

Core Group Meeting of the Practitioners' Dialogue on Climate Investments

Open Session: Energy Transition for Developing Countries: Possible Strategies and Action Plans, 24th October 2016

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Introduction

According to Southeast Asia (SEA) Energy Outlook 2015, SEA's energy demand grows by 80 % from 2015 to just under 1,100 Mtoe in 2040. In SEA, coal is projected to grow at fastest rate among all energy sources and reach 440 Mtce in 2040. By then, coal will overtake oil to become the largest fuel in the energy mix. The share of fossil fuels in the energy mix is projected to increase from 74 % in 2013 to 78 % in 2040. Coal is also responsible for around 60 % of global combustion-related sulfur dioxide emissions – a cause of respiratory illnesses and a precursor of acid rain (World Energy Outlook Special Report on Energy & Pollution, 2016). Coal is also the single largest threat to climate change (Greenpeace, July 2016). With the global urgency in the climate agenda and the growing megatrend of Energy Transition (*Energiewende* originally pioneered by the Germans) and adopted by many developed countries, this raises the question **if energy transition is to take place in developing countries, what would be the possible strategies and action plans?**

Country Background of Facilitators

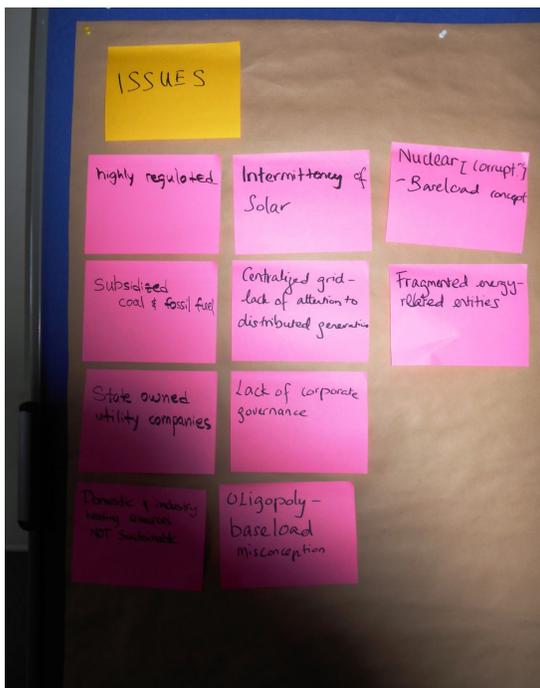
Malaysia

From the electricity perspective, Malaysia is highly dependent upon coal and gas for power generation. In Peninsular Malaysia, coal and gas currently constitutes 84% in the electricity mix and by 2035, coal and gas will increase to nearly 90%; the increase is largely due to increase in coal-fired power plants. In Malaysia, the country's main greenhouse gas (GHG) emissions are from the energy (electricity generation and oil & gas) and transportation sectors. Malaysia's intended nationally determined contribution (INDC) committed at the Paris Climate Agreement is to reduce its GHG emissions intensity of gross domestic product (GDP) by 45 % by 2030 relative to the emissions intensity of GDP in 2005. This consists of 35 % on an unconditional basis and a further 10 % is condition upon international support. Although Malaysia's total GHG emissions only represent about 0.6 % of global emissions (in 2011), the country is committed to reduce to reduce its carbon footprint and is continuously

exploring how energy can be successfully transitioned from carbon-based towards renewable energy (RE). To this day, the contribution of RE is still low in the country, the Government has implemented in various energy transition measures in the country such as feed-in tariff (FiT), net energy metering (NEM), large scale solar (LSS) programmes.

Mongolia

Mongolia is also highly dependent on coal for heating and electricity, coal is abundant in the country. Currently, approximately 80 % of energy supply source is coal and RE is about 5 %. According to the study by the International Energy Agency (IEA) of 2011, between 4-5 million people die each year related to the lack of basic energy and sanitation infrastructure. Therefore, the need for Energy Transition is necessary and must be taken seriously to provide quality of life to all mankind. The current form of energy has an adverse impact on the environment. In Mongolia, coal mining activities are causing land degradation, environmental pollution as well changing the wildlife migration routes. The energy system is centralized to uphold the sovereignty of the state. So, without mentioning the need of reducing GHG emissions the Energy Transition must be tackled, especially for developing countries. However, energy is a sensitive political issue therefore, should be handled carefully without causing any conflicts among neighboring or other states. For example, currently Mongolia has plans and set the foundation for hydro power plant which is being opposed by Russia due to the fact that it would cause a decrease in water flow into the lake of Russia.



Salient Discussion Notes:

Issues	Strategies
<p>1. Baseload</p> <p>The archaic need for baseload power – difficult to change the mindset of power planners who have difficulty adopting a paradigm shift from the need of baseload power plants (capacity market) towards accepting energy and flexibility markets.</p>	<p>Re-Design of Electricity Industry</p> <ul style="list-style-type: none"> • Capacity markets are ideal for conventional power plants such as coal and nuclear whereas an energy transition will require a shift to energy and flexibility markets. • Energy market – provided by RE with zero marginal costs e.g. variable RE such as solar and wind. • Flexibility market - Some of the proponents include: <ul style="list-style-type: none"> ○ energy storage systems (ESS) e.g. flywheel, supercapacities, compressed air, Lithium-ion, pumped storage; ○ Demand side management via time-of-use (ToU); ○ Power plants that can provide flexible capacity e.g. hydro, biomass, biogas; ○ power trading across border • There is a need to provide incentives to reward proponents of flexible market to break market barrier e.g. ESS.
<p>2. Intermittency of variable renewable energy (VRE)</p> <p>VRE (such as solar and wind) are intermittent and power planners are concerned that these forms of energy sources cannot provide reliable and quality electricity.</p>	<p>Power fluctuations can be addressed by</p> <ul style="list-style-type: none"> • increasing spatial distance or covering a greater geographical area¹; • Using forecasting tools to improve predictability of VRE. • The need to call upon flexibility market to provide balancing power systems

¹ https://www.cleanpower.com/wp-content/uploads/2012/02/081_QuantifyingPVPowerOutputVariability.pdf

Issues	Strategies
<p>3. Monopoly/Oligopoly Energy Market Some electricity markets are highly regulated; they are state-owned utility companies that are either in a monopoly or in oligopolistic market where only few players dominate the market.</p>	<p>A need to liberalize electricity supply industry, to grant third party access (TPA) to the grid. Liberalizing electricity supply industry will help create competition, lower pricing and improve service quality.</p>
<p>4. Lack of corporate governance in energy-related matters The risks associated with awarding large conventional thermal power plants (e.g. coal, nuclear) such as corruption.</p>	<ul style="list-style-type: none"> • To increase governance on energy, it is advisable to adhere to international guidelines on monitoring, reporting and verification to increase transparency; • To consider institutionalizing transparency in our rules and regulations; • The need for a truly independent energy regulator - "The energy sector is certainly the most corrupt one: it generates large sums and a great desire to use them on the level of shadow schemes. Without adoption of an adequate law on a truly independent regulator all other reform laws that regulate or will regulate the markets of gas, electricity, and energy tariffs, will remain partial solutions"².
<p>5. Increasing usage of coal in electricity mix</p>	<p>Co-Firing Coal & Biomass</p> <ul style="list-style-type: none"> • Promote the co-firing of coal and biomass fuel blends to reduce harmful GHG emissions, and also to reduce the amount of coal. • Where agricultural waste is abundant, there should be policy in add in more biomass in the energy mix with financial incentive (e.g. FiT). Additionally, the byproduct of

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http://www.irf.ua/en/about/news_eng_n/eksperti_ta_narodni_deputati_obednuyut_zusillya_dlya_stvorenniya_nezalezhnogo_regulyatora_v_energetitsi/

Issues	Strategies
	biomass e.g. biochar has economic value using possible technologies such as torrefaction.
6. Existing Fossil Fuel Power Plants, What do we do with them?	<ul style="list-style-type: none"> • To avoid stranded assets of fossil fuel power plants, consider adopting policy of phasing out expiring fossil fuel plants and not replacing or meeting new energy demands with planting up of more fossil fuel plants but with RE power plants instead; • Drastic measure: Buying out and closing fossil fuel power plants³; • Capacity development – the need to retrain workers so as to be employed in RE sector.
7. Conflicting Policies Conflicting policies prohibiting the growth of RE in the market and industry e.g. restricting the number of power plants that can be owned by a company and public listing requirements of minimal aggregate power plants in portfolio.	<ul style="list-style-type: none"> • Energy transition needs a balanced and holistic approach; • Policies should be designed to enable RE industry and market to grow; • Important to have access to policy makers on energy matters so as to be able to provide right advice on policy formulation and to substantiate the renewable energy policy with economic, social and environmental values. • INDC – incorporating carbon reduction commitments and INDC must be institutionalized in policies cross-cutting ministries e.g. energy, transportation, industries, construction, and forestry. • Intervening policies required such as NEM, FiT and Renewable Portfolio Standard (RPS) if RE has not achieve grid parity with fossil fuel.

³ The Dutch Liberal MP and vice president of the parliament, Stientje van Veldhoven, told the Guardian: “Closing down big coal plants – even if they were recently opened – is by far the most cost effective way to achieve the goals of the Paris agreement, and all countries will need to take such far-reaching measures. We cannot continue to use coal as the cheapest source of energy when it is the most expensive from a climate perspective.”
<https://www.theguardian.com/environment/2016/sep/23/dutch-parliament-votes-to-close-down-countrys-coal-industry>

Issues	Strategies
<p>8. Fossil Fuel subsidy</p> <p>In some countries, the use of fossil fuel (e.g. natural gas or coal) for power generation is still being subsidized providing an inequitable playing field for RE.</p>	<ul style="list-style-type: none"> • This is another example of conflicting policy to (say) INDC commitment. • Subsidy removal from fossil fuel based power plants in order to provide equitable platform for RE; • In a shift to an open electricity market, electricity tariff should undergo an important paradigm shift from being <i>cost based pricing</i> to <i>price based costing</i>. • “Where the monopolistic position could previously offer the possibility to determine the price based on internal costs, now the open market dictates that cost must be based on the market price that can be asked”⁴ • Carbon pricing – although principley good to tax carbon, in reality quite challenging to implement because any (carbon) tax faces tough social acceptance.
<p>9. Centralized Electricity Generation</p> <p>Electricity generation is still highly centralized with lack of attention or priority for distributed generations;</p>	<ul style="list-style-type: none"> • Policy makers need to understand why it is important to promote distributed RE power plants or micro power plants; this is to promote fairer wealth distribution and empowers individuals and communities to be clean energy producers. • Incentives for distributed and smaller renewable energy power plants (such as the FiT)
<p>10. In-door Pollutants</p> <p>In some countries, domestic and industry heating resources are not sustainable and healthy e.g. air</p>	<p>Not enough time to discuss on this but this issue has been addressed in Working Group 2 on Creating markets for off-and mini-grid renewable energy solutions, a prototype on Adaptation of Effective Clean Cooking Energy Technology Through Capacity Building for</p>

⁴ Hoogervorst Jan A. P., Enterprise Governance and Enterprise Engineering, Springer Science & Business Media, 19 Feb 2009

Issues	Strategies
pollutants (black carbon) caused by indoor heating and cooking; these have negative impact on health and increase mortality rate.	Mitigation of Climate Change, by Mbaari Kĩnya, Managing Director, Women in Energy & Environmental Technology (WEET) Enterprise Ltd, Kenya ⁵ .
11. Fragmented or cluttered energy-related entities This makes administration inefficient.	Not enough time to discuss on this.

Note:

This report is based primarily on information gathered at the Energy Transition workshop and additional discussions held outside the workshop. The footnotes are additional online literature to back the information gathered. The facilitators would like to thank the participants for their contributions and to GIZ for the opportunity to have this workshop. Any errors found in this report are our sole responsibility.

⁵ http://www.practitioners-dialogue.de/files/assets/Klimainvestitionen/Working%20Groups/WG2/2_Adaptation%20of%20Effective%20Clean%20Cooking%20Energy%20Technology%20Through%20Capacity%20Building%20for%20Mitigation%20of%20Climate%20Change_Kinya.pdf.