



Centre for Non-Traditional Security (NTS) Studies

# Policy Brief

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## The Way Forward for Energy Security

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*On 28<sup>th</sup> and 29<sup>th</sup> August 2008, the Centre for Non-Traditional Security Studies, S. Rajaratnam School of International Studies of the Nanyang Technological University conducted a Regional Workshop on Energy and Non-Traditional Security.*

*This policy brief highlights the salient issues raised at the workshop and sets out some policy recommendations to address the non-traditional security challenges posed by energy security.*

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In the face of energy supply and price volatility as well as surging global demand, energy security has been traditionally viewed among Asia-Pacific countries as a matter of ensuring adequate, affordable and reliable energy supplies.

However, the projected increase in consumption of and continued reliance on fossil fuels also carry far-reaching environmental and socioeconomic consequences beyond the notion of supply security. These concerns include climate change with its attendant problems of rising sea levels and risks posed to the ecosystem, as well as socio-political impact in the face of public dissatisfaction over volatile energy prices.

While governments in Asia-Pacific recognized these emergent energy-related non-traditional security problems, the securing of energy resources

to manage supply remains the dominant policy discourse yet constitutes only a short term, interim solution. The management of not just supply but also demand would serve as a long term energy security approach.

To accomplish this, investments in energy efficiency and alternative fuel technologies would be essential. As such, this policy brief forwards the following recommendations:

### ***1. Harnessing Technology in Energy Security***

Technology would help in making the utilization of fossil fuels in a more efficient way which is also less polluting, thereby increasing sustainability of the environment. The more important aspect of technological solutions to energy security would be the invention of energy efficiency techniques and alternative fuels to curb consumption of fossil fuel and provide a cleaner diversity of energy sources which could contribute to long term sustainability of energy supplies.

### ***2. Instituting Good Market Governance in Energy Security***

Ensuring energy security is not the responsibility of the market or governance alone. Adequate amount of government intervention is required to mitigate market failures. Good market governance, combining proper regulatory mechanisms

and free market fundamentals, would engender consumer and investor confidence so as to foster an environment conducive for energy-related investments.

### *3. Engaging Civil Societies in Energy Security*

While the state still retains a viable role in ensuring energy security, the importance of non-state actors, in particular civil societies, should not be discounted. More could be done to engage these groupings which, with the aid of modern media communications and access to transnational networks, help to raise public awareness of energy-related environmental and socioeconomic issues, monitor government policies as well as advocating alternative energy security solutions.

## **INTRODUCTION**

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As the world grapples with the ongoing credit crunch, the focus has been shifted away from energy security. Notwithstanding this, however, an increasing world energy demand is expected although a multitude of factors, such as the global financial crisis, added a veil of uncertainty over future supply security and could contribute to an expected continuation in the volatility of oil supply and prices.<sup>1</sup>

The average citizen on the street would continue to bear the brunt of long-term energy price fluctuations and popular calls for government action would remain audible. Also, climate change as a result of greenhouse gas (GHG) emissions from the burning of fossil fuels would remain a matter of concern.

As such, the energy security concept needs to also include environmental and socioeconomic impacts; the resultant interdependent nature of which necessitating a rethink of the role of markets and governance, transcending the national level to involve non-government actors and more international cooperation.

Focusing on Asia-Pacific, this policy brief aims to illuminate contemporary energy security issues with particular emphasis on the non-traditional security challenges of energy security – e.g. socioeconomic and environmental impact.<sup>2</sup>

This brief would attempt to provide some recommendations by looking at the future role of markets, governance, civil societies and technology in addressing these issues.

## **GLOBAL ENERGY SECURITY OUTLOOK**

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According to the International Energy Agency (IEA), global energy usage increased by 23% between 1990 and 2005, with a corresponding 25% increase in GHG emission.<sup>3</sup>

Within the same period, global electricity demand had increased by 54% while oil products constituted the most important part of the total energy mix at 37%.<sup>4</sup>

In another IEA study, the global oil demand was expected to reach 87.7 million barrels per day (mb/d) in 2009, constituting an annual increment of 1% from the 86.9 mb/d in 2008.<sup>5</sup>

The urgency is further heightened by a Reference Scenario proposed by the IEA; the world's primary energy demand is expected to grow by 55% between 2005 and 2030.<sup>6</sup> (See Figure 1)

One of the most significant projections in the same assessment has been the estimated increase in coal consumption, from 25% in 2005 to 28% in 2030.<sup>7</sup>

In part driven by rising energy demands in rapidly-growing economies such as China and India, the increase in coal consumption would also drive up GHG emissions over the same time period, with the bulk of the emissions generated by developing instead of industrialized countries. (See Figure 2)

Hence, energy security in the future would be confronted by not just the projected increase in demand and consumption of primary energy such as oil and coal but also the environmental consequences of a parallel increase in GHG emissions.

Just recently, the Organization of Petroleum Exporting Countries (OPEC) had set to reduce oil production by as much as 1.8-million per day in response to the declining energy prices<sup>8</sup>, sparking future supply security concerns.

In addition, the fall in energy prices would also

stifle research and development (R&D) of cleaner alternative fuels.<sup>9</sup> The global financial crisis also would take its toll on present and future energy production programs, which require an annual investment of US\$360 billion to meet demands.<sup>10</sup>

All these mean that, despite energy prices having fallen from the July-2008 peak of US\$145, there is simply no space for relief for governments, energy firms and consumers.

Figure 1: World Energy Demand from 2005 to 2030.<sup>11</sup>

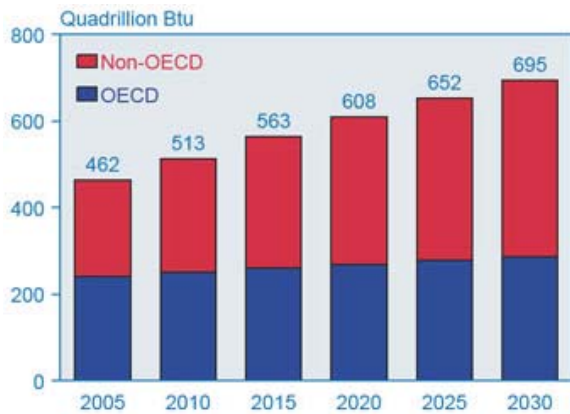
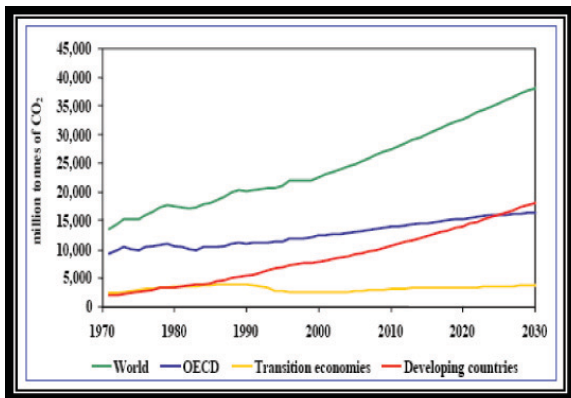


Figure 2: Energy-related GHG emissions by Region till 2030.<sup>12</sup>



## ENERGY SECURITY AND COUNTRY PERSPECTIVES

Energy security – a concept born out of the 1973 oil crisis – primarily focuses on how to handle any disruption of oil supplies from producing countries.<sup>13</sup> This traditional definition has been a primary emphasis for energy security, until newly emergent energy-related environmental and so-

cioeconomic issues rise in prominence.

Prior to delving into these contemporary non-traditional security aspects, the energy security situation of Asia-Pacific, using the following countries – Australia, China, India, Indonesia, Singapore, South Korea and the United States – as case studies shall be briefly discussed.

### Australia

Energy security management in Australia relies on market and international mechanisms.

Australia’s energy security concerns domestic measures to promote efficiency and effectiveness in the energy industry while climate change legislation is still in the midst of formulation ever since the change of government in late 2007. Australia has generally been energy self-sufficient and the country is also a significant exporter.<sup>14</sup>

Although Australia’s energy security policy places particular focus on supply security, it does not consider the potential economic impact a major global energy disruption would have on Australia’s energy exports and imports.

While supply disruptions were considered a low possibility, contingency plans nonetheless had been established by the security forces, with respect to the protection of energy infrastructure and seaborne shipping.

On the non-traditional security front, the Australian Government is concerned with the short term challenge of minimizing disruption of energy distribution to consumers and the long term, attracting investment to create sustainable supply systems.<sup>15</sup>

### China

Being the second highest energy consumer after the United States, China has not only strived to secure adequate energy supplies at reasonable prices but also coping with international pressure to reduce GHG emissions.<sup>16</sup>

The security of supply has not always been a concern for China, for the perennial problem faced by Beijing has been managing the ever-increasing fossil fuel demand.<sup>17</sup>

Since the late 1970s, China has not been subjected to an economic boycott despite later turning from an oil exporter to a net importer. Nevertheless, China's energy quest has often been seen on a collision course with the geopolitical interests of the West, such as entering energy deals with states shunned by the latter, such as Iran and Sudan.

To fuel its rapidly growing economy, China has resorted to increasing use of coal – a less efficient yet highly polluting energy source.

Domestically, the lack of effective governance has not only precluded steady progress towards the utilization of alternative energy sources, such as nuclear energy, but also alleged profit-seeking behavior by private energy companies in the highly decentralized Chinese energy market, leading to dire social and environmental consequences.

### **India**

With a rapidly growing economy and population, India is facing an upward trajectory for its energy demands. 40% of the total energy mix in India relies on imports, hence exposing the country to the volatile international energy market.

Although biomass constitutes the single most important source of energy and is in abundance locally, its combustion emits smoke containing hazardous pollutants known to have inflicted health cases, such as respiratory tract diseases, in particular among the biomass-dependent poor households.

While India still enjoys a relatively low capita GHG emission as compared to the global average, concerns still lie with its growth rate, which is expected to increase with the rise in energy demand.<sup>18</sup>

As such, besides the security of supply, the environmental aspects of energy security had also taken on prominence in India, with an eye towards the development of substitutes for biomass fuel, renewable energy sources to reduce coal dependence as well as improving energy efficiency.<sup>19</sup>

### **Indonesia**

Despite being endowed with a wide diversity and quantity of energy resources, Indonesia since

2004 has become a net oil importer whose socio-economic development relies heavily on oil, constituting more than 60% of its total energy mix in 2006.<sup>20</sup>

Ever since recovering from the Asian Financial Crisis in the late 1990s, energy consumption in Indonesia has experienced a rebound yet fuel scarcity and power outages prevented adequate distribution of energy and power supplies across the large archipelagic nation, threatening social and political ramifications as the public took to the streets in protest against energy price hikes.

The vast natural gas and renewable energy sources remained largely unexploited to their full potential due to technical issues such as limitations of the existing infrastructure. Oil imports are predicted to increase since domestic refinery capacities remain stagnant.<sup>21</sup>

In addition, the energy distribution network is constantly under threat of natural disasters, of which Indonesia is prone, such as earthquakes.

### **Singapore**

Without indigenous energy resources, Singapore has been entirely dependent on oil and natural gas imports, with the latter constituting the largest share in the national energy mix although investments have been set on energy diversification in the long run.<sup>22</sup>

Essentially, other than involving in international initiatives to promote energy security, Singapore has depended on a market approach towards securing adequate and affordable energy supplies.

Since 1995, Singapore's electricity market has undergone significant transformation, culminating in 2003 to become Asia's first liberalized electricity market.

In 2006, the New Singapore Energy Market was introduced, consisting of a wholesale and retail market regulated by the Energy Market Authority (EMA) – the national energy market regulator of Singapore.

However, such market liberalization opens the Singapore energy market to risks such as unfair practices, for instance large electricity corpora-

tions resorting to unfair practices.<sup>23</sup>

As a measure, the EMA together with other state agencies implemented policies to curb market forces in order to mitigate the future possible impact full-scale energy market liberalization would have on household consumers especially.

### ***South Korea***

The projected increase in domestic energy demand had drawn the South Korean government to energy security issues. Energy consumption has experienced a 3.5% increment from 1998 to 2006, interjected by a slowdown after the Asian Financial Crisis.<sup>24</sup>

In anticipation of this upward trajectory in demand, South Korea has instituted measures throughout the energy supply chain and end-use sectors to reduce energy imports and hence improve energy security.

In addition, it adopted the National Energy Vision 2030, aiming to increase energy efficiency and bolster foreign energy resource development, inter alia. To this end, there would be a shift in focus on the more energy efficient high-tech industries as well as developing renewable energy, of which South Korea enjoys a vast untapped potential.

Furthermore, to ensure the security of affordable energy supplies, Seoul has also embarked on market deregulation to enhance energy market efficiency and at the same time, continuing to institute regulatory measures to ensure compliance of industries to stringent energy efficiency requirements.

### ***United States***

Since the beginning of the 20<sup>th</sup> Century, US energy security has revolved around the free flow of crude oil to American refineries and ports.<sup>25</sup>

High reliance on oil imports had left the country vulnerable to supply disruption, a problem given the highly-integrated nature of its energy supply chain.<sup>26</sup>

Also, political and social obstacles stood in the way for viable alternative energy sources, in particular nuclear power, which would logically con-

stitute the long term solutions to dependence on fossil fuels.

The US also faces environmental challenges in the energy security realm, thereby having instituted scientific studies on energy-related climate change problems despite being not just the world's leading energy consumer but also GHG emitter. However, its refusal to accede to the Kyoto Protocol over disagreements with the developing nations on emission targets might beset global progress towards stabilizing the climate.<sup>27</sup>

Geopolitical upheavals, on the other hand, would also continue to have an impact on the American 'oil addiction' resulting from the projected increase in energy demand as well as long lead times required for the development of alternative energy sources.

## **NON-TRADITIONAL SECURITY DIMENSIONS OF ENERGY SECURITY**

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Three observations could be derived from the above discussion:

- 1) energy supply security remains the primary concern, with particular emphasis on meeting increasing demand and enhancing the supply chain;
- 2) non-traditional security aspects of energy use, such as climate change, have been acknowledged by governments; and
- 3) energy-related investments, in particular renewable energy, have been emphasized along with efforts to promote energy efficiency.

The need to address energy-related environmental and socioeconomic problems poses a major challenge for policymakers today.

### ***Environmental Dimension***

The environmental impact of energy use could be multifaceted. Perhaps the most important issue of all is the emission of GHG through the burning of fossil fuels, leading to the depletion of the ozone layer and increased global warming, resulting in the melting of ice glaciers, consequently the rise in sea levels and coastal flooding.

An estimated one million people in South and

Southeast Asia have been placed at risk from flooding along the coastal regions, with negative impact on the infrastructure as well as the aquaculture.<sup>28</sup>

The projected energy mix until 2030, as seen from Figure 3, warrants attention: traditional energy such as oil, natural gas and coal would continue to see increasing consumption while alternative energy would remain, albeit increasing in usage, a minor portion.

Consequently, an increase in usage of traditional energy, especially the highly-polluting coal, would lead to increased GHG emissions. (See Figure 4)

The predicted continual ‘addiction’ to traditional energy, caused by the current dip in prices, insufficient measures to curb demand and reduce consumption as well as the slow induction of cleaner fuel sources, would have long-term, wide-ranging global environmental consequences such as climate change and pollution-related health hazards.

Figure 3: Global Energy Use by Fuel Type 1990-2030.<sup>29</sup>

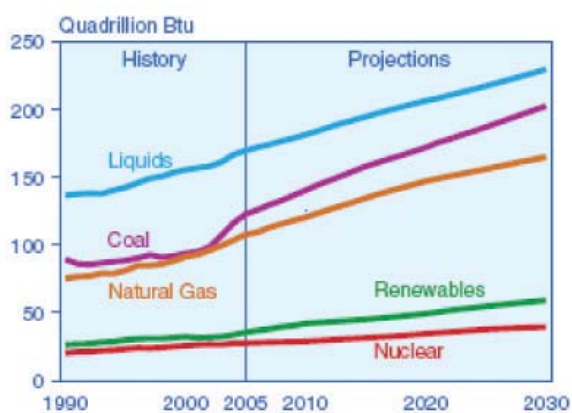
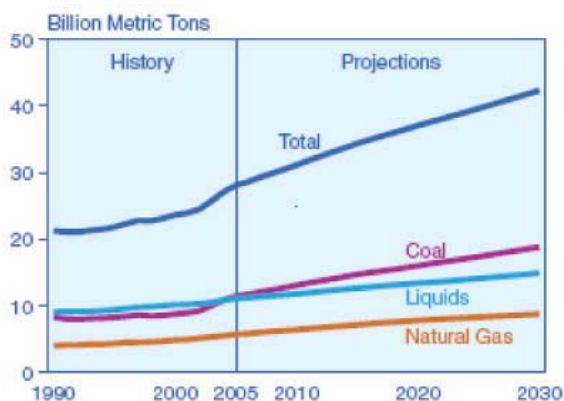


Figure 4: Global Energy-related GHG Emissions by Fuel Type 1990-2030.<sup>30</sup>



Another concern stems from the construction of energy infrastructure which could potentially lead to environmental and biodiversity degradation. For instance, the Laos-Thailand Nam Theun 2 (NT2) hydroelectric power project funded by the World Bank in 2000 could have flooded approximately 450 km<sup>2</sup> of the Nakai Plateau which is home to a rich biodiversity.<sup>31</sup>

Such occurrences could have adverse impact on inhabitants who depended on the ecosystem in the affected area for their livelihood. In the case of the NT2 project, about 4500 inhabitants had been resettled and another 40,000 people would be affected due to the fishery damage caused.<sup>32</sup>

Even if alternative fuel sources are contemplated, there would also be concerns over their impact to the environment. In particular, nuclear power has always been linked to potential risks posed by improper radioactive waste disposal and catastrophic breakdown which would carry serious transnational environmental consequences reminiscent of Chernobyl in the 1980s.

### Socioeconomic Dimension

Energy has been central to international economic development since the industrialized era, in particular for the developing nations. This is especially true for East Asia which has ever since the last world war placed the onus of nation-building on socioeconomic development.

Governments in some of these countries are prone to be adversely affected, socio-politically, by fluctuating energy prices. With the fall of oil prices, several countries in the region had contemplated reinstating fuel subsidies.

However, this would encourage excessive energy consumption and wastage, as well as reducing the incentives for industries to introduce energy efficiency measures or alternative fuels.<sup>33</sup>

Having instituted the lowest local fuel prices in the region, the Indonesian government would be vulnerable to energy price fluctuations and concerns for political expediency, as evident in an earlier announcement to reduce subsidies, which led to street protests.<sup>34</sup>

In response to the energy price dip, the Indonesian

authorities are once again contemplating to reduce subsidized fuel prices.<sup>35</sup>

The encouraged increase in consumption could impede efforts to explore cleaner alternative fuel technologies. Still, fuel subsidies remain a politically sensitive issue; governments might risk straining their financial resources in the long term as energy prices continue to fluctuate, thus impeding their ability to sustain or extend the subsidies and diverting scarce resources from more tangible socioeconomic development programs.

The impact of such could be even more adverse for financially less-endowed nations, especially under the veil of the present global financial crisis.

Energy-related socioeconomic impact could also be viewed from the perspective of inadequate governance during energy production.

For instance, China had seen an increasing demand for energy in order to sustain its rapid industrialization and economic growth. Without proper and adequate central government purview, the implementation of local energy projects in China, in order to feed the rising demand, had been fraught with problems of socioeconomic marginalization, for instance discrimination against migrants displaced by the dam construction projects, reported enslavement of workers as well as deaths in unsafe coal mines.<sup>36</sup>

A notable example had been the case of the Yumen City in China's Gansu Province, whose local government had been heavily reliant on oil revenues from the Yumen Oilfield, after which having been increasingly indebted as production declined, leading to its inability to provide vital public goods and the deterioration of economic conditions.<sup>37</sup>

## **THE WAY FORWARD FOR ENERGY SECURITY**

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In sum, the non-traditional security challenges posed by the volatile energy prices, current global financial crisis, increasing demand, slow transition to alternative fuels and the anticipated climate change due to the persistent utilization of fossil fuels would be considerable, exposing the

world to a potential 'energy tsunami'.<sup>38</sup>

In the short run, there is a need to meet rising energy demands while promoting energy efficiency and the use of cleaner, alternative fuel sources, notwithstanding the present drop in oil prices, as the long-term solution.

From both standpoints, it becomes imperative to bolster energy-related investments. Therefore, a rethink along the lines of the role of technology, civil societies, market and governance might be necessary in order to ensure energy security.

### ***1. Harnessing Technology in Energy Security***

In today's era of globalization, technology has become increasingly relied upon to solve almost any problem encountered by mankind, in improving the way of life and to further national goals, such as socioeconomic development.

It is in this respect that technology and energy security are so closely related to each other. With global warming becoming a perennial existential threat to mankind nowadays, and in the face of increased energy demand but uncertainty of supply, technology would seem to be the solution:<sup>39</sup>

1) Traditional fuel sources: The common perception that fossil fuel supplies would be exhausted in decades' time had been challenged within the scientific circles. Therefore, the issue on hand is not the problem with availability of supplies, but rather, the problem of accessibility.

However, access to untapped fuel sources in naturally inhospitable regions required better exploration and extraction techniques. With traditional fuels projected to dominate the future energy mix, its continued usage without causing further ozone layer damage would hinge significantly on the newly-conceived carbon capture and storage (CCS) techniques such as the one experimented by Norway.<sup>40</sup>

2) Alternative fuel sources: Continued dependence on traditional energy sources could only constitute a short term measure due to their price and supply volatility as well as environmental side-effects. Therefore, cleaner, alternative energy would constitute the long-term solution.

Another promising field has been biofuels although existing first-generation technology was reportedly unable to significantly help reduce GHG emissions or improve energy security.<sup>41</sup>

3) Supply chains: The energy supply chain does not concern only with exploration and extraction, but also the refinement and distribution processes. Geographical limitations and security risks on the supply chain would require technological solutions.

For instance, research and development (R&D) work could be done on mitigating power cable transmission losses to enhance energy efficiency. Technology could also allow for easier transportation of energy products, such as liquefying natural gas to reduce reliance on overland pipelines which are subject to geopolitical disruptions.

4) Energy efficiency and conservation: More attention should be devoted to curbing energy demand through technological solutions for households and industries to conserve energy, thereby sustaining energy resources.

For instance, the use of fuel cells in vehicles, such as the venture by Rolls Royce on aircraft fuel-cell engines, could constitute a significant measure in managing consumption of petrol and diesel which has been on increasing demand as a result of rising affluence and improved lifestyle.<sup>42</sup>

To realize these technological dreams towards ensuring energy security, however, tremendous amounts of investments would be required for R&D, in particular in the area of inventing second-generation biofuels technology.

Notably, there has been no existing technology available to achieve the widely-acclaimed target of less than 450-550ppm of GHG emissions by 2050.<sup>43</sup> R&D requires long gestation periods and considerable costs.

Moreover, the R&D outcomes are often uncertain. Although capital expenditure by leading energy firms had increased sharply in nominal terms over the first half of the current decade and would continue so until 2010 according to company plans, there still exists lingering uncertainty over the exact cost of discovering and exploiting energy sources over the coming decades, notwithstand-

ing cumulative energy infrastructure investments projected to amount to about US\$20 trillion (in 2005 dollars) over 2005-2030.<sup>44</sup>

Furthermore, the impact on additional energy capacity generation from such increased investment spending had been blunted by rising costs, not to mention the effects of the credit crunch.

Investments in 2005 for instance were reportedly lower than that in 2000 and capacity additions due to planned upstream investment out to 2010 would boost global spare crude production only slightly – one of the reasons being regulatory delay.<sup>45</sup>

This illuminates the reality that while securing reliable and affordable energy depends largely on adequate investments in technological R&D, it would only be possible in an environment of good market governance.

## ***2. Instituting Good Market Governance in Energy Security***

The role of market and governance has been intricately linked in contemporary energy security, which comprises not just supply security but also the non-traditional security issues discussed earlier.

In the case of failure in the mutually exclusive practice of market or governance, the ultimate end-user – the average citizen – is the most severely affected.

Ever since the end of the Cold War, the state was no longer perceived as a principal provider of public goods. Riding on the wave of globalization, the provision of energy-related public goods has become increasingly dependent on the private sector, drawing benefits from the free market principles of competition for instance.

However, historical and contemporary antecedents could point to the drawbacks of relying solely on the market for competitively-priced energy supplies. During the 1973 oil crisis, inadequate government intervention and blind reliance on market principles toward securing foreign oil supplies contributed to the public rush for consumer goods in Japan.



The Chad-Cameroon oil pipeline project in 2000 allegedly benefited only profit-seeking foreign investors, in the absence of local government regulations, at the expense of citizens' rights and the environment.<sup>46</sup>

With energy prices exacting a toll on the average citizen, popular calls for increased government action have grown louder over these years.

However, the exercise of governance in the name of energy security could open itself to potential abuse by political leadership for parochial ends.

For instance, the military junta in Myanmar purportedly exploited energy revenues to fund grandiose projects and weapon acquisitions while the population at large remains in abject poverty.<sup>47</sup>

Beyond Asia, in another example, Venezuela's president Hugo Chavez curtailed foreign investments in his country's renationalized oil reserves, restricting foreign access and enabling the use of oil as a tool for furthering geopolitical interests. Recently, President Chavez threatened to sever oil supplies to the United States in the backdrop of deteriorating bilateral relations.<sup>48</sup>

Therefore, relying on market or governance mechanism alone could not ensure energy security. A combined approach melding both mechanisms could be the solution.

Embracing the basic tenets of transparency, accountability, flexibility and respect for competition principles, inter alia, good market governance could be defined as the best set of all laws, regulations, processes and practices that affect the functioning of a regulatory framework and the market.<sup>49</sup> It could provide an environment conducive for investors, in particular the increasingly important small- and medium-sized enterprises which occupy specialist niches on innovative energy solutions.

The Japanese example during the oil crises in the 1970s could demonstrate an admissible approach in which both market and governance approaches were weaved together to ensure energy security. During the second oil crisis in 1979 there had been no panic rush in Japan for consumer goods reminiscent of 1973.

Similarly, in the immediate aftermath of the Iraqi invasion of Kuwait and the Coalition military buildup prior to Operation Desert Storm in 1990, Japanese energy investors in the Middle East remained optimistic despite an anticipated, but never materialized, oil crisis.<sup>50</sup> This could be attributed to the post-1973 policies adopted by the Japanese government, such as energy-saving measures and guidelines defining public-private relationship with respect to investments in energy efficiency and alternative energy technologies.<sup>51</sup>

From Table 1 (note the statistical figures circled in red), Japan's economic performance immediately after the 1979 oil crisis as compared to its counterparts could be indicative of the success of its policies.

Figure 5: Post-Oil Crises Japan's Economic Performance, 1974-1981.<sup>52</sup>

	1974	1975	1980	1981
<i>Real GNP</i>				
Japan	-0.5	1.4	5.0	3.7
United States	-1.4	-1.3	-0.7	0.7
United Kingdom	-2.0	-1.7	-2.3	-2.0
Federal Republic of Germany	0.4	-1.8	1.8	-0.3
France	2.8	0.3	1.8	1.0
Italy	4.2	-3.5	3.7	-1.0
<i>GNP deflator</i>				
Japan	20.0	8.6	3.0	5.0
United States	9.4	9.6	9.5	10.5
United Kingdom	14.9	27.4	19.2	14.5
Federal Republic of Germany	6.8	6.7	4.7	4.0
France	11.2	13.1	11.3	16.7
Italy	18.3	17.4	19.0	16.7
<i>Current balance</i>				
Japan	-4.7	-0.7	-13.2	-6.8
United States	2.1	18.3	5.5	19.7
United Kingdom	-8.0	-3.8	4.5	4.5
Federal Republic of Germany	10.3	4.0	-17.2	-10.5
France	-5.8	n.d.	-7.7	-6.2
Italy	-8.0	-0.6	-5.3	-2.2

Notwithstanding the failure to agree on numerical carbon emissions limits during the recent G-8 Summit, there has been increasing worldwide interest in reinvigorating the governmental role, in conjunction with the market approach, towards addressing energy security issues.

For instance, in February 2008 there had been championing within the European Commission for an independent body, amalgamating member states' national energy regulators, equipped with flexible powers.<sup>53</sup>

Earlier in 2006, there were calls in Thailand for the emplacement of an independent power regulator prior to privatizing the Electrical Generating Authority of Thailand.<sup>54</sup> The United States Federal Energy Regulatory Commission (FERC)

adopted new guidelines in 2007 to enhance accountability among market operators and hence promote competition.<sup>55</sup>

These examples appeared to efforts in balancing the market and governance approaches, thus highlighting the growing recognition of the importance of good market governance in ensuring energy security.

### **3. Engaging Civil Societies in Energy Security**

A variety of definitions exists for the term 'governance'. However, with respect to energy security, it might be fitting to use the definition coined by the Organization for Economic Cooperation and Development (OECD) which states that governance denotes the use of political authority and exercise of control in a society in relation to the management of its resources for social and economic development.<sup>56</sup>

This broad definition encompasses the role of public authorities in establishing the environment in which economic operators function and in determining the distribution of benefits as well as the nature of the relationship between the ruler and the ruled.<sup>57</sup>

While successful governance has been linked to democratization and stable socioeconomic development, there are also instances of skewed distribution of economic benefits and protracted hardships leading to wider dissatisfaction in some Asian nations.<sup>58</sup>

The concept of governance has since evolved into a broader concept encompassing all actors – state and non-state – other than the public sector, towards achieving sustainable human development objectives at the corporate, national, regional and global levels.<sup>59</sup>

Among the non-state actors involved in governance, civil societies have gained increased prominence. For instance, there had been increased space for civil society involvement in Indonesia, in particular occasional invitations to ad-hoc government and public consultations.

In the area of energy security, civil societies have served as advocates for environmental protection, 'watchdogs' over government policies as well as

raising public awareness in supporting or rejecting government initiatives.<sup>60</sup> Such efforts have been aided by the advent of sophisticated information and technological technology (ICT), which has become increasingly proliferated throughout the societies.

Many civil societies have been able to conduct their own researches and released reliable information that could serve as an alternative to official government publications.

Backed by sufficient data, they had become increasingly successful in pushing through their agenda with respect to energy security issues. A notable instance could be seen in the permission granted by the federal court for environmentalist groupings Friends of the Earth and Greenpeace to proceed with a global warming lawsuit against two US government agencies that fund oil and gas projects.<sup>61</sup>

In the case of East Asia, where civil societal involvement has been nascent, there are room for improvements, such as :

- 1) creating a comprehensive agenda among civil societies in order to gain greater bargaining power with the government;
- 2) continuing to work through formal processes and demand for more access and transparency from governments and
- 3) strengthening civil society networks at both domestic and regional levels which could help in expanding the knowledge base and advocacy power.<sup>62</sup>

## **CONCLUSION**

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This policy brief strives to point out that contemporary energy security no longer concerns only the security of supply, but also other non-traditional security issues such as environmental impact and socioeconomic development.

As seen in the energy security situation in the selected countries of Asia-Pacific, while governments had come to recognize the importance of these problems, the onus has been placed primarily on the short-term goal of securing traditional

energy supplies.

To date, several roadblocks stand in the way for energy security in East Asia in particular, lack of proper and adequate governance to regulate market forces as well as to implement prudent policies which could ensure sustainable socioeconomic development.

Facing with the rising energy demand, continued heavy reliance on fossil fuels as well as the dire consequences of global warming, the long-term solution remains in the development of energy efficiency as well as alternative fuel technologies.

However, R&D investments in these areas, while critical, entail long gestation periods and immense costs, often with uncertain outcomes. In the meantime, the decreased energy prices would reduce incentives for continued R&D while encouraging unrestrained consumption.

To engender support for and investments in these areas, more effort is required in strengthening the role of governance in concert with the free market.

The role of non-state actors such as civil societies would become increasingly important especially in helping to ensure public accountability and good governance.

Hence, to bolster energy investments, good market governance – not solely the market or governance approach – is necessary to foster an environment conducive for investors and consumers to curb energy consumption, create innovative solutions to make fossil fuels more environmentally friendly and expand the applicability of alternative energy sources in the near- and long-term future.

This concerted approach by all actors – state and non-state – would eventually help to ensure sustainable human development through adequate access to a diversity of energy resources and protect the environment.

#### **About the writers:**

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## **ENDNOTES**

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1 “Petrol down, more volatility expected”, Otago Daily Times, 4<sup>th</sup> November 2008.

2 This policy brief comprises discussion points raised during the Regional Workshop on Energy and Non-Traditional Security, 28<sup>th</sup> to 29<sup>th</sup> August 2008, Grand Copthorne Waterfront Hotel, Singapore. This workshop was conducted by the Centre for Non-Traditional Security Studies, S. Rajaratnam School of International Studies, Nanyang Technological University.

3 International Energy Agency (IEA) (2008), *Worldwide Trends in Energy Use and Efficiency: Key Insights from IEA Indicator Analysis*, p. 15.

4 Ibid.

5 IEA (2008), *Oil Market Report: A Monthly Oil Market and Stocks Assessment*, 10<sup>th</sup> July 2008, p. 4.

6 IEA (2007), *World Energy Outlook 2007: Fact Sheet – Global Energy Demand*.

7 Ibid.

8 With oil prices continuing to plummet, it might be inevitable that OPEC would contemplate further production cuts in order to drive up the energy prices. See also “OPEC decides cut in oil production, US for “free market” policy – Iran paper”, BBC Monitoring Middle East, 31<sup>st</sup> October 2008.

9 The drop in energy prices essentially makes continued reliance on traditional energy more appealing whereas clean energy development becomes an uneconomical endeavor given the reduced leverage of falling oil prices. See “Energy: The dawn of a disturbing new reality”, *Financial Times*, 3<sup>rd</sup> November 2008.

10 *Financial Times*, 3<sup>rd</sup> November 2008.

11 Energy Information Agency (EIA), *International Energy Annual 2005 (June-October 2007)*, downloaded from [www.eia.doe.gov](http://www.eia.doe.gov) (22<sup>nd</sup> September 2008).

12 IEA (2000), *World Energy Outlook 2002*.

13 Daniel Yergin, “Ensuring Energy Security”, *Foreign Affairs*, Vol. 85, Issue 2, Mar-Apr-2006.

14 Australia exports mainly coal, liquefied natural gas (LNG) and uranium. Australian Bureau of Agricultural and Resource Economics, *Energy in Australia 2008*, pp. 1-2; quoted from Andrew Forbes, “Australia’s Energy Security: The Lucky Country?”, *Regional Workshop on En-*

ergy and Non-Traditional Security, Session 4, 28<sup>th</sup> August 2008.

15 For instance, to deal with high petrol prices and alleviate public concerns, the Australian Government adopted the 'Fuelwatch' scheme where oil companies risk being fined if they fail to announce their fuel prices for the next day and/or deviate from that price. Department of the Prime Minister and Cabinet, *Securing Australia's Energy Future*, p. 115, quoted from Andrew Forbes, 28<sup>th</sup> August 2008.

16 Shebonti Ray Dadwal, "China's Search for Energy Security: Emerging Dilemmas", *Strategic Analysis*, Vol. 31, No. 6, 2007, pp. 889-914.

17 Zha Daojiong, "China's Energy Security: Domestic and International Issues", *Survival*, Vol. 48, No. 1, 2006, pp. 179-190.

18 EIA, *International Energy Annual*, 2004, quoted from Rekha Krishnan, "Energy Security in India", Regional Workshop on Energy and Non-Traditional Security, Session 4, 28<sup>th</sup> August 2008.

19 Ibid.

20 Quoted from Fabby Tumiwa, "Indonesia Energy Insecurity", Regional Workshop on Energy and Non-Traditional Security, Session 3, 28<sup>th</sup> August 2008.

21 Domestic refinery capacities even decrease as older facilities are being shut down for maintenance. In 2000, 80% of the total fuel consumption had been supplied by the domestic refineries but this figure has since dropped to around 60% in 2007. Quoted from the oil production, consumption, export and import data extracted from the Indonesian Ministry of Energy and Mineral Resources by Fabby Tumiwa, 28<sup>th</sup> August 2008.

22 Singapore's energy mix is one of the least diversified in the ASEAN (Association of Southeast Asian Nations), with about 80% of Singapore's electricity powered by gas imported from Indonesia and Malaysia. Quoted from Chang Youngho and Nur Azha Putra, "Energy Security in Singapore (2008)", Regional Workshop on Energy and Non-Traditional Security, Session 3, 28<sup>th</sup> August 2008.

23 Ibid.

24 Korean Energy and Economics Institute (KEEI), quoted by Dae-Jong Gwak, "Korea's Energy Supply/Demand and Policy", Regional Workshop on Energy and Non-Traditional Security, Session 2, 28<sup>th</sup> August 2008.

25 Edward Chow and Jonathan Elkind, "Hurricane Katrina and US Energy Security", *Survival*, Vol. 47, No. 4, 2005, pp. 145-160.

26 Quoted from Toufiq A. Siddiqi, "Achieving Energy and Environmental Security: A Challenge for the United States", Regional Workshop on Energy and Non-Traditional Security, Session 4, 28<sup>th</sup> August 2008.

27 "US scuppers emission targets at Bali", *Energy Economist*, Issue 315, 1<sup>st</sup> January 2008.

28 Quoted by Fitriani Ardiansyah, "Environmental Perspective on Energy Development in Indonesia", Regional Workshop on Energy and Non-Traditional Security, Session 5, 29<sup>th</sup> August 2008.

29 EIA, *International Energy Outlook 2008* (September 2008), Chapter 1, p. 8.

30 Ibid, Chapter 7, p. 89.

31 Edited by Barry Barton, Catherine Redgwell, Anita Ronne and Donald N. Zillman, *Energy Security: Managing Risk in a Dynamic Legal and Regulatory Environment* (2004: Oxford University Press), Chapter 18, p. 447.

32 Ibid.

33 Maria Nimfa F. Mendoza, "The Socio-economic Impact of Energy Security in Southeast Asia", Regional Workshop on Energy and Non-Traditional Security, Session 6, 29<sup>th</sup> August 2008.

34 Further fuel subsidy reductions would not come, at least until the end of elections in 2009, although protests ceased in Indonesia. See "Fuel-price protests a test for Jakarta govt", *Straits Times*, 14<sup>th</sup> May 2008.

35 Pump prices could potentially decrease by 15 percent, with an anticipated encouragement in increased consumption which could beset efforts to develop cleaner, alternative fuels. See "UPDATE 1 - Indonesia energy ministry to propose fuel price cut", *Reuters News*, 4<sup>th</sup> November 2008.

36 Read Philip Andrews-Speed and Xin Ma, "Energy Production and Social Marginalization in China", *Journal of Contemporary China*, Vol. 17, No. 55, 2008, pp. 247-272.

37 Ibid.

38 If current energy security issues persist, the state and the citizens face possible future increment of food prices, economic deterioration such as inflation and unemployment, poor living environment as a result of pollution-induced health hazards and threat to socio-political stability. See Tetsunari Iida, "Non-Traditional Dimensions of Energy Security: Socio-Economical Impact in Northeast Asia", Regional Workshop on Energy and Non-Traditional Security, Session 6, 29<sup>th</sup> August 2008.

39 Alvin Chew, "Technology Developments in Energy Security", Regional Workshop on En-

ergy and Non-Traditional Security, Session 7, 29<sup>th</sup> August 2008.

40 Potential non-technological problems of CCS, such as leakage from capture, would need to be addressed before such techniques are economically viable for widespread adoption. See “CO2 capture key but still not answer”, *Upstream*, 30<sup>th</sup> September 2005.

41 “Biofuels: OECD Report Blasts Biofuels as ‘Costly and Ineffective’”, *Europolitics Agriculture*, 28<sup>th</sup> July 2008.

42 Further research is still needed in order to reduce the cost of fuel cells and to develop better output so that such systems can be miniaturized for wider application. See “Fuel cells hold hope of clean energy for the future”, *Straits Times*, 28<sup>th</sup> April 2007.

43 Fatih Birol, “Energy Security: Investment or Insecurity”, *International Peace Academy – Coping with Crisis: Working Paper Series*, May 2007, pp. 1-27.

44 Carlos Pascual, “The Geopolitics of Energy: From Security to Survival”, *Brookings Institution*, 2008, pp. 1-16. The power sector requires more than 11 trillion USD; capital expenditure 4.3 trillion USD in the oil sector and 3.9 trillion USD in the gas sector. About half of all energy infrastructure investments will be in developing states where demand and production are projected to increase the fastest. See Danila Bochkarev and Greg Austin, “Energy Sovereignty and Security: Restoring Confidence in a Cooperative International System”, *East-West Institute Policy Paper 1/2007*, pp. 1-33.

45 Pascual, p. 6.

46 “Amnesty International says US consortium’s African oil pipeline threatens human rights”, *Associated Press Newswires*, 7<sup>th</sup> September 2005.

47 The Human Rights Watch alleged that lucrative oil deals made with energy-thirsty nations such as China and Thailand had emboldened the ruling military junta to ignore calls for improving human rights and democratization. See “Activists Urge UN to Impose Energy Sanctions on Myanmar”, *The Oil Daily*, 21<sup>st</sup> November 2007.

48 “Venezuela expels US ambassador, threatens to cut oil”, *Agence France Presse*, 12<sup>th</sup> September 2008.

49 L. Hancher et al., “Principles of Good Market Governance”, *Tijdschrift voor Economie en Management*, Vol. XLIX, No. 2, 2004, pp. 339-374.

50 The export of petrochemical plant tech-

nology to the Middle East registered a significant surge of 48.9% during the April-September 1990 period, notwithstanding the Iraqi invasion and subsequent Allied military buildup, compared to the same period in 1989. Nevertheless, the industrial officials admitted that it would have been almost impossible to resume plant construction in the region if the war expanded due to physical security concerns. See “Japanese Industry Shocked, But Copes Coolly With War (Iraq-Kuwait Crisis, 1990- )”, *Japanese Economic Newswire*, 17<sup>th</sup> January 1991.

51 Read pp. 605-608, M. Stephen Weatherford and Haruhiro Fukui, “Domestic adjustment to international shocks in Japan and the United States”, *International Organization*, Vol. 43, No. 4 (Autumn, 1989), pp. 585-623.

52 *Japan Energy Outlook 2007*.

53 “Legal battle brews over EC’s regulatory agency plan”, *EU Energy*, Issue 176, 8<sup>th</sup> February 2008.

54 “Thailand: Democrats criticize government’s energy policy”, *Thai News Service*, 11<sup>th</sup> August 2006.

55 “Proposed changes would raise accountability of market operators”, *Platts Commodity News*, 21<sup>st</sup> June 2007.

56 Quoted in p. 797, Thomas G. Weiss, “Governance, good governance and global governance: conceptual and actual challenges”, *Third World Quarterly*, Vol. 21, No. 5, 2000, pp. 795-814. Weiss also outlined other definitions, such as that of the World Bank and the United Nations Development Program.

57 *Ibid.*

58 See Asclepias Rachmi Soerjono, “Towards A New Framework: States, Regional and Global Governance”, *Regional Workshop on Energy and Non-Traditional Security*, Session 7, 29<sup>th</sup> August 2008.

59 The non-state actors include the private sector as well as civil societies. *Ibid.*

60 Lina A. Alexandra, “The Role of Indonesian Civil Society in Energy Security”, *Regional Workshop on Energy and Non-Traditional Security*, Session 7, 29<sup>th</sup> August 2008.

61 The environmentalists alleged that the Overseas Private Investment Corporation (OPIC) and Export-Import Bank of the United States (Ex-Im) had illegally provided over US\$32 billion in financing and insurance for energy projects over the past decade without assessing their impact on global warming as required under the National

Environmental Policy Act. See “Global Warming Case Against US to Proceed”, The Oil Daily, 25<sup>th</sup> August 2005.

62 Lina A. Alexandra, 29<sup>th</sup> August 2008.

