy efficiency is approaching 90 per cent, but added that the government would need to implement "strict measures" to keep energy consumption under control. "People's lifestyles will have to change," he said.

Russian Energy Minister Alexander Novak said "It is clear that the main component of the Trilemma is energy security – unless it is guaranteed, all other good intentions fade into insignificance." He said Russia will continue to raise the issue of global energy security at international forum such as the APEC and G20 summits. Novak said Russia will also propose ways of establishing a transnational energy infrastructure to service areas with energy production deficits. "This is of special relevance for the Asia Pacific region (APR)," Novak said, "as high economic growth rates and population increase bring about greater energy consumption." Novak pointed out that Russia is increasing the capacity of its Northern Sea Route to provide shorter and more productive routes for energy supplies.

Canadian Minister of Natural Resources Joe Oliver told delegates that Canada is undergoing a series of economic reforms to streamline and cut red tape on major energy projects. "Expanding and diversifying our energy exports are the top priority of the Canadian government," said Oliver. "Canada has an emerging LNG industry and a strategic imperative to become an important supplier of energy to Asia." The Minister also highlighted that about US$650 billion in new investment is planned or underway over the coming decade in hundreds of major resource projects in Canada.

Governments and industry should cooperate to solve Energy Trilemma

With growing energy demand in Asia and coming challenges in the global market, industry and governments need to work together to find solutions to tackle the "Energy Trilemma" of energy equity, energy security, and environmental sustainability, said panelists at the opening session of the World Energy Congress on 16 October.

John Drzik
CEO, Oliver Wyman

"There is a lot of common ground between industry and government," said John Drzik, CEO of Oliver Wyman, the international management consulting firm. "Solving the Energy Trilemma requires a sustainable policy that endures over time, requiring a partnership between industry and government."

Experts suggested how to approach the Energy Trilemma, and where the main challenges will come from in the coming decades. "Energy efficiency is at the heart of any solution for Europe and for our Energy Trilemma," said Maria van der Hoeven, Executive Director of the International Energy Agency (IEA). Experts said that integration could help tackle the Energy Trilemma, bringing about greater energy security and efficiency. "If you want to change your energy mix, you have to be mindful of the consequences of the region," van der Hoeven said, offering the example of Germany. "You can't do things alone."

Luis Enrique Berrizbeitia, the Executive Vice President of CAF – the Development Bank of Latin America, similarly suggested an integrated outlook, drawing on the experience of Latin America. "There are plenty of opportunities to satisfy security needs, especially if we advance on the integration front," he said. "Integration can bring combined resources of region in an efficient manner." He pointed out

that the region already has a clean energy matrix drawing on hydropower, with the growing participation of wind and solar, and is well endowed with energy resources.

Different regions and nations will face unique challenges in the coming years that will all contribute to the global picture. "Energy access, energy security, climate change are all very important objectives. The size of this triangle is shaped in a different way from region to region and country to country," said Riccardo Puliti, Managing Director for Energy and Natural Resources sector at the EBRD. "To find a solution, there are global targets, but there are also regional and national targets that contribute to this global target," he added.

Energy-water-food nexus would benefit from eduction initiatives

"We are fiddling, whilst Rome is burning" said Jason Drew, CEO of AgriProtein, in discussing the sustainability of the energy-water-food nexus. Drew, whose company feeds biological waste to fly larvae to produce a sustainable source of protein for use in industrial agricultural processes, said "the industrial revolution is over and the sustainable revolution has begun," suggesting that the key to sustainable development is in "reinventing the wheel, copying Mother Nature." Drew insisted that adapting human behavior is fundamental to creating an environment conducive to solving sustainability issues.

Brian Statham
Chairman, SANEA

That view was endorsed by Brian Statham, Chairman of South Africa's SANEA, who said that "If you don't have an inherent understanding of the problem and why change is needed, then no amount of regulation is going to help it."

Thani Al-Zeyoudi, Director of the Emirati Directorate of Energy and Climate Change (DECC), recounted a successful education scheme implemented in the UAE. "We launched a campaign called Hero in our schools and it was a huge success" with children learning about energy issues and pressing their parents to use less energy and water at home. Statham commented that "We need to make sure the whole value of resources is embedded in the education system, but in a fun way. It goes to the essence of education. Good education is always fun." "It's simple," added Drew, "We're in a race between education and disaster, if we engage the youth we will win this battle."

Climate negotiations: How to bridge the three gaps?

Although governments will draft a Universal Climate Agreement in 2014 with plans to adopt it in 2015, "a global agreement is not going to be possible unless enough local, national action and legislation occur," Christiana Figueres, Executive Secretary of the UNFCCC, said on 16 October. So far, 30 to 40 countries have climate legislation, but "it is not enough," she said. She also emphasised a need to complement what's happening in those countries, including public-private and multinational cooperation, with a worldwide, top-down effort. "80 per cent of the climate discussion and of the climate solution is energy," said the UNFCCC leader.

Christopher Rapley, Professor of Climate Science at University College London (UCL), said the 2013 IPCC report is "arguably the most rigorous scientific report on anything ever." It shows that "there is absolutely no doubt that the world is warming." And it finds that the degree of certainty that the warming is man-made has moved up to 95 per cent. The report, *Climate Change 2013: The Physical Science Basis*, "isn't a run-of-the-mill report to be dumped in a filing cabinet," said Rapley, who was not involved with the report. "It's not a political document. It's science." So why isn't there greater commitment to changing the energy mix? The issue arouses "strong emotions," Rapley observed. "It is an inconvenient truth." To try to deal with that, climate scientists "tend to be very conservative," fearing that otherwise they'll sound "alarmist." What's the one best solution? "Make CO_2 smell bad," he suggested, and then no one will live next to a coal mine, no one will like driving a car.

Christopher Rapley
Professor of Climate Science, UCL

"All the planet cares about is how much CO_2 is in the atmosphere," Rapley said. "There's only so much carbon we can yet burn." The maximum, he said, is 800-880 gigatons. If more than that is burned, that risk rises of global warming growing by more than 2°C rise, which, scientists believe, is the optimum level. "At the rate that we're burning it now, we will have used it all in the next 30 years," Rapley said. "If we continue at business as usual, we could well be at three or four degrees at the end of this century, and rising."

The electricity industry, said Philippe Joubert, Executive Chair of WEC's Global Electricity Initiative (GEI), "can do a lot. We know how to decarbonise electricity." To stop emitting CO_2, "nuclear is part of the solution." So is renewable non-CO_2 technology. "They all have their limits," Joubert said. "We still have some difficulty to deal with intermittency. We have all the technology. After that we'll use CCS" – carbon capture and storage – because the world will still be using fossil fuels for a long time.

Philippe Joubert
Executive Chair, WEC's GEI

Electricity storage is the only vital technology that doesn't yet exist, Joubert said. "R&D doesn't happen by an act of God," he explained. "The signals from the public and the regulators are not clear. To make this kind of decision we have to give the industry a long-term, stable direction." Convince the industry that the public and government want it and industry will do it. "As long as you play around with the CO_2 price – US$5, then US$30, then back to US$5 – we will not be safe to invest seriously in new CO_2 technology."

Khalid Abuleif, Chief Climate Agreements Negotiator for Saudi Arabia's Ministry of Petroleum and Mineral Resources, emphasised the need for equity in finding solutions to global warming when "1.3 billion people in the world do not have access to electricity."

National energy policy: Achieving a triple 'A' score

The WEC's Energy Sustainability Index serves as a benchmark for nations in implementing their energy policies. The World Energy Council has graded 129 countries with A through D scores based on three criteria reflecting the "Energy Trilemma": security, equity, and environmental sustainability. Only 5 countries received the highest score, AAA. For developed countries, achieving a high score is significantly easier compared to those in the developing world. However, the Energy Sustainability Index can help all nations improve their energy strategies and acts as a guideline for responsible policy implementation.

With over 40,000 buildings crammed into 1,100 square-kilometres of real estate, Hong Kong is an "extreme case of high density" population that "cannot tolerate blackouts," said Christine Loh, Hong Kong's Secretary for the Environment. The implementation of a successful energy policy is a high priority for the Chinese Special Administrative Region, she explained. Loh noted that every country strives to place high in global rankings and the Energy Sustainability Index is no different. "It fuses three important issues, to do well we need government policy-making to be better," she said. The lawmaker says it's difficult to bring together multiple branches of any government, even in a city the size of Hong Kong. She believes the "objective" rankings of the WEC compel her government to "not take energy for granted."

For Alistair Buchanan, KPMG's Partner & Chairman of the UK Power and Utilities Practice, the energy policies the country has implemented complement the standards of the index and address the concerns of the Trilemma. He notes that countries that live up to the framework of the Energy Sustainability Index will "attract vital investments that will bring jobs and innovations" to their economies. But he noted that for many European countries and beyond "hurdles are rising against achieving a AAA score", due to national and regional shortages and unregulated energy markets. Buchanan said the first part of the Trilemma to fall by the wayside is environmental sustainability, as countries attempt to stabilise prices and secure their energy supply.

B. Prasada Rao
Chairman & Managing Director, BHEL

For developing economies, balancing an environmentally sustainable energy policy and the myriad of other domestic needs is hard to accomplish. In India, where 450 million people live without reliable access to electricity, it's "a major challenge," said B. Prasada Rao, Chairman & Managing Director of Bharat Heavy Electricals Ltd (BHEL). The costs of implementing standards like those of the Energy Sustainability Index can "adversely affect the country's competitiveness," he added. But Rao acknowledged that those goals are something to be strived for and will ultimately benefit economic growth.

Ministerial dialogue: Energy in transition

Whether governments should subsidise energy costs for the world's poorest consumers emerged as a point of heated debate at the World Energy Congress during the closing plenary session for 16 October as government ministers discussed how countries should coordinate

energy policies to achieve the triple goals of security, sustainability, and equity in energy policy.

Ministerial delegates from India and Saudi Arabia argued in favour of providing energy at low prices to the poor, while their counterparts from developed countries and emerging economies warned against market distortions caused by subsidies.

Pradeep Kumar Sinha
Secretary of Power, India

"Government intervention is necessary so that costly power can reach even the poorest people," said Pradeep Kumar Sinha, India's Secretary of Power. "When you have poverty and import reliance you have no other choice." India imports 80 per cent of its oil and 20 per cent of its gas. Vast areas of rural India are yet to be connected to the electricity grid. Alawaji Saleh, Saudi Arabia's Deputy Minister for Electricity stated that his government needs to provide cheap electricity for "air conditioning which needs a lot of energy."

This drew a comment from Switzerland's State Secretary for Power, Walter Steinmann to the effect that governments should not be spending money to keep inefficient buildings cool with inefficient air conditioners. "High prices inspire innovation," argued Steinman, "In Switzerland you are only allowed to build energy-efficient buildings." Saleh responded that energy-efficient buildings and air conditioners also require additional costs. "Who will pay for such improvements?" Saleh said.

Walter Steinmann
State Secretary for Power, Switzerland

Uruguayan Secretary of Energy, Ramón Mendez stated that governments must participate in the development of energy resources, but that their role must be limited to providing a "stable regulatory framework to attract foreign investors." According to Mendez, Uruguay will achieve 90 per cent reliance on renewable energy in two years. "The government has provided no subsidies for any energy investments," he said.

The debate comes at a time when the World Energy Council has promoted the concept of the "Energy Trilemma," which examines how to provide energy equitably, securely and in an environmentally sustainable manner. But delegates from different parts of the world have put different emphases on the three 'prongs' of the Trilemma, depending on the levels of economic development. "You cannot paint all countries with the same brush," said India's Sinha. "Each country is in a different location and at a different stage." Brownouts and blackouts are common in India.

In Africa, 70 per cent of the population has no access to electricity despite recent rapid economic growth. "In some parts of rural Africa, access to energy is limited to 1 per cent or less," said Elham Ibrahim, Commissioner for Energy and Infrastructure of the African Union. Uruguay's Mendez commented, "We need to remember the 1.4 billion people on the planet whose energy use has not changed since the Middle Ages." ❑

The World Energy Council (WEC) *has been at the forefront of the energy debate for nearly a century, guiding thinking and driving action around the world to achieve sustainable and affordable energy for all. It is the UN-accredited energy body and principal impartial network, representing more than 3,000 organisations – public and private – in almost 100 countries.*

The WEC informs global, national and regional energy strategies by hosting high-level events, publishing authoritative studies and working through its extensive member network to facilitate the dialogue that creates energy policy. Independent and inclusive, the WEC's work covers all nations and the complete energy spectrum – from fossil fuels to renewable energy sources.

In a world where many non-governmental organisations have clear partisan agendas, the World Energy Council stands out as a unique umbrella grouping of leaders dedicated to promoting the sustainable supply and use of energy for the greatest benefit of all.

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