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Energy Security in Singapore: Challenges and Opportunities

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The pursuit of energy security traditionally revolves around securing supply sources. Is there more to it than just supply issues? The effectiveness of energy security also depends on whether energy can be made affordable to everyone.

WHILE MOST nations pursue energy sources as input for economic development, Singapore identifies energy as an engine for economic growth. This is not surprising considering that the manufacturing sector rather than households form the bulk of electricity consumption in the Republic. Statistics from the Energy Market Authority's (EMA) show that, as of 2004, households account for 20 percent and industrial consumers account for 80 percent of consumption. However, the number of households outstrips that of industries - households comprising 89 percent while industrial consumers stand at only one percent of total consumers. This means that industries consume far more energy than households. Given this consumption landscape, how would the state's energy policy affect both types of consumers?

Energy for Growth: Liberalisation and Diversification

Last November, the Ministry of Trade and Industry (MTI) released the National Energy Policy Report (NEPR), entitled *Energy for Growth*, which outlines the state's energy policy framework at three levels - national, regional and global. At the national level, the government pursues open market principles, liberalisation of electricity and gas markets and diversification of energy resources amongst other initiatives. At the regional and international levels, the government continues its policy of collaboration and cooperation with other states via platforms such as ASEAN, East Asia Summit and the United Nations Framework Convention for Climate Change.

The three main policy objectives are economic competitiveness, environmental sustainability and energy security.

To remain economically competitive, the government needs to ensure that the market, not central planning, determines electricity prices. Therefore, since 1995, the government systematically

liberalized the state-owned electricity and gas industries managed by the Public Utilities Board. Vesting contracts, a market-based instrument, was introduced to curb market power.

With regard to environmental sustainability, the Energy Efficiency Programme Office (E2PO) was established to drive the national campaign to turn Singapore into an energy-efficient nation.

On energy security, the strategy is to diversify the energy mix which is too concentrated on Piped Natural Gas (PNG) and oil imports. In 2007, Singapore's electricity was generated mainly by PNG followed by fuel oil, refuse and diesel while about 70 percent of its crude oil is imported from the Middle East where Saudi Arabia accounts for almost 33 percent. Singapore's PNG supplies are totally imported from Indonesia and Malaysia, of which almost 80 percent are used for generating electricity. Hence, Singapore's energy mix and gas sources are one of the least diversified in ASEAN.

Along with investments in solar energy and photovoltaic (PV) technology research, the government also plans to construct a Liquefied Natural Gas (LNG) terminal. From 2012, Singapore would be able to import natural gas from nations further away.

Energy for Growth: The Three-Pronged Approach

Thus, energy security in Singapore is a three-pronged approach comprising security of supply and demand, and cooperation and collaboration.

From the supply side, the government, through the liberalised electricity retail market, strives to ensure that domestic consumers have access to energy at a competitive price. To strengthen the security of supply, Singapore intends to import LNG instead of mainly relying on PNG. Meanwhile, should the potential for PV materialise, solar energy will be added to the nation's fuel mix thereby diversifying it further.

From the demand side, the strategy is to reduce consumption by improving efficiency and encouraging conservation. The E2PO will drive the national campaign towards an *Energy Efficient Singapore*. At the regional and global levels, Singapore continues to collaborate with member states of ASEAN and the East Asian Summit towards achieving collective energy security. Singapore's ratification of the Kyoto Protocol in 2006 underlines its commitment on climate issues.

It appears that this multi approach is unique because unlike most nations, the government's strategy is to actually transform Singapore's apparent shortcomings into an economic opportunity.

Energy Security: From Challenges to Opportunities

However, at a recently concluded regional workshop on energy security organised by RSIS' Non-Traditional Security Centre, some participants questioned the premise and assumptions of the NEPR.

For instance, will diversification lead to energy security? If by importing LNG diversifies Singapore's gas sources, can energy security be achieved when some of the world's largest gas suppliers are situated at politically volatile regions? Also, one wonders whether it is feasible to rely on solar energy and whether PV is not simply a 'fair-weather' technology.

On regional collaboration and international cooperation, several participants wondered whether collective security is fair since it arguably benefits resource-limited nations more than the resource-abundant nations.

One potential issue with the free market system is that while an open market ensures competitive prices, it does not necessarily mean that the price is affordable to all. The benefits of a liberal market system may not be felt when there is a wide income gap amongst consumers. This happens when the

market is driven by the burgeoning middle class while a fixed tariff is applied across all households regardless of their income level.

Thus, it can be argued that energy security at the national level does not necessarily trickle down to everyone. The availability of electricity does not mean that everyone can afford it. Thus, the issue of accessibility and affordability should be more rigorously considered on account of end-users who do not have alternative electricity sources or suppliers.

Residents in landed properties could opt for sources of energy other than electricity. But residents in Housing Development Board (HDB) flats depend mainly on electricity provided by SP Services Ltd., a Market Support Services Licensee, for energy sources. There are almost no viable alternative sources of energy available for those who live in HDB flats in which about 85 percent of Singapore households stay.

Perhaps this is why EMA and SP Services Ltd. introduced the 'Pay-As-You-Use' (PAYU) metering scheme and the Electricity Vending System (EVS) in 2005 and 2007 respectively. Under the PAYU scheme, consumers pay in advance for their electricity usage as opposed to post-paid services. Although on a voluntary basis, this scheme is applicable to households who either have defaulted on their payments or who are in arrears.

Even though PAYU offers households better management over their electricity usage, it still does not address the issue of affordability. These households are still paying the same tariff as others on the conventional scheme. The EVS, which is currently on trial and expecting completion by the second half of 2009, empowers households and small businesses to choose their own retailers and retail packages according to their lifestyles and needs.

Energy for Every Strata of Society

Despite its emphasis on economic growth, Singapore's energy policy ensures that electricity is made accessible to every strata of the society without differentiating the industries from small businesses and household consumers. By this, the notion of energy security does not simply revolve around mere market equilibrium and diversification of sources but extends to the larger picture – that energy should also be made affordable to everyone.

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