Energy and Security Cooperation in Asia

Challenges and Prospects

Edited by
Christopher Len
Alvin Chew

Institute for Security & Development Policy

Energy and Security Cooperation in Asia

Challenges and Prospects

Christopher Len

Alvin Chew

Editors

Institute for Security and Development Policy
Västra Finnbodavägen 2, 13130 Stockholm-Nacka, Sweden
www.isdp.eu

Energy and Security Cooperation in Asia: Challenges and Prospects is a *Monograph* published by the Institute for Security and Development Policy. *Monographs* provide comprehensive analyses of key issues presented by leading experts. The Institute is based in Stockholm, Sweden, and cooperates closely with research centers worldwide. Through its Silk Road Studies Program, the Institute runs a joint Transatlantic Research and Policy Center with the Central Asia-Caucasus Institute of Johns Hopkins University's School of Advanced International Studies. The Institute is firmly established as a leading research and policy center, serving a large and diverse community of analysts, scholars, policy-watchers, business leaders, and journalists. It is at the forefront of research on issues of conflict, security, and development. Through its applied research, publications, research cooperation, public lectures, and seminars, it functions as a focal point for academic, policy, and public discussion.

This publication is kindly made possible by support from the Swedish Ministry for Foreign Affairs. The opinions and conclusions expressed are those of the author/s and do not necessarily reflect the views of the Institute for Security and Development Policy or its sponsors.

ISBN: 978-91-85937-59-2

Printed in Singapore

Cover Photo Credit: Data courtesy of Marc Imhoff of NASA GSFC and Christopher Elvidge of NOAA NGDC. Image by Craig Mayhew and Robert Simmon, NASA GSFC. The image "Earth's City Lights" is sourced from NASA's Visible Earth website (http://visibleearth.nasa.gov/).

Distributed in Europe by:

Institute for Security and Development Policy
Västra Finnbodavägen 2, 131 30 Stockholm-Nacka, Sweden
Tel. +46-841056953; Fax. +46-86403370
Email: info@isdp.eu

Distributed in North America by:

The Central Asia-Caucasus Institute
Paul H. Nitze School of Advanced International Studies
1619 Massachusetts Ave. NW, Washington, D.C. 20036
Tel. +1-202-663-7723; Fax. +1-202-663-7785
E-mail: caci2@jhuadig.admin.jhu.edu

Editorial correspondence should be addressed to Dr. Bert Edström: bedstrom@isdp.eu

Table of Contents

Abbreviations

ACCC	Australian Competition and Consumer Commission
ALP	Australian Labor Party
APAEC	ASEAN Plan of Action for Energy Cooperation
APEC	Asia-Pacific Economic Cooperation
APP	Asia Pacific Partnership on Clean Development and Climate
APT	ASEAN Plus Three / ASEAN + 3
ARF	ASEAN Regional Forum
ASEAN	Association of Southeast Asian Nations
ASPOG	Association for Studies of Peak Oil and Gas Production
BJP	Bharatiya Janata Party
BTC	Baku-Tbilisi-Ceyhan (Pipeline)
CBM	Confidence-Building Mechanism
CCS	Carbon Capture and Storage
CDM	Clean Development Mechanism
CENTO	Central Treaty Organization
CNOOC	China National Offshore Oil Corporation
CNPC	China National Petroleum Corporation
COD	Coalition of Democracies
CPC	Caspian Pipeline Consortium
EAS	East Asian Summit
EC	European Commission
ECT	Energy Charter Treaty
EEC	European Economic Community
EEZ	Exclusive Economic Zone
EIA	Energy Information Administration (USA)
ENEOS	Nippon Oil Corporation

ESPO	East-Siberian-Pacific Ocean (Pipelines)
ESI	Environmental Sustainability Index
EU	European Union
EurAsEc	Eurasian Economic Community
FIRB	Foreign Investment Review Board
FTA	Free Trade Agreements
GATT	General Agreement on Tariffs and Trade
GCC	Gulf Cooperation Council
GHG	Green House Gases
GNEP	Global Nuclear Energy Partnership
GNPI	Global Nuclear Power Infrastructure
GS	Genuine Savings
HEU	Highly Enriched Uranium
HM	Hizb-ul-Mujahideen
HSM	Hybrid Sustainability Model
IAEA	International Atomic Energy Agency
IEA	International Energy Agency
IEF	International Energy Forum
INFCC	International Nuclear Fuel Cycle Centre
IPI	Iran Pakistan India (Pipeline)
JeM	Jaish-e-Mohammed
JODOC	Japan Oil Development Corporation
JOGMEC	Japan Oil, Gas and Metals National Corporation
JNOC	Japan National Oil Corporation
KCTS	Kazakhstan-Caspian Transportation System
KEDO	Korean Peninsula Energy Development Organization
KMG	KazMunaiGaz
KNOC	Korea National Oil Company

KOGAS	Korea Gas Corporation
LeT	Lashkar-e-Taiba
LEU	Low-Enriched Uranium
LNG	Liquefied Natural Gas
LWR	Light Water Reactor
MEA	Millennium Ecosystem Assessment
METI	Ministry of Economy, Trade and Industry of Japan
MITI	Ministry of International Trade and Industry of Japan
MOX	Mixed Oxide
NATO	North Atlantic Treaty Organization
NDRC	National Development and Reform Commission
NEAT	Network of East Asia Think-Tanks
NPT	Nuclear Non-Proliferation Treaty
NSG	Nuclear Suppliers Group
OBP	Odessa-Brody Pipeline
OECD	Organization for Economic Cooperation and Development
ONGC	Oil and Natural Gas Corporation
OPEC	Organization of the Petroleum Exporting Countries
PECC	Pacific Economic Cooperation Council
PNOC-AFC	Philippine National Oil Company-Alternative Fuel Corporation
PSA	Product Sharing Agreement
PSI	Proliferation Security Initiative
ReCAAPC	Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships
SAARC	South Asian Association for Regional Cooperation
SCO	Shanghai Cooperation Organization
SCP	South Caucasus Pipeline

SD	Sustainable Development
SEATO	Southeast Asia Treaty Organization
SLOC	Sea Lanes of Communication
SOCAR	State Oil Company of Azerbaijan Republic
SOMS	Straits Of Malacca and Singapore
SPR	Strategic Petroleum Reserve
SS	Strong Sustainability
TAGP	Trans-ASEAN Gas Pipeline
TAPI	Trans-Afghanistan Pipeline
TCGP	Trans-Caspian Gas Pipeline
TFP	Total Factor Productivity
UNFCC	United Nations Framework Convention on Climate Change
UNPA	United National Progressive Alliance
WCED	World Commission on Environment and Development
WMC	Western Mining Corporation
WMD	Weapons of Mass Destruction
WS	Weak Sustainability
WTO	World Trade Organization
WTI	West Texas Intermediate
WUM	Weapons-Usable Material

Preface

Asia is one of the most dynamic regions in the world, experiencing record economic growth and contributing significantly to global economic development. However, this economic growth also translates into greater energy demand and increases the need to secure stable supplies of energy resources. There are growing concerns on whether the quest for energy security by Asian states would lead to political, economic and social instability in Asia, with wider international repercussions. This publication is an attempt to examine the impact of Asia's growing energy demand and the resulting security implications.

A common theme reflected by the authors in this collection is that Asia's energy problems cannot be addressed by individual states on their own. Some governments have resorted to self-help and zero-sum attitudes as a means to ensure their own stable access to sufficient energy supplies. While this strategy is meant to enhance their own national security, it has had a counter-productive effect in causing diplomatic and security tensions with fellow Asian states, and raising international anxieties.

There have been many liberal advocates stressing the benefits of cooperation and collective action in addressing Asia's energy challenges. However, major obstacles stand in the way of such a solution. First, Asian states have disparate historical development paths and are at different stages of economic development. Their energy profiles and requirements are varied, making it difficult for them to reach consensus on what the priorities for action are. The more actors are involved, the more difficult it would be in reaching a consensus.

Second, the Asian governments have a traditionally narrow conception of national security and the persistent realist fear of relative gains has stymied the scope of cooperation over key energy issues. In particular, issues that are perceived to affect national security and economic interests, such as the control over oil and gas pipelines, and the liberalization of domestic energy sectors, tend to be off-limits. As a result, the scope and prospects

for transformational change in multilateral energy security cooperation in Asia appears limited, despite the potential benefits it portends.

Third, the political culture of the region tends to place more value on form over substance. Cooperation initiatives tend to stall at the declaration phase and face numerous impediments in implementation and institutionalization. This slow pace of progress is a source of frustration and has made many observers skeptical towards the idea of meaningful and substantial multilateral action in Asia. In the area of energy, there are indicative signs in recent years of growing political recognition on the importance of addressing energy security challenges in Asia collectively. Nevertheless, progress remains at an embryonic stage and should be actively encouraged.

With the current global financial crisis, there are expectations that the rising economies in Asia would play a significant role in lifting the global economy again. Energy security will be central to the ability of the Asian economies to rise to the occasion. Worries about global energy security have in large part been attributed to Asia, with its large population and growing energy demands. Despite the challenges listed above, the notable and constructive attempts by Asian governments to help mitigate global energy security challenges should be acknowledged. There is recognition among the Asian governments that the lack of regional cooperation would be even more detrimental, and undermine Asia's growing international status. The region has taken important first steps in recent years to develop sustainable and technological solutions to address its energy security challenges, and to acknowledge the benefits of multilateral energy cooperation.

The global pressure on large consuming economies in Asia to curb carbon emissions would instill sufficient rationality for the region to cooperate in energy spending. The drive to develop technologies promoting energy efficiency and conservation would have regional and international benefits; albeit the issue of cost remains as a hurdle. A positive and emerging trend from the region is that there is growing political will to cooperate in tackling contemporary energy related security issues such as climate change.

This publication is divided into three sections. The four authors in Section One provide the energy and security profiles of different sub-regions in Asia. In Chapter One, Elspeth Thomson discusses Southeast Asia's energy and security challenges, highlighting the energy concerns of the Southeast Asian governments, particularly the problems associated with their reliance on oil, followed by discussion of non-oil alternatives available to the region. Thomson also sheds light on the role of ASEAN in addressing the region's energy challenges.

Jaewoo Choo in Chapter Two provides an energy and security profile of Northeast Asia. His chapter is based on a simple question: Will Northeast Asian states in general, and China and Japan in particular be able to cooperate on the energy security front? Choo reminds us that Northeast Asian governments remain highly distrustful of one another and this has limited the prospects for energy security cooperation in the region. He notes that while China and Japan do engage in general energy cooperation in technical fields, both governments have little interest in energy security cooperation, since such energy issues are linked to the governments' narrow perspectives on the concept of national security.

Chapter Three is written by Robert M. Cutler who provides an overview of the on-going energy projects in Central Asia, focusing on Kazakhstan, Turkmenistan, and to a lesser extent, Uzbekistan. He elaborates on the exploration, development and export of oil and gas projects in this region and how security and economic imperatives drive the Central Asian governments' energy diplomacy.

In Chapter Four, C. Raja Mohan focuses on the role of energy in South Asian security. He writes that energy considerations have emerged as a defining element in the security politics of South Asia – within the region, between the subcontinent and its neighbourhood, and its relations with great powers. India's growing energy imperative is shaping its foreign policy and Mohan makes the case that India is emerging as a major actor on these three fronts.

Section Two consists of works that focus on the external dimensions and linkages of Asia's energy and security. In Chapter Five, Janet Xuanli Liao examines the evolution of perceptions and strategies on energy security in

China and Japan since the 1970s, with oil as the focus of analysis. Richard Leaver in Chapter Six informs us of Australia's role in feeding Asia's energy demand. Leaver examines Australia's energy resource profile and the country's role in supplying coal, natural gas, and uranium to key Asian markets. According to him, Australia believes in the liberalization of the energy trade as a means to address Asia's energy and security challenges but this thinking has been met with skepticism in Asia.

In Chapter Seven, Shoichi Itoh examines the role of the energy policy of Russia towards Asia. He notes that while Russia possesses vast amounts of energy resources and has an ambitious plan to expand into the Asia-Pacific energy market, there are currently insufficient investments going into the Russian energy sector to make this a reality. Russia's role in the Sino-Japanese competition over the route of the East Siberian-Pacific Ocean pipeline is also discussed in this chapter.

Rajesh Basrur in Chapter Eight provides an in-depth look into the security implications of the India-U.S. nuclear deal. He argues that the India-U.S. nuclear agreement is particularly significant in that it enhances India's status as a major power and as a force of stability in Asia. Chapter Nine is written by Gaye Christoffersen, focusing on the role of the United States in addressing Asia's energy and security challenges. Through her contribution, we learn about different multilateral energy initiatives in Asia and how they developed. She assesses the U.S. attitude towards Asia's energy challenges and details the linkages between the U.S., ASEAN and the major Asian energy consumer states.

Section Three is titled *The Future of Energy and Security Cooperation in Asia*. The six authors here look at the issue of multilateral energy and security cooperation in Asia from a number of angles. Pascal Laffont in Chapter Ten writes about the relevance of The Energy Charter in the creation of a legal regime for multilateral energy cooperation in Asia. In Chapter Eleven, Tatsujiro Suzuki examines the growing interest in the use of nuclear power in Asia. He identifies the issues that need to be addressed and the collective measures governments should undertake with this turn to nuclear power. Youngho Chang and Soo Jiesheng Tan in Chapter Twelve adopt a quantitative approach to discuss ways to concurrently address

sustainable development, the types of energy resources to use, and the issue of greenhouse emissions.

Chapter Thirteen is dedicated to the discussion of the Cebu Declaration on East Asian Energy Security. Here, Renato Cruz De Castro begins by examining the background of East Asia's energy security agenda. He then explains the Philippine's interest in propagating biofuel as host of the East Asian Summit in Cebu and goes on to assess the political feasibility of the Cebu Declaration. Chapter Fourteen is by Ingolf Kiesow. In his first part, he warns of the global race for energy resources, and the role of key actors – namely Russia, the U.S., Europe, China, India and Japan – in this development. The second part focuses on Northeast Asia's energy problems, particularly the regional repercussions of North Korea's domestic energy problems. He urges the European Union to take an active interest in the Six-Party talks. Kiesow also highlights the relevance of the Energy Charter Treaty in facilitating multilateral energy cooperation beyond Europe where it was first conceived. The last chapter, Chapter Fifteen is by Shoichi Itoh who discusses the obstacles and prospects of multilateral energy cooperation in Asia by examining the energy competition and cooperation trends in Asia in recent years.

This publication is the product of a joint effort between the Institute for Security and Development in Sweden and the S. Rajaratnam School of International Studies, Singapore. The chapters that appear here are based on the conference papers presented at a two-day conference held in Singapore on September 7-8, 2007, entitled Spotlight on Asia's Energy and Security Challenges – A Multilateral Response? During this conference, participants sought to address the questions raised above from a multitude of perspectives. We would like to thank the authors for their contribution and patience in seeing this publication through.

Christopher Len

Alvin Chew

Executive Summary

1. The lack of political trust between governments in Asia is a recurring theme in this publication and this has hampered the prospects for multilateral energy security cooperation. Governments in Asia increasingly view the control of energy resources as an important component of their national security agenda. Some have also subscribed to Peak Production Theory and turned to zero-sum thinking in attempting to secure energy supplies. This has limited the progress of multilateral energy security cooperation in Asia because states worry about relative gains by one another.
2. Demand for energy imports in Southeast Asia is expected to be among the highest in the world over the next two decades. The heavy reliance on Middle Eastern oil and gas deliveries is a source of concern among the ASEAN member states. The ASEAN region's overall energy security could be improved with the completion of transnational gas and power grids in the region. However, progress has been slow and more needs to be done to liberalize the energy markets. Biofuels appear as a promising renewable and alternative source of energy for this region. However, questions remain on the environmental impact and commercial viability of this fuel source.
3. In Northeast Asia, no institutionalized multilateral security mechanism exists. China and Japan are crucial actors for multilateral energy security cooperation to be successful. However, policy reviews conducted on the respective energy security policies of Beijing and Tokyo indicated that both prefer to pursue their energy security strategies separately. They have also competed with each other over access to international oil and gas in zero-sum terms.
4. A security flashpoint in Northeast Asia is North Korea's nuclear weapons program, which is partly linked to its domestic energy poverty. It is important to consider North Korea when discussing multilateral energy cooperation in this region. The European Union should play a more active role in supporting the Six-Party Talks.

5. The Central Asia energy exporters, namely Kazakhstan, Turkmenistan and Uzbekistan, regard their energy resources as being closely tied to their national security and economic survival. Questions on whether to export to Russia, or Europe bypassing Russia, or eastwards into China are therefore based on both political and economic considerations by these Central Asian governments.
6. In South Asia, regional states, particularly India and Pakistan, have increasingly important roles in the security of the two neighbouring energy producing regions – the Persian Gulf and Central Asia. The energy imperative has great potential in facilitating intra-regional cooperation and integration in South Asia. However, progress has been hampered by the existing state of bilateral relations among regional states and the historical legacy of the 1947 partition of India.
7. India's growing imperative to secure access to overseas energy supplies is shaping its foreign policy. It has become an important actor in managing energy-related issues at the international level. Energy security cooperation has also become a major factor for India in building strategic partnerships.
8. The Indian-U.S. nuclear agreement is particularly significant. The co-option of India through this agreement will strengthen the nuclear non-proliferation regime; speed up its transformation as a major power; bolster its security vis-à-vis Pakistan and China; improve partnership with the U.S. in facing security issues; and help facilitate the emergence of a Concert of Asia by raising India's status as a force of stability in Asia.
9. Australia is rich in uranium, coal and gas. Canberra has sought to promote the liberalization of the energy trade in Asia, believing in the potential of markets to resolve all kinds of political tensions and conflicts. This is in contrast to the regional skepticism of the East Asian governments towards the liberal approach for the energy trade. In recent years, there has been a rise in resource nationalism, particularly by China and Japan, in their trading positions towards Australia's energy and resource sectors.
10. Russia has vast amounts of energy resources and has an ambitious aim to significantly increase its crude oil exports to the Asia-Pacific region by 2020. To attain its goal, Moscow would need to increase its

investments and introduce new technologies in the development of its hydrocarbon resources.

11. The zero-sum competition between China and Japan over the route of the East Siberian-Pacific Ocean pipeline is in part the result of Russia's use of its energy resources to maximize it geopolitical and economic interests in the Asia-Pacific. However, since the departure of Japanese Prime Minister Junichiro Koizumi from office, the strained Sino-Japanese bilateral relationship has improved and Russia's use of the ESPO pipeline for leverage against Beijing and Tokyo has reduced.
12. In Asia, the U.S. prefers to focus on bilateral energy cooperation and has such arrangements with Russia, India, China and Japan. Nevertheless, it is also involved in the APEC Energy Working Group (EWG) and the Asia-Pacific Partnership on Clean Development and Climate (APP). Energy cooperation within Southeast Asia was initiated in 2006 under the ASEAN-U.S. dialogue framework. It became part of the Five-Country Energy Ministerial framework together with China, Japan, India and South Korea in 2007. Washington could play a major role in East Asian energy cooperation by contributing technological and economic energy expertise but has yet to define a role for itself within the East Asian regional context.
13. The Energy Charter Treaty is the only multilateral legal framework for global energy trade and should be promoted across Asia. It would put in place mechanisms for the sharing and mitigation of risk and promote a sound climate for long-term investment. The Charter could facilitate cross border energy projects based on minimum standards for access and transparency that all Asian states could commit to as part of the multilateral process.
14. Sustainable development is important when thinking about energy production, economic output and the environment. Capital derived from non-renewables should be invested into renewable natural resources and technologies that would protect the environment.
15. The use of nuclear power is expected to grow in Asia. China, India, South Korea and Japan have plans to expand their nuclear energy usage. Vietnam, Indonesia and Thailand are prepared to introduce nuclear power for the first time. With this turn to nuclear power, safety

and public confidence issues, and the challenge of waste management have to be addressed. The management of the nuclear fuel cycle facilities in particular calls for a multilateral approach.

16. East Asian energy security cooperation is the latest response to the need for multilateral energy security cooperation in Asia. The Cebu Declaration on East Asian Energy Security in January 2007 focused on renewable and alternative energy sources in addressing Asia's energy challenges. The subsequent Singapore Declaration on Climate Change, Energy and the Environment in November 2007 linked East Asia's energy security with the global threat of climate change. The emphasis was on energy efficiency and clean energy, with a focus once again on renewable and alternative fuel sources.
17. The issue of regional energy security cooperation in the context of East Asian regional formation is symbolic of the Sino-Japanese competition for regional leadership in East Asia. China prefers the ASEAN Plus Three format while Japan supports the East Asian Summit framework.

Part I:
Asian Energy and Security Profiles

1. Southeast Asia's Energy and Security Challenge

Elspeth Thomson*

Introduction

In his maiden speech in January 2008, the new Secretary-General of the Association of Southeast Asian Nations (ASEAN), Surin Pitsuwan, told participants at the Regional Outlook Forum 2008 held in Singapore that he would like to see the grouping become an oil centre, develop a middle class, and convince the West of the region's importance.[1] With respect to his first ambition, noting that the region is already a global transhipment hub, he declared that he would also like it to become a centre for storing the world's oil and gas.

While Southeast Asia has considerable energy resources of its own, there are insufficient local supplies of oil. Vast quantities of oil are imported by the region, and also transported through it to Northeast Asia. Herein lies the most critical energy security challenge for the region. Regardless of whether or not the Secretary-General's goal is reached, there is no doubt that the amounts of oil (and gas) coming through the region will continue to rise sharply over the next two decades at least. Much of Northeast Asia's oil is shipped through the region and the number of tankers making the journey from the Middle East and other parts of the world is expected to increase dramatically.

The demand for energy within the region itself is expected to continue to rise, the precise rate of which being influenced by the international price of oil. It is feared that the shipments of oil and gas could be interfered with, interrupted, or even be the target of terrorists. Compounding this

---

* Elspeth Thomson is a Senior Fellow at the Energy Studies Institute, National University of Singapore. Her research interests are in Asian energy security and economics.

[1] The 10 ASEAN members are Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam. See Cheong Suk-Wai, "Asean Sec-Gen Sets 3 Areas for Group to Work On," *Straits Times*, January 9, 2008.

risk are the expected increasingly higher volumes of tanker traffic, especially in and near the narrow Straits of Hormuz and Malacca/Singapore. The greater the density of traffic, the more damage that can be done, no matter the cause of the incident.

Current Energy Demand Overview

Due to different historical development paths, the ASEAN member states are currently at widely varying stages of economic development. Table 1 (refer to Appendix at the end of this chapter) provides an overview of the ten economies and their relative energy consumption. ASEAN's total primary energy consumption currently amounts to only about 3.3 per cent of global consumption, while its population represents about 8.7 per cent of the world total.[2] Per capita energy consumption is generally very low in the region, far below the world average.[3] Some of the economies are currently pre-industrial. Many still rely heavily on biomass (twigs, leaves, dung, etc.) for cooking and heating. Over the coming decades, commercial energy consumption growth will be irrepressible as industrialization, urbanization and modernization accelerate.

In Cambodia, Laos and Myanmar, agriculture accounts for sizable proportions of gross domestic product, whereas in the other economies industry and services dominate. The region's average (excluding Laos and Myanmar) per capita gross national income amounted to about US$6,024 in 2003 compared to the world average of about US$5,737. If the figure for the urban areas alone were calculated, ASEAN's average would likely be even further above the world average. It is expected that the urban areas within the lesser developed members of the grouping will catch up with those of the more developed ones over the next two decades.

---

[2] Calculated from the Energy Information Administration (EIA) website at: http://www.eia.doe.gov/pub/international/iealf/tablee1.xls and http://www.eia.doe.gov/pub/international/iealf/tableb1.xls (both accessed February 2008). It must be noted that the ASEAN energy consumption figures are somewhat distorted due to the fact that Singapore's energy consumption figures include oil that is imported, then processed and re-exported or bunkered.

[3] Based on EIA figures, ASEAN's average per capita energy consumption of 98.8 million British Thermal Units (BTU) is higher than the world average of 71.8. However, this is a misrepresentation. See footnote 2.

As for energy resources, the member states range from virtually zero endowment in Singapore to relatively high endowment in Brunei and Indonesia. Table 2 (refer to Appendix) shows the amounts of the various types of energy produced in each country. Production of all types of energy except natural gas amounts to less than 6 per cent of world production. The relative abundance of the various types of energy is discussed below.

Table 3 (refer to Appendix) indicates the means by which electricity is generated. Hydropower presently plays major roles in Vietnam and Myanmar, as well as Laos and Cambodia. Most of the economies rely more on natural gas to generate power.

Table 4 (refer to Appendix) portrays the energy consumption structure of each country. The diversity revealed here is largely a function of historical economic development, political and cultural factors. In the wealthier economies, consumption in the transport sector is highest, reflecting higher car ownership, larger airline companies and wider shipping-related activities.

Insufficient Oil Resources

ASEAN has substantial hydropower resources, coal and natural gas. Australia could provide more coal if desired and more liquefied natural gas could be imported from a variety of sources. Insufficient oil is the region's most critical energy security challenge. Singapore, Malaysia, Thailand and the Philippines each depend on the Middle East for over 70 per cent of their oil imports. Indeed the region as a whole is heavily dependent on imports from the Middle East, where some 56 per cent of the world's oil reserves are situated.[4] In 2006, the Persian Gulf states (Bahrain, Iran, Iraq, Kuwait, Qatar, Saudi Arabia and the United Arab Emirates) produced approximately 28 per cent of the world's oil.[5]

The Middle East is politically unstable and the world's most powerful governments are not in agreement on how best to interface with the con-

---

[4] Calculations based on data available on the EIA website: www.eia.doe.gov/pub/international/iealf/crudeoilreserves.xls (accessed January 15, 2008).

[5] Calculations based on data available on the EIA website: www.eia.doe.gov/emeu/international/RecentTotalOilSupplyBarrelsperDay.xls (accessed January 15, 2008).

stituent countries. Many Asian governments fear offending Iran and therefore avoid support for the U.S. and Europe in the dispute over Teheran's nuclear programme.

The region's largest producers of crude oil are Indonesia, Malaysia and Vietnam. Indonesia had been a member of OPEC since 1962, but withdrew in 2008. The country became a net importer in 2004 due to declining production. Malaysia's oil production is also dwindling. It currently exports crude oil to Thailand, Singapore, Indonesia and the Philippines, while Brunei exports to Singapore and Thailand.

Vietnam's production began to increase rapidly from the late 1980s. All output is exported because the country does not yet have any refineries of its own.[6] Though the Philippines' large-scale production of crude oil began only after the year 2000, the country quickly began to export. Thailand's output of crude oil has grown steadily since the early 1980s. Its exports to Indonesia account for nearly 40 per cent of its total exports of crude. Brunei consumes only 10 per cent of its output domestically.

In recent years, new oil reserves have been discovered within the region, but they are not spectacularly large. It is hoped that deposits surrounding Myanmar will yield substantial new supplies. However, international companies and the neighbouring governments are generally unwilling to work with Myanmar's military government. Other potential deposits lie near Vietnam in the Beibu Gulf and in the East China Sea but involve complicated border disputes. In 2005, large deposits were discovered offshore near Cambodia. The viability of these, however, is not yet certain.

In 2007, both the International Energy Agency (IEA) and the U.S. Energy Information Administration (EIA) predicted that oil supplies would be tight in the coming years due to inadequate supply increases. However, other energy analysts believe that there is plenty of oil readily available for consumption over the coming decades.[7] If the price is high enough, known technologies can and will be employed to extract the oil from less

---

[6] Vietnam's first refinery is expected to be ready for operation in 2009.

[7] For example, E. Gholz and D. G. Press, "Energy Alarmism: The Myths that Make Americans Worry about Oil," *Cato Institute Policy Analysis*, No. 589 (April 5, 2007). A website offering further discussion of this view is: www.lifeafterthe oilcrash.net/ (accessed August 15, 2007).

easily accessible locations. They also contend that because oil is a fungible commodity, there need never be any supply disruptions.

In July 2008, the international price of oil reached a high of US$147. It has since dropped to a quarter of this by early 2009, but is expected to rise again, and remain high this time. Consumers, large and small, are therefore considering, with increasing seriousness, their options for reducing oil consumption. However, most analysts believe that economic growth in the region and concomitantly, energy consumption, will continue apace.

The International Energy Agency (IEA), in its reference case scenario (albeit compiled before the price of oil reached US$147), estimated that the world's demand for oil would grow at 1.3 per cent from 2005–2030, but at 3.2 per cent in "Developing Asia" as a whole, 3.7 per cent in China and 3.8 per cent in India.[8] With respect specifically to transport fuel demand, the IEA forecasted 4.4 per cent annual average growth in Asia to 2012 and that transport fuels would account for 55.2 per cent of total regional demand.[9] It is expected that the demand for private cars will likely soar in ASEAN as it has in China.

Other analysts disagree. For example, Fereidun Fesharaki, Chairman and CEO of FACTS Global Energy Inc., an influential energy consulting company, is quoted as saying: "With the exception of China, demand for oil in the rest of the [Asian] region is slowing because of higher prices...The [proposed pipeline across Malaysia] assumes that demand will explode, but demand will not explode. That's the real story."[10]

The varying predictions about economic growth, and concomitantly, the demand for oil, obviously pivot on the timeframe considered, the assumptions with respect to oil price movements, oil price elasticities, the substi-

---

[8] "Annex A - Tables for Reference and Alternative Policy Scenario Projections," International Energy Agency, *World Energy Outlook 2007*, pp. 624.

[9] Maryelle Demongeot, "New Sweet Crudes to Put Asia Market under Pressure," *International Business Times*, July 16, 2007, www.ibtimes.com/articletag/oil/page1.htm (August 15, 2007).

[10] I. Sam, "Experts Cautious on Malaysian Oil Pipeline," *Middle East Times*, June 23, 2007. More information about Fesharaki's views can be found at his company's website: www.fgenergy.com/ (accessed January 15, 2008), especially the powerpoint presentation, "Asian Oil Demand and Supply in the Global Context," presented at the 5th Joint OPEC-IEA Workshop (May 2007).

tutability of biofuels, the success of governmental measures to conserve energy (see below), etc.

Oil producing countries greatly benefit from high oil prices. However, the amount that some governments spend on oil subsidies can easily cancel out the higher revenues. For example, the Indonesian Government has long provided fuel subsidies. In 1998, a major increase in fuel prices resulted in rioting which contributed to the unseating of the Suharto presidency. In its 2007 budget, the Government had set aside a sum for these subsidies assuming an average oil price of US$60 a barrel.[11] With high oil prices, however, economic growth could be affected and inflation could worsen. The Malaysian Government is similarly bracing itself for much larger sums being required to keep fuel prices unchanged.[12]

The IEA strongly recommends the construction of strategic petroleum reserves (SPRs). Its 27 member countries must hold 90 days' worth of consumption. In June 1986, the ASEAN members signed a Petroleum Security Agreement whereby oil would be shared in the region in the event of a critical shortage.[13] To date, however, only Singapore maintains storage capacity of any size. Singapore's oil refineries and independent terminals are presently capable of storing some 8.1 million cubic metres of oil products, and it is planned that new capacity on land, underground and in tanks floating offshore will expand this considerably.[14]

Concerns over Security of Oil and Gas Transport

The ASEAN member states worry about the security of their oil supplies from the Middle East. They fear that oil operations in the Middle East could be disrupted due to terrorism or war, and that the carriers of crude oil and liquefied natural gas are vulnerable to attack.

---

[11] "Indonesia: $100/bbl Oil Price Can Cause Subsidy Problem," *Reuters*, November 2, 2007.

[12] "M'sia to Hold Fuel Steady As Long As It Can," *Straits Times*, January 3, 2008.

[13] See this particular section of the ASEAN website: www.aseansec.org/6568.htm (accessed January 15, 2008).

[14] Ronnie Lim, "Singapore Looks Set to Build Floating Oil Storage," *Business Times*, October 3, 2007; and "Singapore's Floating Storage Study Moves Forward," http://www.portworld.com/news/2008/11/74109 (accessed February 26, 2009).

The first choke-point for oil tankers is the Hormuz Strait which is the only point of egress from the Persian Gulf. Several governments have expressed deep concern over Iran's nuclear activities. However, Teheran has insisted that the programme is for peaceful purposes and has warned that any attack on Iran would jeopardize the region's oil exports. In order to prove how readily the Strait could be blocked, the Iranian military has held naval manoeuvres and fired torpedoes in the area. It could also potentially use submarines or mines to halt all commercial ocean-going traffic.

The other choke-point is the Straits of Malacca and Singapore (SOMS) which could be cut off by the sinking of tankers, the deliberate creation of an oil slick, etc.[15] The SOMS is presently used by more than 100,000 local and international vessels per year.[16] Each day, over 1,000 vessels pass through the Singapore Strait.[17] It is estimated that at least 30 per cent, perhaps up to 50 per cent of all global sea transport, including 12 per cent of the world's daily oil output, passes through SOMS.[18] In 2007, about 26 tankers, including three supertankers, passed daily through the SOMS.[19] With China's insatiable demand for oil, it is expected that the volume of traffic in the Strait will increase considerably. Thus, anxieties over politically-motivated transport interference or interruptions are increasingly compounded by worries about accidents caused by tanker traffic congestion.

---

[15] For a review of ASEAN energy security issues as well as energy cooperation, see the ASEAN Secretariat website: www.aseansec.org; and Elspeth Thomson, "ASEAN and Northeast Asian Energy Security: Cooperation or Competition?" *East Asia: An International Quarterly,* Vol. 23, No. 3 (Winter 2006), pp. 67-90; and Elspeth Thomson, "ASEAN-China Energy Cooperation," in *ASEAN-China Economic Relations*, Saw Swee-Hock, ed. (Singapore: Institute of Southeast Asian Studies, 2006), pp. 226-49.

[16] "What's behind the Dramatic Drop in S-E Asian Piracy," *Straits Times*, January 19, 2009.

[17] "Navy Revamps Coastal Command," *Straits Times*, February 13, 2009.

[18] U.S. DOE-EIA: World Oil Transit Chokepoints at: www.eia.doe.gov/cabs/World_Oil_Transit_Chokepoints/Malacca.html (accessed February 26, 2009) and "Malaysia Warms to Joint Patrols in Malacca," *Manila Times*, April 19, 2007.

[19] Joshua Ho, "The Importance and Security of Regional Sea Lanes," in Kwa Chong Guan and John Skogan, eds., *Maritime Security in Southeast Asia* (New York: Routledge, 2007), p. 22.

In 2004, the governments of Singapore, Indonesia, Malaysia and Thailand took measures to step up sea and air surveillance, patrol and anti-piracy exercises as well as communication networks. The following year, Lloyd's shipping underwriters' Joint War Committee declared the Straits vulnerable to "war, strikes, terrorism and related perils." This significantly raised the cost of shipments through the Straits. However, in August 2006 this assessment was lifted because the joint measures were deemed successful in deterring would-be attackers.

In order to obviate the need for tankers to go through the Strait of Malacca, the Thai Government has long considered building a canal, land bridge or pipeline across the Kra Isthmus. However, this project has repeatedly foundered. A separate proposal to build a pipeline across northern Malaysia was approved by the Government in May 2007. To be completed in 2014, this multi-billion dollar project would divert about 20 per cent of the oil transiting through the Strait of Malacca and the cost of transporting oil (coming mainly from the Middle East or Africa) could fall by US$1.50 a barrel.

Both of these projects would have facilities for storage and transit of oil and LNG on both coasts, and would shorten the journey to East Asia by at least two days. Both proposals have many detractors who cite cost, environmental concerns, corruption, etc. They say that Southeast Asia as a whole would gain little from the projects and that the ports along the Malacca Strait would decline if either of these projects came to fruition.

Alternatively, more tanker traffic could be diverted to the Lombok or Sunda Straits of Indonesia. This, however, would prolong the journey by a few days, increasing shipment costs. Monitoring these straits would also be more complicated.

Non-Oil Energy Resources and Trade within the Region

ASEAN has large reserves of natural gas. In all, about 40 per cent of the world's supply of liquefied natural gas (LNG) originates from this region. Indonesia and Malaysia together account for about 70 per cent of Asia's gas trade. Following Indonesia and Malaysia, the next largest producers are Thailand, Brunei and Myanmar (see Table 2 in Appendix).

Indonesia accounted for about 21 per cent of the world's total LNG exports in 2002 but these have begun to decline. In March 2006, the Indonesian Government announced that it would not renew many of its long-term gas export contracts due to dwindling resources and a preference to have the fuel used domestically instead of abroad. Then in September 2006, it notified the Japanese companies that it intended to halve LNG exports to Japan by as early as 2010. Gas distribution infrastructure within Indonesia is still very weak and the Government is keen to ameliorate this situation.

Brunei exports over 90 per cent of its LNG production, while Malaysia about 40 per cent. Within ASEAN, Brunei exports LNG to Thailand. All of Myanmar's exports go to Thailand. Indonesia is the region's largest producer of coal. It is also the world's largest exporter of thermal coal. Vietnam and Thailand are the distant second and third largest producers (see Table 2 in Appendix). Indonesia exports large quantities of coal to Malaysia and the Philippines (accounting for over 40 per cent of its total imports of coal), while Vietnam also exports to the Philippines, as well as to Thailand. In order to ensure sufficient supplies for 35 new power stations which are due to come on stream in 2009, the Indonesian Government is planning to impose domestic market obligations on coal producers. Total domestic demand is expected to reach 103 million tons in 2009, up from 33 million tons in 2007.[20]

Vietnam produces the most hydropower in ASEAN (see Table 2 in Appendix). Most of the tributaries from rivers which originate in the mountains in and around Tibet and southern China eventually flow either into the greater Mekong, Chao Praya or Nu Jiang (Salween) watershed systems. Together they constitute substantial hydro-power generating potential. Laos, Vietnam and Myanmar all depend on hydropower to generate much of their electricity (see Table 3 in Appendix).

Malaysia exports electric power to Thailand, Indonesia and Brunei, while Laos exports to Thailand and plans to export soon also to Cambodia and Vietnam. Singapore and Malaysia provide surplus power to each other at peak hours.

---

[20] John Aglionby, "Coal-rich Jakarta Leans on Domestic Supplies," *Financial Times*, November 2, 2007.

In sum, there is considerable energy trade within the region, but there could be much more. Much of ASEAN's energy is in fact exported to Northeast Asia, but very little of Northeast Asia's energy comes to ASEAN.[21] Northeast Asia, especially China, continues to scour the ASEAN region for whatever energy resources it can find. Table 5 (refer to Appendix) gives the percentages of Northeast Asia's energy imports coming from ASEAN. For example, China obtains 63 per cent of its total steam coal imports from ASEAN, 10 per cent of its crude oil imports and 35 per cent of its oil products imports. In all, about 53 per cent of ASEAN's steam coal exports are sent to Northeast Asia, all of its coking coal exports, 67 per cent of its crude oil exports and all of its LNG exports.

Elusive Gas and Power Grids

ASEAN's overall energy security could be improved with the completion of gas and power grids. Efforts towards realizing a Trans-ASEAN Gas Pipeline (TAGP) began in 1998[22] and the ASEAN Plan of Action for Energy Cooperation 1999-2004 included details for a regional power grid.[23] Several point-to-point links were already in place or underway. However, progress has been slow in finalizing agreements for multi-country hook-ups. A great deal needs to be done in terms of liberalizing energy markets and regulating anti-competitive behaviour throughout the region.[24]

The existing gas lines include: two from Indonesia to Singapore, Indonesia to Malaysia, Malaysia to Singapore and from Myanmar to Thailand. Planned lines include: CAA (Commercial Agreement Area between Malaysia and Vietnam) to Malaysia, JDA (Malaysia-Thailand Joint Development Area) to Thailand, JDA to Thailand and Malaysia and Malaysia to the Philippines.

---

[21] See Thomson, "ASEAN and Northeast Asian Energy Security: Cooperation or Competition?"

[22] Full details of the plans for the Trans-ASEAN Gas Pipeline project are available at the ASEAN website at www.aseanenergy.org/ace/workprogramme.htm (accessed January 15, 2008).

[23] Full details of the plans for a regional power grid are available at the ASEAN website at www.aseansec.org/6577.htm (accessed February 15, 2009).

[24] Andrew Symon, "Privatisation and Liberalisation of Gas Markets in Southeast Asia," *Thai Gas Markets '05 Asia Business Forum*, Bangkok (May 26-27, 2005).

For the power grid, the following interconnection projects are envisioned: Peninsular Malaysia - Singapore, Thailand - Peninsular Malaysia, Sarawak -Peninsular Malaysia, Sumatra - Peninsular Malaysia, Batam - Bintan - Singapore - Johor, Sararwak - West Kalimantan, Philippines - Sabah, Sarawak - Sabah - Brunei, Thailand - Lao PDR, Lao PDR - Cambodia, Thailand - Myanmar, Vietnam - Cambodia, Lao PDR - Vietnam and Thailand - Cambodia.

Biofuel Uncertainties

Singapore is aspiring to become a biofuels "hub." In Southeast Asia, most efforts are being devoted to concocting fuels made either from used cooking oil or locally-produced palm oil, sugar cane, jatropha, etc. Biofuels have done well in other parts of the world such as Brazil, but many countries have major environmental and commercial concerns about their use. At the time of writing, the European Union Environmental Chief had recently announced that it would have to re-consider its draft rules on boosting the production of biofuels because the environmental and social problems arising from their use were more serious than initially believed.[25]

The main environmental concerns are related to deforestation and the consequent haze resulting from the clearing of land for biofuel crop plantations. Very heavy use of fertilizers has also been observed, threatening fresh water supplies and fragile ecosystems. Some plantations have been created by draining and burning peat land, causing the release of huge amounts of carbon emissions. Large numbers of farmers have been abandoning traditional crop rotation, resulting in soil erosion.

Some analysts believe that biofuels use more energy than they produce, and possibly create more harmful emissions than fossil fuels. Much depends on the types of plants used, how they are grown and processed. Economically, if the price of petroleum falls below US$50, biofuels cannot compete. Their use in Indonesia has caused the price of cooking oil to rise sharply. Some low income families have been forced to boil all their food

---

[25] "EU Rethinks Biofuels Targets as Criticism Mounts," *Deutsche Welle,* January 14, 2008; "EU Admits Biofuel Target Problems," *EUobserver.com,* January 14, 2008.

instead of frying some of it. Another concern is what to do with the main by-product of biodiesel production, namely, glycerine. The world market is already close to saturation.

Even if eventually deemed an acceptable substitute for fossil fuels, it will be some years before biofuels could be supplied and marketed in the quantities required. Moreover, there will be a continuing global need for crude oil no matter how successful biofuels may eventually become in terms of substituting/supplementing transport fuel on a large scale because biofuels cannot generally be employed for all of oil's other uses.

Nuclear Energy Worries

Despite the well-known waste-disposal and safety issues, high capital costs and long construction times, as well as the potential diversion to military or other illicit uses, the nuclear option is appealing where energy demand growth is expected to increase sharply, energy supply security is a worry, where there are seemingly few alternate energy options and controlling air pollution and greenhouse gas emissions is a priority.

In January 2007, ASEAN's Cebu Declaration on East Asian Energy Security "recognized" that "nuclear power will represent an increasing share of global supply" and agreed to "reduce dependence on conventional fuels through intensified energy efficiency and conservation programmes, hydropower, expansion of renewable energy systems and biofuel production/utilization, and for interested parties, civilian nuclear power." In July 2007, a commission set up by the Southeast Asia Nuclear Weapon-Free Zone Treaty made provisions for cooperation with the International Atomic Energy Agency to establish legal frameworks for nuclear safety, regional networks for the early notification of nuclear accidents, and a regional emergency preparedness response plan. In August 2007, the ASEAN Energy Ministers agreed "in principle" to set up an ASEAN Nuclear Energy Safety Sub-sector Network.

The governments of Thailand, Indonesia, Vietnam and Malaysia have announced plans to build nuclear plants and the Philippines is said to be making efforts to re-commission a nuclear plant that was shut down in 1986. While some analysts believe there is little alternative at this point in history to nuclear power, others are alarmed over the potential for corrup-

tion in construction and operation, the lack of sufficient numbers of trained staff and the high frequency of earthquakes and volcanoes along the "Pacific ring of fire."[26]

In rebuttal, the governments argue that recent technological developments have significantly enhanced the safety of the plants, and they point to the fact that they have deliberately signed international agreements promising the highest levels of safety attainable in terms of construction and maintenance. There are a number of United Nations conventions pertaining to nuclear power. Ideally, these should be acceded to by all ASEAN members.[27]

Energy Security, Energy Conservation and Climate Change are Bound Together

There is no point in making great efforts to ensure the region's energy security if energy consumption efficiency remains low and there is serious wastage of energy.

Energy consumption efficiency is generally very low in ASEAN due to widespread use of old, poorly maintained energy consuming equipment and a lack of awareness about energy conservation on the part of governments, industry, businesses and households alike.[28] Much of the problem is related to energy prices which are, in many cases, well below international levels. Some governments in the region devote astonishing amounts of their revenues to energy price subsidies and fear that lifting these could result in massive social unrest.

---

[26] See Andi Abdussalam, "Indonesia's Nuke Plan Still Hanging in the Balance," *Antara News*, June 25, 2007 at www.antara.co.id/en/arc/2007/6/25/news-focus-indonesias-nuke-reactor-plann-still-hanging-in-the-balance/ (accessed August 15, 2007).

[27] For example, the Philippines signed the Convention on the Physical Protection of Nuclear Materials in 1980, with Indonesia signing it in 1986 and Cambodia in 2006. Vietnam acceded to the Convention on Early Notification of a Nuclear Accident in 1987, and the Philippines, Myanmar and Singapore did so in 1997. Thailand ratified it in 1989 and Indonesia in 1993. Indonesia and the Philippines signed the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management in 1997.

[28] See Elspeth Thomson, *Energy Conservation in East Asia: Towards Greater Energy Security* (Singapore: World Scientific, forthcoming 2009).

Reducing the amount of energy consumed per unit of output not only raises national energy security, it also improves energy consumption efficiency and has many benefits such as decreased energy expenditure, increased economic competitiveness, greater sustainable development, higher incomes, improved trade balances, reduced need for new power plants, reduced environmental impact of energy use, etc.

Related to poor energy consumption efficiency is the pollution caused from the incomplete burning of fossil fuels. Not only is the air quality in the region's metropolises among the poorest in the world, the environmental consequences of emitting large quantities of greenhouse gases are increasingly being regarded as a security issue. The ASEAN countries would be very badly affected by rising sea levels, extreme wind storms, etc. Such phenomena could potentially leave hundreds of thousands of people homeless, wipe out large tracts of prime agricultural land and increase the incidence of tropical diseases. The affliction of any of these disasters in already very poor areas would unquestionably lead to conflict and strife.

Conclusion

The 10 ASEAN members vary widely in terms of economic development, energy resources and energy requirements. Many of the members' rural areas presently have very little, or no power. Over the next two decades, this region's growth in energy demand is expected to be among the highest in the world. Per capita incomes, urbanization and industrialization are expected to continue to rise at a rapid rate.

It is generally believed that there is sufficient hydroelectric power, natural gas and coal available locally, with support from Australia, to meet the region's rapidly growing electricity needs for some years yet. Some member states have also announced plans to build nuclear power plants. Ideally, the region would be served by both power and gas grids. However, there is currently anything but a homogeneous regulatory environment.

The main energy security challenge for the region is the provision of a steady supply and uninterrupted shipments of oil particularly for use in the transport sector. If the ASEAN Secretary-General's goal of making the

region a global centre for storing oil and gas is realized, this energy security challenge will become all the more critical.

Worldwide research into operating vehicles fitted with non-fossil fuel engines is on-going. There has yet been no unequivocally superior alternative. Within the region, tremendous effort has been devoted in recent years to the development of biofuels. However, there are serious environmental and commercial concerns. At the time of writing, there seemed little option for the region but to continue relying on gasoline and diesel for transport. Thus, the governments must do all they can to reduce oil supply and transport vulnerabilities. They must also try to help reduce the tension between Iran and the U.S., eliminate terrorism in Saudi Arabia, and protect the shipping lanes extending from the Strait of Hormuz to beyond the Malacca Strait.

Raising energy consumption efficiencies is also imperative, not only for economic reasons, but also to reduce emission of greenhouse gases. Climate change and energy security are bound together, especially in Southeast Asia where rising sea levels and cyclonic weather patterns could render hundreds of thousands of people homeless and exposed to rampant tropical diseases.

For a variety of economic, political and social reasons, much hope has been placed in further integrating ASEAN.[29] Certainly, greater cohesiveness would raise the grouping's energy security. There is already considerable energy trade within the region and a great deal more is possible. With so much oil and gas presently coming to and through the region, and with much larger quantities expected in the coming years, ASEAN has too much at stake not to enhance energy cooperation.

---

[29] Rodolfo C. Severino, "ASEAN Beyond Forty: Towards Political and Economic Integration," *Contemporary Southeast Asia*, Vol. 29, No. 3 (December 2007), pp. 406-23.

Appendix

Table 1. ASEAN Energy and Economy Indicators in Perspective

	Total Primary Energy Consumption 2006 (quadrillion BTU)	Population 2007 estimates (million)	Population Growth 1997-2007 (%)	Per Capita Energy Consumption 2005 (million BTU)	Per Capita Energy Consumption Growth 1997-2007 (%)	Agricultural Sector, % Total Value Added 2006	Industrial Sector, % Total Value Added 2006	Service Sector, % Total Value Added 2006	Per Capita GNI (US$) 2003
Brunei	0.177	0.37	2.20	482.1	11.48	1.1	67.9	31.0	20,823
Cambodia	0.010	14.00	1.79	0.7	0.43	29.6	29.2	41.2	245
Indonesia	4.149	234.69	1.41	17.9	3.76	13.7	42.4	44.0	599
Laos	0.023	6.52	2.51	3.6	2.77	46.8	27.6	25.7	
Malaysia	2.557	24.84	1.95	104.8	3.49	8.8	50.0	41.2	3,312
Myanmar	0.236	47.37	5.03	5.0	8.44	52.6	13.4	34.0	
Philippines	1.271	91.08	2.00	14.2	3.09	14.2	32.1	53.7	920
Singapore	2.142	4.55	1.80	476.8	5.62	0.1	33.0	66.9	20,066
Thailand	3.741	65.07	0.76	57.9	6.33	10.7	44.6	44.7	1,838
Vietnam	1.404	85.26	1.14	16.6	10.99	21.7	40.2	38.0	392

Sources: EIA website http://www.eia.doe.gov/emeu/international/populationan dgdp.html and www.eia.doe.gov/emeu/international/energyconsumption. html (February 27, 2009); Economic and Social Commission for Asia and the Pacific, *Statistical Yearbook for Asia and the Pacific 2007* (New York: United Nations, 2007), p. 88; CIA World Factbook and Nationmaster at www.nationmaster.com/ graph/eco_gro_nat_inc_percap-gross-national-income-per-capita (accessed February 27, 2009).

Table 2. ASEAN Energy Production in Perspective

	Crude Oil (thousand bpd) 2007 estimate	Total Refined Petroleum Products (thousand bpd) 2005	Natural Gas (trillion cubic feet) 2006 estimate	Total Electricity (billion kilowatt hours) 2006 estimate	Thermal Power (billion kilowatt hours) 2006	Hydro Power (billion kilowatt hours) 2006 estimate	Nuclear Power (billion kilowatt hours) 2006 estimate	Other Electricity (billion kilowatt hours) 2006 estimate	Coal, all types (million short tons) 2006 estimate
Brunei	180.56	13.73	0.487	3.10	3.10	0	0	0	0
Cambodia	0	0	0	1.16	1.11	0.05	0	0.002	0
Indonesia	1,043.14	1,081.68	2.016	125.67	109.82	9.53	0	6.33	213.17
Laos	0	0	0	1.64	0.05	1.59	0	0	0.33
Malaysia	703.92	536.48	2.278	99.08	93.13	5.95	0	0	0.72
Myanmar	21.93	20.74	0.445	5.96	2.67	3.29	0	0	1 1.53
Philippines	25.19	246.74	0.078	53.93	34.15	9.84	0	9.94	2.60
Thailand	345.40	1,038.17	0.859	130.68	119.83	7.87	0	2.99	21.02
Singapore	0	1,051.24	0	37.08	37.08	0	0	0	0
Vietnam	350.65	0	0.201	54.28	30.92	23.36	0	0	45.06
ASEAN Total	2,670.79	3,988.78	6.364	512.58	431.86	61.48	0.0	19.262	284.43
World Total	84,440.64	82,589.32	103.977	18,014.67	11,943.04	2,997.80	2,660.26	414.31	6,806.99
ASEAN Total as % of World Total	3.2	4.8	6.1	2.8	3.6	2.1	0.0	4.6	4.2

Notes: Abbreviation bpd refers to "Barrels Per Day." "Other Electricity" refers to geothermal, solar, wind, wood and waste electric power. Source: EIA at www.eia.doe.gov/international (accessed February 27, 2009).

Table 3. Breakdown of ASEAN Electricity Production, 2006 (%)

	Coal	Oil	Gas	Bio-mass	Hydro	Geother-mal	Total
Brunei		1.0	99.0				100.0
Cambo-dia		95.7			4.1		100.0
Indonesia	44.1	29.1	14.6		7.2	5.0	100.0
Malaysia	25.3	3.0	64.0		7.7		100.0
Myanmar		5.8	40.2		53.9		100.0
Philip-pines	27.0	8.2	28.8		17.5	18.4	100.0
Singapore		22.0	78.0				100.0
Thailand	18.0	6.1	67.8	2.3	5.8	Negligible	100.0
Vietnam	17.1	4.1	37.0		41.8		100.0

Source: Calculated from IEA Energy Statistics, OECD/IEA, www.iea.org/Textbase/stats/index.asp (accessed February 27, 2009). The website provided no data for Laos.

Table 4. Breakdown of Total Final Consumption, 2006 (%)

	Brunei	Cambo-dia	Indone-sia	Malaysia	Myan-mar	Philip-pines	Singa-pore	Thailand	Vietnam
Industry	13.5	1.4	25.8	40.8	8.3	33.6	7.5	32.9	20.9
Transport	53.6	9.3	18.8	36.8	10.1	31.7	35.8	30.3	15.0
Residential	8.2	86.3	42.0	9.5	76.4	22.4	3.8	14.1	58.7
Commer-cial and Public Services	22.2	0.8	2.6	7.2	0.6	6.9	7.2	4.9	3.8
Agriculture / Forestry		2.2	1.7	0.2		1.1		4.7	1.1
Non-Specified			0.3		3.4	3.2			
Non-Energy	2.5		9.0	5.5	1.1	1.1	45.6	12.9	0.5
Total	100	100	100	100	100	100	100	100	100

Note: Rows may not add up to 100.0 per cent due to rounding errors. Source: IEA Energy Statistics, OECD/IEA, www.iea.org/Textbase/stats/prodresult.asp?PRODUCT=Balances (accessed February 18, 2009)

Table 5. Summary of Energy Flows from ASEAN to Northeast Asia in 2004 (minimum percentage of total imports from ASEAN)

	China	Japan	Korea	Taiwan
Steam coal	63	11	24	36
Coking coal		21		
Crude oil	10	5	6	
Oil products	35	15	11	
LNG		60	50	98

Source: Elspeth Thomson, "ASEAN and Northeast Asian Energy Security: Co-operation or Competition?" *East Asia: An International Quarterly*, Vol. 23, No. 3 (Winter 2006), pp. 67-90.

2. Northeast Asia Energy Cooperation and the Role of China and Japan

Jaewoo Choo*

Introduction – Deepening Energy Interdependence

According to one estimate, Asia, excluding Russia, Central Asia, and the Middle East, holds about 3 per cent of world oil reserves, and 8 per cent of global gas.[1] Notwithstanding its relentless efforts to amend its domestic energy structure and diversify supply channels, East Asia defined here to include Northeast, Southeast and South Asian regions will remain highly dependent on oil and gas supplies from the Middle East. Hence, energy security concern will dominate the foreign policy agenda in many of these high energy consuming nations.

The regional production capacity of oil and gas in the next ten years is anticipated to drop as major East Asian producers such as Indonesia and Malaysia are expected to become net oil importers.[2] As a result, Asian governments have to address the issue of supply with a greater sense of urgency and at a higher political level.

---

* Jaewoo Choo is Chair and Associate Professor of Chinese Foreign Policy at the Department of Chinese Studies, Kyung Hee University, Republic of Korea.

[1] Although Kent Calder does not makes a clear distinction in his definition of "Asia" in his breakdown of its holding of oil and gas on global scale, it is the author's instinct to interpret his implication of the region as in excluding those including Russia, Central Asia, and the Middle East where sumptuous reserves remain to date. Perhaps a geographical concept of East Asia from a consumer's perspective would be a more appropriate term for his argument. Kent Calder, "East Asia and the Middle East: A Fateful Energy Embrace," *China and Eurasia Forum Quarterly*, Vol. 3, No. 3 (November 2005), p. 5.

[2] Kang Wu and Fereidun Fesharaki, "Managing Asia Pacific's Energy Dependence on the Middle East: Is There a Role for Central Asia?" *Asia Pacific Issues* No. 60 (June 2002), p. 2. The Asia Pacific region including Australia and the Pacific Islands relies more than 90 per cent of its oil imports from the Middle East. At the same time, the Middle East accounts well over half the amount consumed in the Asia Pacific (p. 3).

Although there has been growing recognition of Eurasia's role in becoming a significant and viable alternative supplier, particularly from Russia and the Caspian region, it is also acknowledged that Eurasia's potential can only be fully tapped in the distant future.

The Middle East will hence remain a major supplier for the East Asian markets. First of all, the Middle East still holds the world's largest proven oil and natural gas reserves. Second, it is still well-connected to the major Northeast Asian consuming markets as substantiated by their high dependency. Third, the Middle East still holds the reputation for the lowest production costs for hydrocarbon resources.[3] Moreover, at least in the foreseeable future, it will be difficult for Northeast Asia to reduce its energy dependency on the Middle East, and the Gulf states in particular, due to Northeast Asia's distinctive energy features, namely, limited reserves, widening gap between production and consumption, and desire for sustained economic growth.

From an economic perspective, Northeast Asia's continuous high dependency on Middle East oil and gas supply is a natural evolution, "which must be encouraged, not discouraged," because it is the market forces that have produced the emergence of East Asia-Middle East market zone, not government policies.[4] The emergence of such a market nexus is indeed market-driven. Hence oil and natural gas prices are very much driven by the changes in the landscape of the global energy market, in conjunction with diminishing refinery capacity, shrinking spare capacity, and a low level of investment.[5]

However, East Asian governments have increasingly come to view access to energy supplies as a critical national security issue that cannot be properly addressed through, and left entirely to, the free-market system. An increasing number of government officials in the energy policy-making

---

[3] Gawdat Bahgat, "Europe's energy security: challenges and opportunities," *International Affairs*, Vol. 82, No. 5 (2006), p. 961.

[4] Fereidun Fesharaki, "Oil Markets and Energy Security in Northeast Asia," in Michael Stankiewicz, ed., *Energy and Security in Northeast Asia*, Policy Paper No. 35 (Berkeley: University of California Institute on Global Conflict and Cooperation, 1998), p. 18.

[5] Gawdat Bahgat, "Europe's energy security: challenges and opportunities," p. 961.

circles have come to view their countries' energy security outlook in competitive zero-sum terms.

Although there seems to be a growing consensus that Northeast Asia could be much more self-sufficient if security dilemmas and political barriers could be overcome for the sake of intra-regional cooperation,[6] the reality speaks volumes otherwise. Indeed, energy is a double-edged sword. As put forth by Kent Calder, it could deepen the tensions endemic in an area of great-power rivalry with tragically few mechanisms to restrain conflict or, alternatively, dampen them, opening the way for important new forms of collaboration.[7] In the case of Northeast Asia, the former seems closer to reality. Despite numerous calls for regional energy security cooperation, hardly any action follows. The absence of willingness to cooperate on energy security interests is well reflected in the respective states' long-term energy (security) policies, as well as consensual statements adopted by the regional states at regional forums including Asia-Middle East Dialogue (AMED), ASEAN+3, East Asia Summit (EAS), and Asia-Pacific Economic Cooperation (APEC) energy ministerial meetings. A paradox thus emerges: the competitive nature of dependency spurred by security concerns is translated into Northeast Asia's reservations towards energy security cooperation.

This chapter aims to address a simple question: Will Northeast Asian states in general and China and Japan in particular be able to cooperate on the energy security front? To understand Northeast Asia's reservations regarding energy security cooperation, this chapter will first examine the long-term energy policies of the two largest import countries in the region, namely China and Japan, so as to understand why these two governments' public statements on cooperation are merely rhetorical. With this understanding, this author will then attempt to prove how the absence of cooperation in the general security area plays out against energy security cooperation. It will conclude by presenting policy suggestions deemed to

---

[6] Kent E. Calder, "Energy and Security in Northeast Asia's Arc of Crisis," in Kent Calder and Fereidun Fesharaki, *Energy and Security in Northeast Asia: Fueling Security* (Washington, D.C.: Institute on Global Conflict and Cooperation, 1998), p. 5.

[7] Ibid.

be conducive to energy security cooperation in the Northeast Asian context.

Why Still Only Rhetoric?[8]

The term "energy security" essentially means the maintenance of sufficient energy supplies, prices commensurate with purchasing power, and guaranteed safe delivery of energy resources.[9] Hence, in order for the regional states to substantiate their willingness to cooperate in the energy security realm, they must include at least one of the aforementioned aspects of energy security concerns. The inaugural meeting between major Gulf oil producers and Asian oil consumers in January of 2005 produced proposals to consolidate oil and gas cooperation but not in the energy security context.[10] The contents are rather viewed in the context of an Asian petroleum market, mutual cooperation in upstream and downstream sectors, and building strategic petroleum storages.[11]

The Cebu Declaration on East Asia Energy Security adopted on the occasion of the Second East Asia Summit in January 2007, however, went further by "**HIGHLIGHTING [sic]** the fundamental need of countries in East Asia for reliable, adequate and affordable energy supplies which are essential for strong and sustainable economic growth and competitiveness; and CONSIDERING **[sic]** further that the First East Asia Summit had agreed to enhance cooperation by promoting energy security."[12] The adopted measures to follow the Declaration's goals and recognitions hardly addressed cooperation in light of energy security issues. It did mention

---

[8] Analyses on China and Japan were drawn from my earlier work that had been published in "Energy Cooperation Problems in Northeast Asia: Unfolding the Reality," *East Asia: An International Quarterly*, Vol. 23, No. 3 (Fall 2006), pp. 96-100.

[9] Philip Andrews-Speed, "Energy Security in East Asia: a European View," a paper presented at the Symposium on Pacific Energy Cooperation 2003, February 12-13, 2003, Tokyo, pp. 2-4.

[10] Participants from both sides include Iran, Kuwait, Oman, Qatar, Saudi Arabia, the UAE, China, India, Japan, and South Korea.

[11] Gawdat Bahgat, "Energy Partnership: Pacific Asia and the Middle East," *Middle East Economic Survey*, Vol. XLVIII, No. 33 (August 15, 2005), p. 1.

[12] "Cebu Declaration on East Asian Energy Security, Cebu, Philippines, January 15, 2007, http://www.aseansec.org/19319.htm (accessed July 10, 2007).

improving the infrastructure for stable energy supply with limited focus on the ASEAN Power Grid and the Trans-ASEAN Gas Pipeline. It is a progressive improvement in terms of substance, compared to other declarations and statements adopted by AMED, ASEAN+3, APEC energy ministerial meeting, and others alike.

Member states at these multilateral forums seem to have strong reservations toward frank dialogue on the issue of energy security cooperation. This is in part due to a lack of confidence because they perceive each other as competitors, and in part because their external stance on the issue is an extension of their domestic posture. The latter case is especially well presented in their long-term energy policies. In particular, the two regional giant consumers of oil and gas, namely China and Japan, still prefer to address their energy security interests bilaterally, rather than multilaterally.

It is important to clarify the distinction between energy security cooperation and general energy cooperation. Energy security cooperation refers to cooperation over energy issues that are perceived to have a direct impact on a state's national security. Cooperation in energy security means actual cooperation in securing energy supply at an economical (affordable) rate without disruption, and guarantee of safe deliveries of energy resources. However narrow and limited the scope and range of cooperation may be, the concept of energy security cooperation is exclusive and straight forward. It is exclusive in that it does not account other areas that are defined in what I termed as "General Energy Cooperation." It is not concerned with technology and climate related issues, environmental consequences of energy consumption, and others alike. The focus is instead all about exploration, development, production, and transportation. It is straight forward because it is basically in direct concern of securing energy supply and transportation routes. General energy cooperation on the other hand refers to cooperation in efficiency, technology, and environment issues in the energy sector and these have been visible and on-going.

China

China's energy structure and conditions are pressing. Beijing realizes the compelling need to plan for sufficient fuel to sustain its long-term economic growth, alleviate ensuing changes in its social sphere (i.e., rising car ownership, growing use of home electrical appliances), and reform its

energy industry. In order to meet these challenges, long-term energy policy and strategy reports were drafted starting in 2001. The different emphases of these reports reveal the limited capacity of the government and competing energy interests to pursue a national energy security strategy. They turned out more to be indicative than effective "grand plans."[13] While both the 2001 and 2003 reports focused on oil and gas, the 2004 report primarily targeted domestic supply and demand,[14] i.e., maximizing domestic supply and improving energy conservation, both of which require better planning and coordination among different sectors of the economy. It called for a centralized "authoritative institution" to make national energy policy.

Despite the numerous efforts, there is one underlying significant problem in all these reports: the goals are laid out without direction, priority, and orientation for cooperation in energy security.[15] It is indeed difficult to incorporate all the necessary criteria in a long-term energy policy, but the Chinese government is not generous in giving attention to the issue of cooperating with other needy countries, be they regional neighbors or distant transit nations. When it comes to identifying potential cooperative partners, Beijing's emphasis on cooperation is narrow and selective in scope. Most "partners" are current energy producers, countries with energy production potential, or transit nations which are within its geographi-

---

[13] Xu Yi-chong, "China's Energy Security," *Australian Journal of International Affairs*, Vol. 60, No. 2 (June 2006) pp. 265-86.

[14] The policy reports are: Zhu Rongji, "Report on the Outline of the 10th Five-Year National Plan of Economics and Social Development," Delivered at the Fourth Session of the Ninth National People's Congress on March 5, 2001, available at: http://english.peopledaily.com.cn/features/lianghui/zhureport.html (accessed March 22, 2001); Development Research Center, The State Council, *China's National Energy Strategy and Policy 2000-2030*, November 2003, http://www. efchina.org/documents/Draft_Natl_E_Plano311.pdf (accessed January 29, 2004); and The State Council, Nengyuan changqi fazhan guihua gangyao [Energy long-term development plan outline], 2004-2020, June 30, 2004.

[15] The latest of such is also found in the Chinese energy white paper from 2007. Zhongguo guowuyuan xinwen pangongshi [Chinese State Council News Bureau], *Zhongguo de nengyuan zhuangkuang yu zhengce* [Current Status of China's Energy Situation and Policy], December 26, 2007, http://www.sdpc.gov.cn/zcfb/2007tongzhi/W020071227502848725829.pdf (accessed February 3, 2008).

cal proximity, i.e., Kazakhstan, Pakistan, India, ASEAN, and Russia.[16] None of the long-term reports on Chinese energy security addresses the issue of cooperation with regional states in Northeast Asia. Thus, despite the chronicled rhetoric by Chinese officials about the necessity for energy cooperation in ASEAN, APEC, and Asian Cooperation Dialogue (ACD), Chinese words and action do not tally.

The last time China made explicit reference to regional cooperation in Northeast Asia in an official document was perhaps in 1999, with nothing similar thereafter.[17] Since then, the official policy has been self-oriented, self-centric, self-helping, and to an extent selfish by neglecting the calls for cooperation at governmental level made by other regional players. In 2004, for instance, when China was invited to an inaugural ministerial level talk on energy cooperation at the regional level initiated by the Korean government, it totally neglected it without due explanation.[18] Japan did the same as will be discussed later.

---

[16] 2005 *nian guoneiwai nengyuan zhengce zongshu* [2005 domestic and foreign energy policy summary], p. 3, http://nyj.ndrc.gov.cn/gjdt/t20060331_64917.htm (accessed June 24, 2006).

[17] See *Guojia jiwe hongguan jingji yanjiuyuan ketizhu* [Assignment Group, Macroeconomic Research Institute, National Planning Commission], *Zhongguo changqi nengyuan fazhan zhanlue yanjiu zongbaogao* [Comprehensive Report on China's Long-term Energy Development Strategy Studies], pp. 28, 46, http://www.arm.gov.cn:8080/xszz.nsf/aa677dcef4839b0482568400021 (accessed July 19, 2006).

[18] The Korean Ministry of Industry and Natural Resources, in collaboration with the UN ESCAP initiated the meeting in 2004. Only South and North Korea, Mongolia, and Russia were represented by their respective ministers. The second meeting in November 2005, in Ulaanbaatar, Mongolia, however, was represented by high governmental officials from the four nations while China, Japan, and the U.S. came as observers. The meeting was held under the "First Session of Senior Officials Committee on Energy Cooperation in Northeast Asia." In the end, it officially launched an "Inter-governmental Collaborative Mechanism on Energy Cooperation in Northeast Asia." The meeting also produced the so-called "Working Group on Energy Planning and Policy (WG-EPP)" that was held in May 2006 in Thailand, with official participation from South and North Korea, Mongolia and Russia, with China and the U.S. as observers. See *ENB Newscenter,* May 16, 2006, http://www.ebn.co.kr/search/s_view.html?id=244955&keys=%C0%FC%C3%BC%B4%BA%BD%BA&kind (accessed June 19, 2006); and Jaewoo Choo, "Energy Security and

As such, China's indifferent attitude to cooperation with neighboring states was once again reiterated in the 2006 Working Report (*Gongzuo baogao*), delivered by Vice Premier Zeng Peiyan to the People's Congress in March 2006.[19] China's potential and existing energy challenges were reflected as follows:[20]

- Sustained strong energy demand that places pressure on supply;
- Shortage in resources that limits the growth of the energy industry;
- Coal-centered supply structure that is detrimental to the environment;
- Backward technologies that inhibit efficient supply of energy;
- International market fluctuations that negatively impact domestic energy supply.

To overcome these challenges, the Report listed these strategies: (1) develop multiple oil import sources and import locations by increasing imports from Russia and Central Asia; (2) raise the proportion of crude oil imports from areas other than the Middle East so as to achieve diversification of energy suppliers; (3) prepare against unexpected interruption of oil supplies by building strategic oil reserves; (4) promote and strengthen regional and bilateral energy cooperation with energy-producing nations; and (5) participate in the Energy Charter Treaty. Once again, China's attitudes regarding cooperation in Northeast Asia are conspicuously missing. At the governmental level or Track I level, China is simply not interested in cooperating with the Northeast Asian oil importing nations.

There are perhaps several causal factors. China's desire to counteract the rapid growth in oil consumption and demand may be the top priority. Bei-

---

Cooperation in Northeast Asia," *Korea Journal of International Studies*, Vol. 44, No. 1 (2004), p. 213.

[19] The Chinese Communist Party's official stance was confirmed on December 27, 2005 as the same. See *Dangqian woguo nengyuan xingshi yu nengyuan anquan wenti: zai shijie chuanguo renda changweihui dishijiuci huiyishang Zeng Peiyan fuzongli baogao* [Our Nation's Current Energy Situation and Energy Security Problems: Vice Premier Zeng Peiyan's Report at the 10th Plenary National People's Congress Standing Committee's 19th Conference]," http://nyj.ndrc.gov.cn/zywx/t20060123_57786.htm (accessed June 23, 2006).

[20] Wenran Jiang, "China's 'New Thinking' on Energy Security," *Alexander's Gas & Oil Connections*, Vol. 11, No. 9, http://www.gasandoil.com/goc/news/nts61820.htm (accessed June 28, 2006).

jing may think it can secure energy resources more efficiently by strengthening relationships with energy-producing nations on its own, rather than trying to collaborate with rivals. Perhaps, without a formal ministry, China has had difficulties in learning about cooperation possibilities and may thus inadvertently ignore them. Without redefining and reconceptualizing the idea and meaning of energy cooperation in Northeast Asia, regional cooperation in any realm is impossible without China's active participation.

Japan

In June 2006, based on *The Basic Energy Plan of 2003* and *The Basic Energy Policy of 2004*, Japan finally released its first long-term national energy policy entitled "New National Energy Strategy (NNES)."[21] It was prepared out of concerns for the future scarcity of fossil fuels and against the peak-production-theory. It posits firstly that Japan will face the strong possibility that "fossil fuel supplies and energy politics will be fraught in the coming years,"[22] and secondly that global oil output "will peak in 2050 and natural gas output will reach its zenith in 2100."[23] Due to external and internal factors that will cause energy prices to rise, a "very tight squeeze" between demand and supply will be protracted.[24] Driven by the specter of another oil crisis, the global rush for energy resources and a simmering gas dispute with China, the NNES was published amid fears about

---

[21] Already in 2003, the Japanese government gave top priority to energy security, ensuring stable energy supplies and confirming nuclear power as the nation's key energy source. For a critique of The Basic Energy Plan, see "Basic Energy Plan: No Reflection on the Past, Remaining Longstanding Government Policy," *Kiko Network News*, Vol. 32 (September 2003).

[22] Hisane Masaki, "Japan's New Energy Strategy," *Japan Focus*, December 19 2006, http://www.japanfocus.org/-Hisane-MASAKI/2294 (accessed March 1, 2009).

[23] Shigeru Sato, "Japan Creates Long-Term Plan for Its Energy Sources and Usage," *Wall Street Journal*, September 14, 2005, p. B3H.

[24] The internal factors were the unusually cold weather and subsequent rise in the cost of heating oil, winter vegetables and other products. The external factors were systemic problems such as the robust economic growth of two large states (China and India), the shrinking margins of spare production capacity by the major oil producers, and economic challenges to developing new resources. See Hisane Masaki, "Japan's New Energy Strategy."

whether the nation will be able to ensure oil and other energy supplies to fuel its economy.[25]

The aims of the NNES are threefold: (1) to establish energy security measures that the Japanese people can trust; (2) to establish a foundation for sustainable development through a comprehensive solution combining both energy and environmental issues; and (3) to commit to assist Asian and world nations address the energy problem.[26] Other goals are to boost upstream investment, add refined products to the government's strategic oil stockpiles, and reduce the country's oil dependency.[27] There are three points the report emphasizes as fundamental: First, the establishing of a state-of-the-art energy supply-demand structure. Second, the goals are expected to be realized by strengthening diplomatic efforts and comprehensive measures to address energy and environmental issues. Third, improving emergency measures is critical. By coordinating public and private organizations, the following five specific long-term targets are to be attained jointly by the government and private entities: [28]

- Another 30 per cent improvement in efficiency by 2030;
- Reduction of dependence on petroleum to lower than 40 per cent in 2030;
- Reduction of dependence on petroleum in the transport industry to around 80 per cent by 2030;
- Maintain nuclear power as a proportion of total power production at 30 to 40 per cent until 2030 or beyond;

---

[25] Ibid.

[26] "New National Energy Strategy," Standing Group on Long-Term Cooperation Round Table - Japan, June 2006, http://www.iea.org/Textbase/publications/free_new_Desc.asp?PUBS_ID=1013 (accessed June 24, 2006).

[27] Takeo Kumagai, "Japan Finalizes New Energy Strategy to 2030," *Platt's Oilgram* News, Vol. 84, Issue. 104 (June 1, 2006), http://construction.ecnext.com/coms2/gi_0249-150707/Japan-finalizes-new-energy-strategy.html (accessed June 30, 2006).

[28] "New National Energy Strategy," Standing Group on Long-Term Cooperation Round Table - Japan, June 2006, http://www.iea.org/textbase/papers/roundtable_slt/slt_japan.pdf#search=%22%22New%20National%20Energy%20Strategy%22%22 (accessed July 1, 2006); Ministry of Economy, Trade and Industry of Japan, "New National Energy Strategy (Digest)," May 2006, http://www.enecho.meti.go.jp/english/newnationalenergystrategy2006.pdf (accessed June 27, 2006).

- Increase the self-development ratio of overseas natural resources development to around 40 per cent by 2030.

The NNES notes that the goal to secure natural resources abroad will be realized by actively pursuing more equity production by strengthening relations with oil/gas producing countries. One of the most prominent measures adopted by the NNES is the provision of technical assistance beyond the energy sector (i.e., official development assistance and economic cooperation) as well as by increasing overall "investment" in those countries.[29] To enhance the investment capacity of the Japanese firms in the equity participation of foreign energy sources and companies, the Japanese government is now aiming to raise the participation limits on the government-owned Japan Oil and Gas and Metal National Corporation (JOGMEC) in upstream projects from the current 50 per cent.[30] In addition, it has also been steering Japan's overseas upstream investment policy towards more proactive participation by Japan National Oil Corporation (JNOC) in exploration and development overseas for a percentage of production.[31]

One salient example is when Japanese gas companies Osaka Gas, Tokyo Gas and Chubu Electric were able to purchase gas from the Chevron-led Gordon LNG project in Australia, which was already being lined up by the Chinese state-owned China National Offshore Oil Corporation (CNOOC). The case was entangled in a heated competition in which CNOOC appeared to be closing in as the favorite. However, in the end, Japan was able to "steal in secure" supply of their Chinese rivals.[32] As Japan prepares to offset the dominance of oil against cleaner-burning natural gas and raise the proportion of natural gas in the total energy supply from 13.5 per cent in 2000 to 17.8 per cent in 2030, the competition between the two countries to secure natural gas has recently intensified.

---

[29] Kumagai, "Japan Finalizes New Energy Strategy to 2030," p. 6.
[30] Ibid.
[31] "Japanese Energy Policy Focuses on Supply Security," *Oil & Gas Journal*, February 28, 2005, p. 103.
[32] As a result, Osaka Gas and Chubu Electric will each get 1.5 million tons/year over 25 years beginning around 2010, and Tokyo Gas will get 1.2 million tons/year. "Tokyo's Global LNG Ambitions," *Petroleum Economist*, February 2006, p. 1.

As reflected in the contents of the long-term energy policy, Japan does indeed seem to regard domestic measures as more viable than foreign ones. Its foreign activities in relation to energy security have been somewhat unorthodox: engaging in steep competition with rivals, notably China, and apathetic to cooperation for territorial sovereignty reasons. Apart from some cases of energy technology cooperation for the enhancement of energy efficiency and environmental cooperation, Japan has been relying on a politically unilateral approach to secure untapped energy resources in Northeast Asia.

The NNES and other related documents seem also to limit the scope of cooperation with energy producing nations and regions. Whether deliberate or not, omitting mention of cooperation with regional rivals to secure better energy supply from Russia and other regions including the Middle East is clearly indicative of Japan's current stance on this issue. What is more perplexing in the eyes of many observers is the contrasting support for regional institutions at a broader regional level. For example, Japan has been proactive in promoting energy cooperation in Southeast Asia and the Asia-Pacific region as well as the Middle East. Perhaps the territorial dispute with Russia over the Kurile Islands is the major obstacle impeding regional energy cooperation in Northeast Asia. Until it is settled, perhaps Japan does not want a third party's involvement in its handling of energy issues with Russia and Siberia in particular. It may still prefer to deal with Russia in bilateral terms.

Independent Security Pursuit and Reservations over Cooperation

For understanding the limited prospects of multilateral energy cooperation among Northeast Asian actors, it is necessary to provide an account of the broader security and strategic background of the region. Northeast Asia is one region in the world that has yet to have a security forum on a multilateral basis, whether formal (Track I) or informal (Track II). The Northeast Asia Cooperation Dialogue (NEACD) was launched in the early 1990s but has yet to evolve into the form that it once foresaw and expected at the outset. It was designed to transform into a security dialogue venue, presumably known as "Northeast Asia Security Dialogue (NEASD)." There was little interest in security cooperation until the so-called Six-Party Talks were formalized in 1996 with the aim of discussing peace and

stability matters on the Korean Peninsula. However, the talks lost momentum two years after its formal start. It came to a halt because of North Korea's insistence on holding bilateral talks on issues such as replacing the 1953 Korean armistice with a new peace agreement.

Northeast Asia today has a multilateral security cooperation venue in the form of the Six-Party Talks, which was organized and run with one goal: To peacefully solve the second nuclear crisis of North Korea. It is the first time in the history of the region that all the Northeast Asian states were able to formalize a consensus on the need to address the issue collectively. These regional states include the two Koreas, China, Japan, Russia, and the United States. Reasons for the successful launch of the talks are complicated. No single factor can sufficiently explain why all the regional states were willing to come together to hold such talks. Perhaps their desire not to see the North develop nuclear weapons is one fundamental factor. However, they were not able to do this during the first North Korean nuclear crisis in 1993.

Certainly, changes in the attitudes of North Korea and the U.S. to approaching the matter in the multilateral context played a key role in the fruition of the Six-Party Talks.[33] In addition, China's willingness to host and organize the talks was vital, in contrast to its by-stander posture during the first nuclear crisis. Japan's grave concerns over the North's nuclear development program also led it to change its stance towards a multilateral approach. Russia's strategic calculation whereby it saw the venue as an opportunity to regain its position and influence in the region had an impact on its decision to participate in the talks. Moreover, the complex nature of North Korea's nuclear ambition played a critical role in inducing all the regional states to participate in the multilateral talks. The North Korean nuclear challenge is no longer perceived as a nuclear weapons issue *per se*, but rather as a more comprehensive problem of North Korea.[34] That is, the North's nuclear card is not about nuclear weapons, but a bargaining

---

[33] Michael E. O'Hanlon, "A 'Master Plan' to deal with North Korea," *Policy Brief*, No. 114 (Washington, D.C.: The Brookings Institution, January 2003), p. 2.

[34] Zhu Feng, "*Liufang Huitan: Chaoxian Wenti Haishi Chaoxian Hewenti*?" [Six-Party Talks: Is it a North Korean problem or North Korean nuclear problem], *Guoji Zhengzhi Yanjiu* [Studies of International Politics], No. 3 (2005), pp. 28-38.

card for national survival, which would be costly and burdensome to a single state, if it were to handle the matter on its own.

As can be seen, the lone multilateral security cooperation forum in Northeast Asia is crisis-driven. Grave security concerns over the uncertainties and unpredictability in the North's behavior with alleged nuclear capability drove the regional states to come together. The fear factor over the North's potential to proliferate nuclear weapons technology and possible arms race among the regional states upon the confirmation of the North's nuclear capacity united them towards a multilateral solution. Hence, preventive diplomacy is not in place in the strategic thinking of the regional states. Had a crisis prevention concept been at work, multilateral security cooperation would have developed much earlier.[35]

Unfortunately for Northeast Asia, security is considered a sacred concept in the context of multilateral cooperation and is often attributed to the lack of trust and confidence among the regional states. The lack of trust is due to a number of reasons: Animosity embedded by the nightmarish experience of Japanese imperialism will remain as one critical factor as long as Japan fails to provide a formal apology for its past actions. Another factor is political and ideological at its roots – under the bipolar system, nations were deeply divided in ideologies that were uncompromising and incompatible with the political systems of their neighboring states.[36] This endorsed the notion that governments with starkly contrasting ideologies (i.e. communism versus democracy) are less likely to cooperate in lieu of shared norms and values. Under these circumstances, the chances for na-

---

[35] Niklas Swanström, "Concluding Thoughts," in Niklas Swanström, ed., *Conflict Prevention and Conflict Management in Northeast Asia* (Uppsala: The Silk Road Studies Program, 2005), p. 257.

[36] Aaron Friedberg, "Ripe for Rivalry: Prospect for Peace in a Multipolar Asia," *International Security*, Vol. 18, No. 3 (Winter 1993/4), pp. 5-33; Richard K. Betts, "Wealth, Power, and Instability: East Asia and the United States after the Cold War," *International Security*, Vol. 18, No. 3, pp. 34-77; Charles A. Kupchan, "After Pax Americana: Benign Power, Regional Integration, and the Source of Stable Multipolarity," *International Security*, Vol. 23, No. 2 (Fall 1998), pp. 62-66; Gerald Segal, "East Asia and the Containment of China," *International Security*, Vol. 20, No. 4 (Spring 1996), pp. 107-35; and Douglas T. Stuart and William Tow, *A US Strategy for the Asia-Pacific: Building a Multipolar Balance-of-System in Asia*, Adelphi Paper, No. 229 (London: International Institute for Strategic Studies, 1995).

tions with different political values and ideologies to build confidence and trust are significantly reduced.

Moreover, the gap in economic development among the regional states raises zero-sum thinking as part of their survival strategy. The weaker states would perceive the gains by the stronger neighbors as being at their expense. Vice-versa, the stronger states would regard cooperation among the weaker states as being against their interest.

Nevertheless, there is one vital factor that will not be overcome even if all the aforementioned factors diminish. It is embedded in the traditional way of perceiving one's sovereign rights. In particular, the notion of territorial sovereignty has long been regarded by all Northeast Asian states as the loftiest right for a state's existence. When a state's national security is under threat, the integrity of its territory is perceived to be at stake. Traditionally speaking, the regional states, to date, prefer to defend their territorial sovereignty right independently without relying on external assistance. An alternative strategy, when a state is incapable of doing it on its own, is through an alliance. The number of states in such an alliance would usually not exceed two, including the state that is in need of alliance. Cooperation with a multiple number of states is usually regarded as an unfavorable strategic option incompatible to the regional actors' orthodox understanding and interpretation of sovereign rights of a state.

Northeast Asian states all have a firm belief in the righteousness and loftiness in the self-defense of security and security interests in particular. Discussions and negotiations for the purpose of "peacefully" achieving these ends are acceptable and permissible on a bilateral basis. They are, however, not accustomed to multilateral discussions simply because they do not trust one another. Hence, Northeast Asian states still have a strong propensity to pursue security and security interests on their own.

Such a conservative conceptualization of security explains the lack of enthusiasm towards multilateral cooperation in the energy security realm by the Northeast Asian states. While smaller and weaker states like South Korea would like to see regional energy security through multilateral cooperation, the big regional powers are less willing to do so as of yet. Those against cooperation in energy security still perceive and understand the concept of energy security in zero-sum terms. Such conviction is mutually

shared in the policy circles of Japan and China. Japan, like many others, is convinced that its share in the international energy market is threatened by China's drastically rising demand for more oil and gas, leading to the rise of energy prices.[37] Furthermore, grave concerns on the part of Japan have also arisen due to China's assertive and aggressive overseas energy deals that are orchestrated by the central government.[38] In other words, Tokyo does not feel secure with its energy security interests as China's portfolio in the international energy market has rapidly increased.

On the other hand, China is not comfortable with its energy security as its external dependence is becoming a critical concern to the sustainability of its economy, which continues to record high growth rates. By sheer economic size, China has already surpassed Germany to become the third largest economy in the world in terms of Gross Domestic Production (GDP), becoming the second largest oil consumer and importer in the process. It is expected to surpass the U.S. in these categories, by 2025. Oil and gas is becoming a scarce commodity as the world continues to strive for sustainable growth. Sustainable growth in other regions and countries is already taking a toll on the energy fronts. As countries achieve higher economic growth, they consume more energy because improvement in the quality of life in these countries requires more electricity, fuel for transportation, and other basics for household consumption such as air-conditioning and gas stoves. Just like Russia, Middle Eastern states, and India, China has become a greater stakeholder in the competition for energy security. China has been in steep competition against Japan in regions such as Siberia and Far East Russia, Central Asia, and the Middle East.[39] In particular, China and Japan are competing fiercely for Russian resources because of the cost-effect merits resulting from geographical proximity.[40]

---

[37] James Tang, *With the Grain or Against the Grain?: Energy Security and Chinese Foreign Policy in the Hu Jintao Era* (Washington, D.C.: The Brookings Institution, October 2006).

[38] Peter Cornelius and Jonathan Story, "China and Global Energy Markets," *Orbis*, Vol 51 (Winter 2007), pp. 5-20; and Mathew E. Chen, "Chinese National Oil Companies and Human Rights," *Orbis*, Vol. 51 (Winter 2007), pp. 41-54.

[39] Xu Yi-chong, "China's energy security," *Australian Journal of International Affairs*, Vol. 60, No. 2 (2006), pp. 281-84.

[40] Jaewoo Choo, "Energy Transportation Security and Korea's Response," *East Asian Review*, Vol. 20, No. 3 (Fall 2008), pp. 55-79.

China and Japan in 2008 did agree to conduct joint development in oil and gas in the disputed East China Sea.[41] However, it is too early to make a proper assessment of this agreement's significance since the details of the agreement remain largely undisclosed. A preliminary judgment offered here by this author is that this agreement does not reflect a significant change in attitude between China and Japan towards their positions on energy security cooperation. This is because the agreement only covered a small area of the disputed territory and the two parties have yet to resolve their overlapping territorial claims in this area.

The two regional powers have yet to initiate any concrete actions on the willingness to engage on the issue of regional multilateral energy security cooperation. While recognition and concerns on the need for such cooperation have been well addressed by the two governments, concrete measures towards such cooperation will not come to fruition in the foreseeable future. This is partly because they perceive energy security as a security issue and there has not been any precedent of the two engaging in security cooperation. Pessimism towards regional energy security cooperation is further enhanced by the fact that both China and Japan see each other's international energy diplomacy in zero-sum terms. As long as such an attitude prevails in the government and policy circles of these two states, the likelihood of multilateral energy security cooperation in Northeast Asia will be low.

Conclusion and Policy Recommendations

Will Northeast Asian states in general and China and Japan in particular be able to cooperate on the energy security front? The policy reviews of these two countries do not indicate so. Neither do the empirical studies of their behavior say so. China and Japan both think of energy security in *security* terms, and not *economic* terms. Both consider access to energy supplies within narrow security calculations and in the framework of strategic thinking. It is now elevated to the interest of the nation's foremost goal, that is, sustainable growth. Such thinking basically drives these two nations to regard each other as competitors, instead of partners with po-

---

[41] "Expert: Agreement on East China Sea development flexible and pragmatic," *Xinhua*, June 18, 2008.

tential for cooperation. Hence, zero-sum thinking prevails in their approaches to energy security. Moreover, they have yet to cooperate on the security front at the regional level, not to mention in a multilateral context, the only exception being the Six-Party Talks. As long as these two regional powers remain unwilling to cooperate in the security realm, energy security cooperation based on multilateralism is unlikely and unrealistic.

Nonetheless, a few suggestions could be inferred from other precedents. The first recommendation is that policy options for Northeast Asia could be drawn from the experiences of other precedents and the lessons of other states and regions like the EU. To ensure economic and stable supply of sources, the idea of creating a free trade area can be embraced. Such an attempt, albeit yet to be materialized, lies in the EU's efforts with the Mediterranean region. "The Euro-Mediterranean Energy Partnership" between the EU members and thirteen countries of North Africa and the eastern Mediterranean[42] is expected to serve as an action plan to develop a free trade area by 2010 with particular attention to the energy market. The Barcelona Declaration, with which the partnership was launched in November 1995, set out three main objectives for the partnership:

- The creation of a common area of peace and stability;
- The construction of a zone of shared prosperity through an economic and financial partnership;
- The development of human resources, the promotion of understanding and the rapprochement and exchange of peoples.[43]

While the first objective may seem like a goal out of reach for Northeast Asia for historical reasons, the second objective has consensus as reflected in the Cebu Declaration on East Asia Energy Security as well as the AMED and Asia-Middle East Energy Partnership. This may also contribute to the reduction, or perhaps removal, of Asian premium. The third objective is feasible for Northeast Asia, too, since such exchanges are not regarded as a threat to national security by the governments.

---

[42] 13 Mediterranean countries include Algeria, Cyprus, Egypt, Israel, Jordan, Lebanon, Libya, Malta, Morocco, the Palestine Authority, Syria, Tunisia, and Turkey.

[43] Suzan Benedicte, *The Barcelona Process and the European Approach to Fighting Terrorism* (Washington, D.C.: The Brookings Institution, 2003), p. 2.

The second recommendation is that Northeast Asian actors should focus on the role of extra-regional cooperation, with Northeast Asia collectively engaging other international and regional regimes such as the Gulf Cooperation Council (GCC) and OPEC.[44] These members together hold the world's largest proven oil and gas reserves, and the world's spare oil-producing capacity is almost exclusively concentrated in Saudi Arabia. Northeast Asia will, however, remain the preferred destination of most Gulf oil as the EU and the United States will continue to seek alternative supply of sources to reduce their heavy dependence on the Middle East. Hence, given the geological and logistical advantages, the Middle East will in the foreseeable future always be a critical player in Northeast Asia's energy policy. Multilateral cooperation with such oil producing cartels or a regime comprised of energy resources producers can be a litmus test to Northeast Asia's collective and multilateral engagement with other alternative sources, namely Russia and Central Asia.

The third recommendation is that collaboration at the governmental level must be promoted since the role played by Asian governments will remain very vital to the cause of ensuring energy security in the respective Asian states. Its role should be carried out in a parallel fashion with the private sector in dealing with energy producing nations. For multilateral energy security cooperation to occur, a finely balanced political framework is required, in which the private sector can secure profitable business opportunities and help enhance the national interests of their respective governments. Thus, close cooperation, policy co-ordination, and dialogue between the public and private sectors of energy consuming nations are as critical as engagement with the energy producing nations.

---

[44] The GCC was created in 1981, comprising of six states: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.

3. Recent Developments in the Structuration of the Central Asian Hydrocarbon Energy Complex

Robert M. Cutler*

Introduction

This chapter reviews recent developments in the Central Asian hydrocarbon energy complex as of January 2009. Central Asia is taken to signify the five former Soviet republics of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan.[1] Only Kazakhstan and Turkmenistan have energy resources of sufficient significance to be strategic on the Eurasian level. Uzbekistan is an important gas producer for itself and Central Asia. The discussion here therefore focuses principally on the first two countries, with some reference to the third. Naturally, the geo-economic implications of developments for regions beyond Central Asia are an integral part of that discussion, representing its Eurasian and global significance.

Three phases in the evolution of energy geo-economics in Central Eurasia have already been completed. The first (1989-1994) was characterized mainly by a focus on oil, principally in the South Caucasus but also with reference to the North Caucasus and offshore Caspian and Black Seas, plus Turkey as a transit country. The second (1995-2000) was marked by a still higher role for Turkey as a transit country and by deepening plans for interconnections between Southwest Asia and Southeast Europe, as well as by the first sketches of projects heading eastward to China. The third (2001-2006) saw further development of plans for transshipment routes

---

* Robert M. Cutler is a Senior Research Fellow in the Institute of European, Russian and Eurasian Studies, Carleton University, Canada. He can be reached at rmc@alum.mit.edu and http://www.robertcutler.org.

[1] The Library of Congress system is used for transliteration from the Russian, and other standard systems for other vernaculars (thus "Berdimuhammedov" for the president of Turkmenistan rather than the Russian-based "Berdymukhammedov"), except when everyday usage has consecrated a familiar spelling in the English orthography.

across the Black Sea and into China, as well as increased attempts by Russia to corner the market as much as possible on Central Asian natural gas.

These represent the phases of development denoted in the study of complex systems ("complexity science") as emergence, autopoiesis, and coherence in the evolution energy geo-economics in Central Eurasia.[2] And that is also the periodization of the evolution of energy geo-economics in the Southwest Asian theater of Central Eurasia. In the Central Asian theater, it is slightly more nuanced. Since this region was torn until 1994 variously by civil war, the lack of definition of the status of Red Army (ex-Soviet) military, and complications of the financial ruble zone vs. attempts to establish stable national currencies, the phase of emergence of energy geo-economics in Central Asia proper falls only in 1995-2000, and that of autopoiesis in 2001-2006. The current phase, beginning in 2007 and stretching provisionally to 2012, is the phase of coherence.

This chapter therefore covers principally the contemporary period, i.e., beginning with the 2006-2007 transition. Its first part addresses Kazakhstan's energy resources, in particular the offshore Kashagan oil-and-associated-gas deposit, and it discusses outlets for Kashagan's gas and then for its oil. Kashagan's centrality and the various possibilities for bringing its reserves to market lead the discussion then to the gas and oil in the Tengiz field. Other Central Asian gas resources are treated in the second part of the chapter, beginning with possibilities for Turkmenistan to participate in the new trans-Caspian pipeline project, then moving to discuss Kazakhstan's Karachaganak field and other elements in the Cen-

---

[2] Autopoiesis is the capacity of complex systems, and especially complex adaptive systems, to set their own goals through progressive interaction with their environment and through learning in response to this. See among others: John Holland, *Hidden Order: How Adaptation Builds Complexity* (New York: Perseus Books, 1996); also Robert M. Cutler, "The Paradox of Intentional Emergent Coherence: Organization and Decision in a Complex World," *Journal of the Washington Academy of Sciences*, Vol. 91, No. 4 (Winter 2006), pp. 9–27, also at http://www.robertcutler.org/download/pdf/ar07jwas.pdf (accessed February 4, 2009). For distinctions among Central Asia (the five former Soviet republics), Greater Central Asia, Central Eurasia, and other constructs see Robert M. Cutler, "US-Russian Strategic Relations and the Structuration of Central Asia," *Perspectives on Global Development and Technology*, Vol. 6, No. 1–3 (2007), pp. 109–25, also at http://www.robertcutler.org/download/pdf/ar06pgdt.pdf (accessed February 4, 2009).

tral Asian gas picture, not neglecting Uzbekistan. The third part of the chapter looks further west and east, assessing the competition between the South Stream and Nabucco projects to Europe and, separately, possibilities for increasing China's consumption. A brief conclusion then follows.

Kazakhstan: The Kashagan and Tengiz Deposits

Kashagan Oil and Gas

The Kashagan field in the Kazakhstani sector of the Caspian Sea remains the largest oilfield discovered since Prudhoe Bay, Alaska, in 1968. Measuring 45 by 75 kilometers, two and a half times the size of the nearby and better-known onshore Tengiz field, it is routinely ranked as the fifth or sixth biggest in the world and has the largest reserves of any oilfield outside the Middle East. These reserves are currently estimated at 38 billion barrels, of which up to 13 billion are judged recoverable. When the Kashagan oil strike was first confirmed in 2000, the original start-up date for production was set for 2005; it was then delayed by the consortium dominated by Western companies to 2008, and then again to 2010. Ratcheted back several times over the years, the year 2013 is now finally established.[3] As Kazakhstani law will subject the members of consortium to fines and penalties otherwise, this is likely to be definitive.

Kazakhstan holds the Western partners responsible for the failure of the Kashagan field to enter into production, yet a combination of formidable technical obstacles has delayed the field's entry into production. For example, temperature extremes range from –30 to +40 degrees Celsius (–25 to +100 Fahrenheit). The waters are shallow, generally no more than three to four meters deep, and they freeze over for at least four months of the year on average. In addition, the reservoir itself is rather deep and under very high pressure. Moreover, the sulfur content is estimated to be between 16 and 20 per cent, and would corrode pipelines if not treated and removed beforehand.[4]

---

[3] Robert M. Cutler, "Kashagan Leads Kazakhstan to Increase Trans-Caspian Oil Exports," *CACI Analyst*, July 9, 2008, pp. 3-5.

[4] "Facts about Kashagan Oilfield," *Reuters*, September 6, 2007.

The gas as well as the underlying oil have high sulfur content and are under extremely high pressure under its overlying dome. The companies also cite the difficulties of extracting resources in shallow water with drifting ice during the winter. Also, Kazakhstani environmental law requires that the associated gas be captured rather than flared, and it also has provisions requiring appropriate care be taken so as not to damage the environment, including delicate, protected plants and animals. However, all of these conditions were known when the strike was confirmed in 2000; and although it is true that there are significant technical obstacles to the development of the field, nevertheless means exist to overcome them.

In early November 2007, Kazakhstan's president Nursultan Nazarbaev signed a bill passed by the country's parliament that would allow the government to change or revoke natural resource contracts deemed to threaten national security.[5] At the time, this was assumed to be merely a means to put pressure upon the consortium of mainly Western oil companies developing the Kashagan deposit in the Caspian offshore. Indeed, following his approval of the bill, negotiations between the government and the consortium members accelerated. On January 13, 2008, the Kashagan consortium agreed the new deal with Kazakhstan. In particular, the current Kashagan exploration consortium for developing the field will be converted into a new entity in which the Kazakhstan state company KazMunaiGaz (KMG) will hold a plurality stake of 16.81 percent while the share held by each of the largest Western shareholders (Eni, ExxonMobil, Royal Dutch Shell, and Total) will fall to 16.66 percent. Two other, more minor investors (ConocoPhillips and Inpex) will also see their shares reduced. KMG will actually hand over the (rather low) sum of US$1.78 billion in payment for shares from the Western partners only after the current exploration consortium disappears on schedule in favor of the newly agreed production consortium.[6]

---

[5] Saule Akhmetova and Samat Daumov, "Review of the Law of the Republic of Kazakhstan 'On Introduction of Amendments and Supplements to the Law of the Republic of Kazakhstan "On Subsoil and Subsoil Use"'," *Mondaq*, January 14, 2008, http://www.mondaq.com/article.asp?articleid=55592 (accessed February 4, 2009).

[6] Nariman Gizitdinov and Lucian Kim, "Eni-Led Group Cedes Kashagan Oil Stake to Kazakhstan," *Bloomberg News*, January 14, 2008.

The new agreement maintains the year 2041 as the end date for the project, rejecting the insistence of one of the Western partners for an extension, but it gives the consortium the right of first refusal of extension at that time as well as the right to meet competing offers. The new agreement means that KMG will not become co-operator of the project, as Kazakhstan appeared strongly to have desired during negotiations up until the end of last year; but the Italian firm Eni will lose its status as operator, as the project operator will be a new operating company owned by all the consortium participants. In addition, the investors will pay US$5 billion additional compensation to Kazakhstan either immediately or over the life of project (which could therefore grow to US$20 billion taking inflation into account).[7]

About 80 percent of Kazakhstan's oil has nowhere to go today, other than through Russia's pipeline system. Half of the remainder is exported through the Georgian Black Sea port of Batumi, the seaside capital of the Georgian autonomous province of Ajara; the rest goes to China. So Kazakhstan has now decided to construct a 980-kilometer pipeline, for Kashagan oil in particular, running from Eskene, where Kashagan's onshore processing facility will be located once full-field development gets under way, to the port of Kuryk, near Aqtau. Starting at 500,000 barrels per day (bpd), its volume would later be increased to 750,000 bpd; to this, another 400,000 bpd may be added by doubling the capacity of the Aqtau port itself.[8]

This pipeline, provisionally estimated to cost US$3 billion, will be the main section of a projected Kazakhstan-Caspian Transportation System (KCTS) that will include expanded and upgraded ports as well as construction of tanker fleets and, if necessary, additional pipelines within Kazakhstan itself. Another field near Kashagan, called Kalamkas, has 500 million barrels of non-sulfurous oil that is relatively easy to lift, plus also 100 billion cubic meters (bcm) of natural gas. If it were desired to give KCTS an earlier launch, then Kalamkas could be developed faster than

---

[7] Renaissance Capital, "Kashagan Agreement Will Be Finalised by 25 Oct [*sic*] 2008," *Business New Europe: Eurasia Digest*, August 29, 2008.

[8] Julia Nanay, "Le puzzle des oléoducs de la Caspienne" [The Puzzle of the Caspian Pipelines], *Énergies*, No. 12 (Autumn 2007).

Kashagan and would produce 100,000 bpd within four years from the start of development.[9]

The Tengiz Resources and their Egress

Coincidence or not, it was only when the KCTS was finally agreed in the course of 2008, that Russia allowed the Caspian Pipeline Consortium (CPC) to reach a conclusion on the expansion of capacity for Kazakhstan's oil through southern Russia. The CPC line takes oil from the Tengiz deposit in northwest Kazakhstan across southern Russia to the port of Novorossiisk on the Black Sea, to be loaded onto tankers for transit through the Turkish Straits. The CPC's current capacity is 670,000 bpd, although this has recently been occasionally augmented through the use of additives to increase flow. The doubling of this capacity was foreseen in the original construction agreement, and planning and construction should have started not long after the pipeline opened in late 2001.[10] However, Kazakhstan and its president, Nursultan Nazarbaev, for years implored Russia and Vladimir Putin to make good on this promise without effect. In the event, the CPC expansion will be implemented not by construction of a new parallel pipeline but rather by that of additional pumping stations with augmented storage facilities at the Novorossiisk terminus. It appears that financing issues held back the final decision on the CPC's expansion, estimated to cost US$1.5 billion.[11] But also, coincidence or not, it seems to have awaited the conclusion of an agreement on construction of an overland pipeline from Burgos, Bulgaria, on the Black Sea to Alexandropoulos, Greece, on the Mediterranean Sea.

The Burgos-Alexandropoulos Pipeline (sometimes called the BAPLine) will provide a route for avoiding the already overcharged Turkish Straits. Russia has a majority participation in its construction consortium at 51 per cent, with the remainder distributed among Bulgarian and Greek companies. This distribution tends to remove the Burgos-Alexandropoulos route

---

[9] Shamil Midkhatovich Yenikeyeff, *Kazakhstan's Gas: Export Markets and Export Routes* (Oxford: Oxford Institute for Energy Studies, November 2008), p. 29.

[10] Chevron Corporation, *Supplement to the 2004 Annual Report* (San Ramon, CA: Chevron, 2005), pp. 24-25.

[11] "CPC Seeks to Boost Through[p]ut by 2008," *Pipeline and Gas Journal: International Highlights*, November 2004, p. 2.

as a potential egress for oil arriving on the eastern Black Sea coast conveyed there by non-Russian companies, such as those managing the production and export of oil from Azerbaijan and Kazakhstan. In particular, it complicates finding an export route for Kazakhstan's oil from the offshore Kashagan deposit, unless enough new Tengiz oil goes through the CPC to Burgos-Alexandropoulos to free up the KCTS trans-Caspian route for Kashagan oil.[12]

Earlier this decade, when it was thought that Azerbaijani offshore oil might not be plentiful enough to fill the Baku-Tbilisi-Ceyhan (BTC) pipeline to maximum capacity, and when Kashagan seemed on-track for early development, oil from Kashagan was considered a prime candidate for topping off the BTC. That is because the Kazakhstani government had been counting on Russia to make good on its promises to double the volume of the pipeline of the CPC so as to accommodate increased production at the onshore Tengiz field. Yet despite such promises, as well as repeated public statements by Russian leaders at the highest level, Russia's commitments to expand CPC pipeline volume have not materialized. Regardless whether this failure is due to internal Russian bureaucratic and interregional squabbling or to the unwillingness of the Russian leadership to act on its words, the result for Kazakhstan has been the same.

Thus, in November 2008 Azerbaijan's state oil company SOCAR and Kazakhstan's state monopoly KazMunaiGaz signed an agreement setting out the main principles for a transport system to convey Kazakhstani oil across the Caspian Sea for entry into the BTC pipeline, as another step forward in the realization of the KCTS that, while long discussed, has now become Astana's response to Russia's unwillingness and/or inability to implement the long-promised doubling of the capacity of the CPC line. It is also entirely possible that the oil could come from the offshore Kashagan deposit now under development, or even from both. The new document is said to specify quantities of 500,000 bpd by 2012, rising to 750,000

[12] Theodore G. R. Tsakiris, "Resolving the Bosphorus Conundrum: Caspian Oil Geopolitics after the Initializing of the Burgas-Alexandroupolis Pipeline," *Pipeline and Gas Journal*, September 2007, pp. 34-38.

bpd later.[13] This bilateral agreement was signed on the side of a larger meeting in Baku earlier this month that saw another significant agreement in which Azerbaijan agreed to supply Georgia's natural gas consumption requirements for five years. This agreement represents Azerbaijan's declination of Russia's recent commercial offer for purchase of all of Azerbaijan's gas production. While the commercial basis of the offer was excellent, current president Ilham Aliev averred noncommercial interests that must be considered.

That most recent Baku meeting marked the second anniversary and fourth ministerial-level follow-up to the November 2006 Baku Initiative, itself in turn a follow-up to a 2004 conference that set the stage for a new cooperation among the European Commission (EC), Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Tajikistan, Turkey, Ukraine, and Uzbekistan. It is noteworthy that the original initiative in 2004 preceded Russia's ostentatious and highly publicized cutting-off of gas supplies to Ukraine at the start of 2006. This move affected the member-states of the EU to varying degrees and which drew mass and elite attention in Europe to the precariousness arising from dependence upon Russian energy supplies. In 2006, Russia supplied 40 percent of the EU's natural gas consumption and 30 percent of its oil consumption. These proportions are at present projected only to rise in the future, particularly as the EU implements its policy decision of a few years ago, to increase the proportion of natural gas in its energy consumption mix for environmental and ecological reasons. Russia was present at the Baku Initiative meetings in 2004 and 2006 as an observer but did not respond to an invitation to send a representative to the most recent one.[14]

The Tengiz consortium already exports about 120,000 bpd of Kazakhstani oil across the Caspian Sea by barge to the Sangachal terminal at Baku, whence then overland by railcar to Batumi. Kulevi, on the Georgian coast near Poti on the Black Sea, is the site of a new export terminal opened re-

---

[13] Farid Guliyev and Nozima Akhrarkhodjaeva, *Transportation of Kazakhstani Oil via the Caspian Sea (TKOC): Arrangements, Actors and Interests* (Lysaker: Fridtjof Nansen Institute, November 18, 2008), p. 19.

[14] European Commission, "Energy & [*sic*] Transport International Relations," http://ec.europa.eu/dgs/energy_transport/international/regional/caspian/energy_en.htm (accessed February 4, 2009).

cently. It is planned to handle about 100,000 bpd of late oil from Azerbaijan to start with, but its capacity can be doubled within two years, and then doubled again if necessary to handle further oil from Kazakhstan. It is not out of the question that Kazakhstan later adds further elements to the Eskene-Kuryk pipeline, effectively expanding the KCTS so as to decrease its dependence on the pipeline of the CPC, which runs from the Tengiz to Russia and then across to Novorossiisk on the Black Sea.[15]

At the latest Baku Initiative conference in 2008, Kazakhstan and Azerbaijan culminated years of negotiations with agreements to supplement Azerbaijani crude in the Baku-Tbilisi-Ceyhan (BTC) pipeline by increasing the amounts of Kazakhstani oil to be shipped across the Caspian Sea. Still more significant, and the Russian invasion of Georgia notwithstanding, the redevelopment and expansion of ports on Georgia's Black Sea coast now prepare the way for Kazakhstani crude later to enter the Odessa-Brody pipeline (OBP), which can be reversed so as to flow southeast-to-northwest, reaching world markets by way of Gdansk. This oil can come either from the massive offshore Kashagan field or the onshore Tengiz field itself.

Tankers from Batumi and Kulevi/Poti can take Kazakhstan's as well as Azerbaijan's oil to Ukraine over the Black Sea for insertion into the OBP. This pipeline, finished in 2001, lay empty for three years because Russia refused to allow transit of oil from Kazakhstan that would have been destined for Europe. So instead of flowing southeast-to-northwest, the OBP has since 2004 instead flowed northwest-to-southeast, carrying Russian oil domestically inside Ukraine. Now that Kazakhstani oil will have another route to the OBP, its flow may be reversed back to the originally intended direction. From Brody, the oil will flow to Plock, Poland, since higher world prices have made this continuation of the OBP economically justifiable to construct; from Plock, an existing pipeline goes to the port of Gdansk and thence to world markets. Since Kashagan is now not planned to enter production until 2013, this project can, if necessary, use oil from Tengiz or even the Azerbaijani offshore in the meantime.[16]

---

[15] Guliyev and Akhrarkhodjaeva, *Transportation of Kazakhstani Oil via the Caspian Sea*, pp. 16-17.

[16] Cutler, "Kashagan Leads Kazakhstan to Increase Trans-Caspian Oil Exports."

Other Central Asian Gas Resources

The New Trans-Caspian Gas Pipeline Project

Following Niyazov's death, Russia sought to prevent negotiations between Turkmenistan and the EU over the TCGP from restarting. In December 2007, Russia, Kazakhstan, and Turkmenistan signed an agreement to refurbish and expand the capacity of the Prikaspii (or "Caspian coastal") pipeline, a Soviet-era gas line from Central Asia to Russia.[17] In separate negotiations with Moscow, Ashgabat bargained hard and succeeded in raising prices paid to it by the former from US$100/tcm to US$130 during the first six months of 2008, and US$150 during the second half of the year. Russia thought that it had succeeded in purchasing the vast majority of Turkmenistan's potential production over the long term and so sealing its lock on provisioning of Europe with natural gas from the region. However, in October 2008, the results of a new audit of Turkmenistan's gas reserves commissioned by Berdimuhammedov and performed by British expert firm Gaffney, Cline and Associates revealed that the new Yoloton-Osman field alone contains a minimum of four and a maximum of 14 trillion cubic meters, over and above the country's current exports to Russia and Iran and its planned exports to China. Suddenly Turkmenistan's available resources far outstrip Russia's attempts to corral them.[18]

Both Azerbaijan and Turkmenistan have new and younger presidents than has been the case for most of the post-Soviet period. In May 2008 they held their countries' first bilateral summit in over a decade. Symbolically, the day the summit began, a ship from the Azerbaijani state oil company SOCAR delivered equipment to a Turkmenistani oil rig located in Turkmenistan's Caspian offshore. In a concluding joint press conference, the two presidents declared that all issues were resolved between their coun-

---

[17] "Tripartite Agreement on Pre-Caspian [*sic*] Pipeline Signed," *New Europe*, No. 761 (December 29, 2007). This project is sometimes called the Caspian Gas Pipeline, but also erroneously by mistranslation the "Pre-Caspian" Pipeline: the Russian prefix *pri*, meaning means "adjacent to" or "attached to" is not equivalent to the English *pre*. There is a geologic formation in northwestern Kazakhstan and southern Russia called in English the "pre-Caspian basin," but it is, strictly speaking, unrelated to the track of trilateral pipeline project.

[18] "British Auditor: Up to 14 Trillion Cubic Meters Gas Reserve in Eastern Turkmenistan Fields," *News Central Asia*, October 14, 2008.

tries. Turkmenistan reopened its embassy in Baku, and Azerbaijan paid off its US$44.8 million gas debt to Ashgabat.[19] The major international energy companies have known for ten years that there is no technical obstacle to construction of an ecologically sound gas pipeline tracing a relatively shallow east-west undersea ridge between Turkmenistan and Azerbaijan.[20]

In November 2007, Turkmenistan's President Gurbanguly Berdimuhammedov and his entourage visited Brussels, where they had wide-ranging discussions with top-level EU officials and European businessmen, displaying an openness unthinkable during the reign of his predecessor Saparmurat Niyazov. February 2008 saw the settlement of a long-standing conflict over payment of Azerbaijan's debt to Turkmenistan.[21] In early 2008, Berdimuhammedov signed a Memorandum of Understanding (MoU) with the EU's External Relations Commissioner, Benita Ferrero-Waldner, during the trip of a very high-level EU delegation to Central Asia, providing for the export of natural gas from Turkmenistan to the EU but not specifying a route, which is nevertheless understood not to cross Russia. The 10 billion cubic meters per year (bcm/y) mentioned in the MoU amount is not very much of the estimated 500 bcm of natural gas that EU countries consume each year; however, for the EU it is an initial step towards diversification of supply.[22]

The TCGP project, which failed in the 1990s due to Niyazov's insistence on personally leading Turkmenistan's negotiations and his inability to grasp the technical details of project planning and financing, is now integrated as an aspect of the Nabucco pipeline led by Austrian concerns. The route of the Nabucco pipeline would run from Turkey's eastern border (with Georgia and/or Nakhechivan, in two non-mutually exclusive variants) through Ankara and Istanbul into eastern Greece, then northwards through central Bulgaria and western Romania, finally snaking across Hungary from southeast to the northwest and terminating at Austria's Baumgarten gas hub. The new MoU for the first time gives proponents of

---

[19] "Turkmen Delegation to Baku for Debt Settlement, Cooperation Talks," *News Central Asia*, March 4, 2008.

[20] Author's interviews.

[21] "Azerbaijan, Turkmenistan Settle Old Gas Dispute," Reuters, March 5, 2008.

[22] Robert M. Cutler, "The European Union Looks to Central Asia for Energy," *CACI Analyst*, April 16, 2008, pp. 5-7.

the Nabucco pipeline specific volumes of gas from non-Azerbaijani sources to consider.

However, the most optimistic estimate today for construction of the Nabucco pipeline is that it will be completed by 2013. However, the MoU dedicated 10 bcm from Turkmenistan to Europe in 2009. This is achieved through the interconnection of natural gas rigs from the Turkmenistani sector of the Caspian Sea to those in the Azerbaijani sector, which are already part of the international network of gas pipelines from the Caspian to Europe. Insofar as Ashgabat has announced that the date of completion of the pipeline to China is delayed. It appears that these 10 bcm are coming from the 20 bcm quantities previously dedicated to China. It is perhaps no coincidence that Turkmenistan selected a Russian company for the planning and construction of that project: the possibility of delays is intrinsic to such a choice, since Russia competes with China for volumes of Turkmenistan's gas.[23]

The unresolved legal status of the Caspian Sea is a stumbling block insofar as Kazakhstan feels obliged to take Russia's interests into account in formulating its own energy export policy. Talks among the five Caspian littoral countries over the status of the Sea in international law have been dragging along for well over a decade, although a number of important bilateral agreements have been reached on different issues. The most notable of these concerns is the allocation of national sectors of the seabed, and it is such an agreement between Moscow and Astana that permitted resource development to move ahead notably in the northern Caspian offshore between Kazakhstan and Russia.

Russia insists, as a way of blocking the TCGP, that the agreement of all five littoral states is necessary for any trans-Caspian pipeline to be built. One way to finesse this problem could be to offer to include in the pipeline gas from fields assigned to Russia (but now developed jointly with Kazakhstan) during the demarcation of the "modified median line" delimiting the border between Russian and Kazakhstani sectors of the seabed. However, this is unlikely to work insofar as it would require not just an economic but rather a political decision on Russia's part. Consequently, the EU has also been looking at exploring other means for conducting

[23] Ibid.

Central Asian gas from the eastern to the western coast of the Caspian Sea. The three methods available are liquefaction, compression, and gas-to-liquids. They would all be more expensive than constructing the TCGP, and the break-even price of the gas to the end consumer would be higher than the TCGP in every case, complicating the prospects of each in a different way.[24]

The Karachaganak Field and Other Central Asian Gas

The development of the natural gas production industry in northwest Kazakhstan has historically depended upon the capacity of the Russian gas processing industry, much as the development of the oil production industry there has depended upon the capacity of Russian oil pipelines. The Karachaganak gas deposit, for example, where today fully half of Kazakhstan's gas is produced, has ever since Soviet times depended upon the capacity of the transborder Orenburg processing complex in Russia, which has been its only outlet. Throughout the 1990s, Russia was able to use its monopsonistic position so as to limit possibilities for developing Karachaganak's gas production.[25] Various projects were elaborated over the past decade and a half for the westward transit of at least part of Karachaganak's production towards the Caspian Sea basin for trans-Caspian export. However, whenever such projects would become sufficiently well defined to appear technically and economically feasible, Russia would reinvigorate negotiations with Kazakhstan for raising the prices and/or the quantities it would accept from Karachaganak, so as to render other routes uneconomical by comparison, only to alter the terms on offer yet again once the momentum of the alternative project had dissipated.

At the beginning of the present decade, Russia was contracted to upgrade Kazakhstan's gas pipeline infrastructure in the west and north of the country, linking this to the prospect of gas flowing through those pipelines to be exported to Russia. An oil pipeline from Karachaganak was eventually constructed to Atyrau so that its liquids could be conducted

---

[24] Yenikeyeff, *Kazakhstan's Gas*, pp. 72-73.

[25] Mehmet Ögütçü, "Kazakhstan's Expanding Cross-border Gas Links," *CEPMLP Internet Journal* 17, No. 8 (November 21, 2006), http://www.dundee.ac.uk/cepmlp/journal/html/Vol17/Vol17_8.pdf (accessed February 4, 2009).

into the pipeline of the CPC to Novorossiisk on Russia's Black Sea coast. In mid-2007 the two countries reached agreement for further investment in Karachaganak with the intention of more than doubling current production levels from 7.5 to 16 bcm/y, all still going to Orenburg with the exception of a separate and much smaller Uralsk Gas Pipeline for local customers.[26]

Meanwhile, the (re)construction of the Caspian coastal (Prikaspii) pipeline, announced with Russia and Kazakhstan with much fanfare, was for a long time on hold at least from Turkmenistan's side. Despite great publicity at the time about the project for a "gas OPEC" headed by Russia, it was rarely if ever noted, during all the commentary at the time, that the Prikaspii agreement represented nothing other than yet another intergovernmental MoU. It did not establish an international consortium to undertake the work; rather, the three governments became responsible for funding and assuring the execution of the work on its national segment. This allowed Berdimuhammedov to placate Russia, which is promised as much as 50 bcm/y by agreements inherited from the Niyazov era, while gaining breathing space during which to pursue further possibilities.[27] In Turkmenistan and Kazakhstan there have been delays. Not only is the TCGP of greater benefit to both of them since it would provide an additional outlet for the gas produced, but also it is more economical for them because it would be funded and constructed by the European companies concerned. Under the terms of a trilateral December 2007 agreement, the Caspian coastal pipeline is planned to carry 20 bcm/y beginning in 2012.[28] There has been some delay, but some of the more specific terms for this work were said to have been agreed in December 2008 and embodied in the three countries' respective national legislation.[29]

---

[26] Yenikeyeff, *Kazakhstan's Gas*, p. 25.

[27] "Gas Pressure Equalizes in Turkmenistan-Russia Talks," *News Central Asia*, November 26, 2007.

[28] "Gazprom's Delegation Visits Turkmenistan," July 3, 2008, http://www.natural-gas.ch/2008/07/03/gazprom%E2%80%99s-delegation-visits-turkmenistan/ (accessed February 4, 2009).

[29] Robert M. Cutler, "Russia Deepens Gas Hegemony," *ISN Security Watch*, January 30, 2009, http://www.isn.ethz.ch/isn/Current-Affairs/Security-Watch/Detail/?lng=en&id=95931 (accessed February 4, 2009).

Uzbekistan does not usually come to mind when one thinks of Central Asian energy producers, because it does not export as much as either Kazakhstan or Turkmenistan. However, it is one of the top ten gas-producing countries worldwide, and it is third in gas production in the Commonwealth of Independent States. It has not gained corresponding attention on the world energy map because its population of approximately 28 million consumes over 80 percent of the gas produced, leaving comparatively little for export.[30]

When Bulgarian president Georgi Parvanov visited Tashkent in late 2008 to try to induce his Uzbekistani counterpart Islom Karimov to dedicate volumes of gas to the Nabucco pipeline project planned to run from Central Asia to Central Europe, the latter declined, saying that his country exports gas through only one pipeline (it dates from the Soviet era) and therefore exports only to Russia.[31] Parvanov was, in fact, a bit late. In September 2008, Karimov had already agreed to build a new pipeline to Russia parallel to the existing Central Asia-Center and Bukhara-Urals pipelines. With a capacity of 54 bcm/y, it will originate in Turkmenistan and also cross Kazakhstan before terminating in Russia. About half the volume will come from Uzbekistan, increasing its exports to Russia by about half from the level in 2006, with Gazprom investing about US$1.5 billion in development of the gas condensate fields in the country's Ustyurt region.[32]

In addition, at the end of 2010, Uzbekistan's three-year agreement to supply 3.5 bcm/y to southern Kazakhstan will terminate. Kazakhstan has been "repaying" Uzbekistan via a swap arrangement by sending 3.5 bcm/y from its own Karachaganak complex in the northwest of the country to the transborder Orenburg gas processing plant in Russia. However, Karachaganak's production capacity is being further ramped up and the Orenburg plant is being expanded, so those volumes from Kazakhstan

---

[30] International Energy Agency, "IEA Energy Statistics – Natural Gas for Uzbekistan," http://www.iea.org/Textbase/stats/gasdata.asp?COUNTRY_CODE=UZ (accessed February 4, 2009).

[31] "Uzbekistan Rules Out Gas Exports to EU," *EUbusiness*, November 6, 2008, http://www.eubusiness.com/news-eu/1225988235.99 (accessed February 4, 2009).

[32] Energy Information Administration, Department of Energy, U.S. Government, "Caspian Sea Energy Data, Statistics and Analysis - Oil, Gas, Electricity, Coal," http://www.eia.doe.gov/emeu/cabs/Caspian/NaturalGas.html (accessed February 4, 2009).

will not be lost to Russia in the future.[33] All this suggests that despite Uzbekistan's on-again, off-again relations with the Eurasian Economic Community (EurAsEc), the country's relations with Russia are not suffering. Indeed, Putin's efforts at formation of a Central Asian "gas club" within the Shanghai Cooperation Organization (SCO) may appear to be bearing fruit: just not inside SCO itself. The signature of a trilateral agreement for yet another pipeline in December 2007, beginning in Turkmenistan and running to Russia through Kazakhstan alone, is further evidence of this energy diplomacy.

As Russia and China seek to augment their influence over the development of Kazakhstan's energy production, Astana looks for other routes to overcome the restraints. The reinvigoration since 2007 of prospects for a new TCGP with Turkmenistan's participation creates the possibility for Kazakhstan, which already cooperates with Azerbaijan on trans-Caspian oil shipments, to participate also with gas exports. Delays in the development of the offshore Kashagan field make associated gas from the onshore Tengiz oilfield the first candidate for such exports. At the time of Kashagan's proving, it was considered that its associated gas might be piped under the Caspian Sea to Azerbaijan so as enter the South Caucasus Pipeline (SCP, also Baku-Tbilisi-Erzerum) and eventually, through Turkey, reach Europe.

Due to delays with Kashagan, and with Karachaganak still dedicated to Orenburg for the foreseeable future, associated gas from the onshore Tengiz oil deposit is now the best candidate to supply Kazakhstani gas in a revamped TCGP project. Industry practice has been to flare Tengiz gas into the atmosphere, but now this must cease by 2011. The government in Astana considers the practice to be environmentally unsound (there is legislation against it) and, moreover, wishes to recover the gas for domestic use and revenue enhancement through export. Since the agreement of the multilateral "Road Map" in Astana in November 2006 by the Second Energy Interministerial Conference of the Littoral States of the Black and Caspian Seas (a process set into motion under the EU-sponsored 2004

---

[33] "Uzbekistan, Kazakhstan, Russia Strike Gas Deal," *Radio Free Europe*, September 22, 2006, http://www.rferl.org/content/Article/1071562.html (accessed February 4, 2009).

"Baku Initiative" but which acquired true momentum following the January 2006 suspension by Russia of natural gas exports to Ukraine), Kazakhstan has been working together with Azerbaijan and the EU to address concretely the realistic prospects for Kazakhstan's gas to reach Europe and the available techniques for this. The undersea portion of the TCGP as now conceived would run from Kazakhstan's Caspian Sea coast at Aqtau (whither gas from Tengiz would be brought overland) to Baku, connecting there to the SCP and eventually on to Europe. At the same time, a spur from this main line to the port at Turkmenbashi would connect Turkmenistan's gas fields to the TCGP. At present, the pipeline is projected to have an initial capacity of 20 bcm/y, possibly increasing to 30 bcm/y. Its total length would be almost 1600 kilometers, of which only 300 would actually be underwater.[34]

Since the death of Turkmenistan's former president, Saparmurat Niyazov, at the end of 2006, Ashgabat is no longer an obstacle in principle to such plans. Following a visit by Turkmenistan's new president Gurbanguly Berdimuhammedov to Berlin and Vienna in late 2008, the major German energy firm RWE together with Austria's OMV formed a joint venture so as to move the TCGP project ahead. Berdimuhammedov had already visited Brussels for high-level EU discussions in late 2007, and by mid-2008 an agreement had been reached that 10 bcm of gas from Turkmenistan would reach Europe in 2009. This is being accomplished through interconnecting Turkmenistan's rigs with Azerbaijani gas rigs in the Caspian offshore, which are in turn connected to the SCP.[35]

Looking Further West and East

Westward to South Stream and/or Nabucco

Agreement on the CPC expansion was also delayed for some time by Bulgaria's insistence on receiving higher transit fees, for which it used as leverage the question of the source of its own gas imports. On this latter issue,

---

[34] Shamil Midkhatovich Yenikeyeff, "Trans-Caspian Pipeline Remains Contentious," *Oil and Gas Journal*, January 12, 2009, p. 52.

[35] "Recent Initiatives to Advance the Nabucco Project," *Budapest Business Journal*, January 23, 2009, http://bbjonline.hu/index.php?col=1004&id=46537 (accessed February 4, 2009).

Russia elbowed Turkey out of the way when, in January 2008 during a visit by Putin to Sofia, Bulgaria enrolled as a transit country in the "South Stream" pipeline project (gas from Russia under the Black Sea to the eastern Balkans and thence to the rest of Europe), itself main strategic competitor to the EU-sponsored Nabucco gas pipeline project.[36] Indeed, over the past two years, Russia has moved swiftly to pose obstacles to the realization of the Nabucco project. Its own South Stream pipeline project is planned to branch westwards from the Russia-Turkey Blue Stream pipeline under the Black Sea. Russia has played the national interests of EU members against one another and sought to entice European energy companies into special relationships that would prevent the all-European cooperation necessary to realize Nabucco from solidifying into concerted action.

At present, Turkey appears to be a stumbling block to Nabucco, independent of Russian moves, as it insists on purchasing, at prices below-market, a portion of all gas transiting via Nabucco, for domestic consumption. Former Azerbaijani president Heydar Aliev, the current president's father, was able magnanimously to forego transit fees in order to seal the deal with former Georgian president Eduard Shevardnadze for construction of the BTC back in the late 1990s.[37] However, it is doubtful that his son is either willing or able to accord such a privilege to Turkey.

On a visit to Baku in mid-2008, Gazprom's chief Alexei Miller unexpectedly offered to buy natural gas from Azerbaijan at European market prices, minus transport costs. The Russian company made this offer again in late December.[38] It is likely, although unconfirmed, that this was intended to fill the Russian-Italian sponsored "South Stream" pipeline project, on which Gazprom is partnering with the Italian firm Eni, the same team that built the "Blue Stream" pipeline under the Black Sea from Russia to Turkey. The South Stream's route had two variants. First it would cross, un-

---

[36] "Balkan Boost for Russian Gas Plan," *BBC News*, January 18, 2008, http://news.bbc.co.uk/2/hi/europe/7195522.stm (accessed February 4, 2009).

[37] Robert M. Cutler, "Just When You Thought Baku-Ceyhan Was Dead and Buried, Part 6," *FSU Oil and Gas Monitor*, No. 77 (April 11, 2000), p. 7.

[38] "Russian Gazprom Confirms Intention to Purchase Whole Volume of Azerbaijani Gas," *Regnum News*, December 25, 2008, http://www.today.az/news/business/49811.html (accessed February 4, 2009).

der the Black Sea, the continental shelves of Ukraine and Romania, whose agreement would also be necessary and not a sure thing, reaching Bulgaria. From there it would either continue through Greece and under the Ionian Sea to Italy or instead join another Turkey-Greece-Italy ("trans-Adriatic") pipeline already planned by the Swiss energy-trading company Elektrizitäts-Gesellschaft Laufenburg with Norway's StatOilHydro; or else it could take a northern route through Serbia, Hungary and Slovenia to Austria's Baumgarten hub, unless from Slovenia it passed instead into northern Italy, or else via Bosnia-Hercegovina and/or Croatia to Trieste. Recent developments indicate that this latter Bulgaria-Serbia-Italy route may now be established.[39]

A potential problem from Baku's standpoint was that Gazprom insisted on long-term contracts at fixed prices, whereas the price of natural gas in Europe is projected to rise over time. Baku announced instead its readiness to participate in the rival Nabucco pipeline project, which takes a route through Turkey, Bulgaria, Romania and Hungary, also terminating at Baumgarten in Austria. Also in mid-2008, Azerbaijan agreed to supply the first real order for physical gas through Nabucco: Bulgaria will buy more than 1 bcm/y of Azerbaijan's natural gas as of 2013, when the Nabucco pipeline is projected to open. This amount represents over one-sixth of Bulgaria's annual consumption and about one-eighth of the pipeline's first-phase capacity.[40]

Eastward to China

Both Tengiz and eventually Kashagan oil could conceivably reach China. Already, a pipeline runs to the Caspian port of Atyrau from Kenkiyak in the Aqtobe region of western Kazakhstan, where China has industrial interests in the country's hydrocarbon industry. The Kazakhstan-China pipeline finished in 2006 already runs from Atasu in the center of the country to the Dushanzi refinery in China. Between Aqtobe and Atasu, an existing pipeline already runs roughly halfway, from Kumkol to Atasu.

---

[39] "Slovenia Backs South Stream Gas Pipeline," *United Press International*, January 20, 2009.

[40] Clive Leviev-Sawyer, "Bulgaria Set for Azerbaijan Gas Deal as Nabucco Summit Continues: Gas Pipeline Project Asks European Investment Bank for Financing," *Sofia Echo*, January 27, 2009.

China's receipt of Tengiz oil therefore requires only construction of the segment from Kenkiyak to Kumkol and reversal of the Aqtobe-Atyrau pipeline to flow from west to east. The result could eventually boost Chinese imports of Kazakhstani oil from 100,000 to 400,000 bpd; but whether it happens, or how fast, depends crucially on the accessibility of oil from Kashagan. Kazakhstan's decision in favor of the KCTS and its westward route for Kashagan suggests that the Kazakhstani leadership may not be too keen to repeat with China its mistake of depending too much on Russia.

The westward extension of China's current oil pipeline from Kazakhstan, including the forced buyout of the Canadian firm Petrokazakhstan (formerly Hurricane Hydrocarbons) that controlled a key segment of existing pipeline, is an especially impressive piece of political-economic engineering. Chinese energy geo-economic penetration into Central Eurasia is confirmed not only with the entry into service of the oil pipeline from Kazakhstan but also with the construction now under way of the gas pipeline from Turkmenistan, through Uzbekistan and Kazakhstan to Xinjiang in western China. These realizations are testimony to Chinese strategic planning beginning fifteen years ago, when its national energy trusts first implanted themselves ever so delicately in the Caspian littoral.

A Turkmenistan-China gas pipeline, on which construction has already started in transit countries Uzbekistan and Kazakhstan, is formally an extension or add-on to earlier Kazakhstan-China negotiations. The route of the pipeline has not been made public, but the most reasonable scheme involves expanding the volume of the Bukhara-Tashkent pipeline within Uzbekistan and then taking it through Almaty to Alashankou on the border, where the existing Kazakhstan-China oil pipeline from Atasu also crosses into China. Towards the end of the first half of the present decade, the China National Petroleum Corporation (CNPC) started negotiations for gas imports from western Kazakhstan with the country's national energy trust KazMunaiGaz. The first phase of that project was assigned the figure of 10 bcm/y, and the second stage of the Kazakhstan-China gas pipeline was to have increased Kazakhstan's own exports to China to 30

bcm/y.[41] This gas could come either from the Karachaganak deposit, where production has been in thrall to Russian limitations on volumes receivable by the transborder Orenburg processing plant in southern Siberia. It could also come from the associated gas in the offshore Kashagan deposit, where China was rebuffed a few years ago when it tried to purchase a share of the consortium directing Kashagan's development. In the beginning, it will probably come, however, from Chelkar, in the Aqtobe region in western Kazakhstan, where the CNPC has been already active for nearly a decade. From there, a feeder pipeline would logically descend southwards to Kzyl-Orda and then to the major city of Shymkent (South Kazakhstan province), thereafter rejoining the extension of the Bukhara-Tashkent pipeline to Almaty and beyond.

The idea was first sketched on maps as early as 1993 when Western companies began to survey possibilities for energy development in Central Asia following the disintegration of the Soviet Union. However, the sheer scale of the project together with the self-imposed isolation of the country under its former president Saparmurat Niyazov, who died in December 2006, made it for a long time a non-starter. Nevertheless, it was Niyazov who, in April 2006, signed a framework cooperation agreement in Beijing with Chinese president Hu Jintao. By July 2007, there was an agreement signed by the CNPC and witnessed by Niyazov's successor Gurbanguly Berdimuhammedov. Chinese experts conducting the geological exploration and development of the Bagtiyarlyk fields have already reported that they hold 1.6 trillion cubic meters of gas. A first phase will be opened for up to 10 bcm/y from the already operating Samantepe and Altyn Asyr fields, which are together expected to supply 13 bcm/y to the completed project. After this quantity reaches 10 bcm/y, the second phase will be inaugurated, adding 17 bcm/y from deposits that the two countries will develop under the terms of the July 2007 production sharing agreement.[42]

---

[41] Robert M. Cutler, "Gas Pipeline Gigantism," *Asia Times Online*, July 17, 2008, http://www.atimes.com/atimes/Central_Asia/JG17Ag01.html (accessed February 4, 2009).
[42] Ibid.

Conclusion

To return to the terms employed in the introductory remarks to this chapter, the period beginning 2007 represents different phases of evolution depending upon the scale of analysis. At the scale of Central Eurasia and Greater Central Eurasia, it represents the beginning of the autopoietic phase of the geo-economic structuration of the hydrocarbon energy complex at the given scale, following the closure of the phase of emergence through the development of its three subphases (1989-1994, 1995-2000, and 2001-2006). At the scale of Central Asia itself, however, and possibly Greater Central Asia as well, the political, social, and economic chaos following the disintegration of the Soviet order delayed the beginning of the emergent phase until the period 1995-2000. The three subphases for Central Asian energy geo-economics are therefore properly periodized as follows: emergence of emergence, 1995-2000; autopoiesis of emergence, 2001-2006; and coherence of emergence, 2007-2012. Following these developments, the broader phase of autopoietic development will then begin to emerge. The prospects for those further developments are now being sketched in the competition between the South Stream and Nabucco projects on the one hand and, on the other hand, the extension of export possibilities to China, as discussed above.

4. The Role of Energy in South Asian Security

C. Raja Mohan *

Introduction

Throughout the Cold War, South Asia had tended to be marginal to the world's security politics. The issues of traditional regional security were rooted in the impact of the U.S.-Soviet global rivalry on the regional balance among India, Pakistan and China, the unending conflict between India and Pakistan and the enduring tensions between New Delhi and Beijing. The region's inward economic orientation and low economic growth rates saw its relative decline vis-à-vis the rest of Asia and a diminution of the subcontinent's political weight in the world. Since the end of the Cold War, a number of factors have made the region more consequential for international security. As the region began to adapt to the new wave of globalization, the South Asian states were compelled to undertake far-reaching economic reforms in the 1990s. The changes in economic directions have begun to produce historically high growth rates across the region, and South Asia has now emerged as the second fastest growing region, after China. The end of the Cold War has made it easier for all the great powers to simultaneously improve relations with India and Pakistan. The introduction of nuclear weapons in South Asia at the end of the 1980s has drawn greater international involvement in the conflict between India and Pakistan, given its potential to escalate to the nuclear level. The events of 11 September 2001 have propelled Pakistan and its lawless frontier with Afghanistan to the centre-stage of the U.S. global war on terrorism. India's rapid economic growth in the first decade of this century has compelled the great powers to factor New Delhi into their calculus on regional and global balance of power. Meanwhile, within the region, the globalization of South Asian economies has generated new imperatives for regional cooperation, if not re-integration.

---

* C. Raja Mohan is Professor of South Asian Studies at S. Rajaratnam School of International Studies, Nanyang Technological University, Singapore.

As international relations within South Asia as well as the region's relationship with the rest of the world undergo a rapid transformation, energy security has become an important driver of change. First, South Asia has always been a net importer of energy and had suffered badly under the impact of the oil shock in the mid 1970s. The regional responses were relatively simple – looking for friends among the oil-producing countries for some relief and purchasing oil on the spot markets when prices were low. The rise in outflow of scarce hard currency, however, was partly compensated by the dramatic surge since the late 1970s of the movement of South Asian labour to oil-rich Gulf countries and the consequent inflow of substantive foreign exchange remittances. As the scale and scope of South Asia's energy dependence has increased in recent decades as a consequence of more rapid economic growth, ensuring adequate energy at reasonable prices has become a national security concern for India, Pakistan and other South Asian states.

Second, the South Asian subcontinent has also become relevant to the geopolitics of energy-producing regions. An energy deficient South Asia abuts two of the most important energy-producing regions – the Persian Gulf and Central Asia. The region is also interested in energy supplies from Southeast Asia and Australasia, where oil, natural gas and coal are available in varying quantities. The outward orientation of the subcontinent since the early 1990s and its improving relative economic weight have meant a growing impact of India and Pakistan in the geopolitics of the regions abutting South Asia. These include the huge presence of South Asian migrant labour in the Gulf – India alone accounts for nearly five million labourers. The six countries of the Gulf Cooperation Council have together emerged as major trading partners of India and its neighbours. India and Pakistan have had security cooperation with the Gulf countries, a trend that has begun to deepen in recent years. Over the last decade, Southeast Asia too has begun to figure prominently in the foreign policy priorities of the subcontinent. India's example of a vigorous "Look East Policy" has been emulated by Pakistan.

Third, the partition of the subcontinent also created a new set of energy- and resource-related conflicts among the successor states of British India. These involved the sharing of the major river waters of the Indus and

Gangetic basin, now divided between India, Pakistan and Bangladesh.[1] While some of those disputes were settled amicably, the main issue remains to be resolved. As energy considerations loom large in the national economic strategies of the South Asian nations, both intra-state and inter-state conflicts over resources have steadily deepened. At the same time, there is growing pressure on the nations of the subcontinent to embark on regional energy cooperation.

Finally, South Asia, especially India, has also become an important factor in managing energy-related issues at the international level. The size of the Indian economy and the prospects for its rapid growth has an effect on the supply and demand of global energy sources and their prices. The scale of expanded energy used also means that India, like China, will emerge as a major carbon emitter and must be integral to any regime that seeks to both mitigate the consequences of global warming and reverse it over the longer term. Western countries have begun to insist that without significant contributions from India and China towards the reduction of carbon emissions, there can be no real international agreements on managing global warming.

This chapter is not about the technical aspects of the energy context – the balance between internal and external resources, the mix between different sources, and the technology choices – in the subcontinent. There is an enormous amount of work already available on these complex subject areas. Much less analysis, however, is available on how energy-related issues have begun to shape the security dynamics of the subcontinent. The scale and scope of the energy challenge in the region means that the traditional narratives on South Asian security are not adequate to capture the new trends in the subcontinent. The chapter begins with an exploration of the intersection between the changing nature of the foreign and security policies of the largest and most consequential of the South Asian nations, India. The second part focuses on the new imperatives of South Asian regionalism on India's energy security policy. The third examines the impact of the subcontinent on the geopolitics of its neighbouring energy-rich regions and the maritime environment. The final section examines the dan-

---

[1] For an overview, see Tan Tai Yong and Gyanesh Kudasia, *The Aftermath of Partition in South Asia* (London: Routledge, 2000).

gers of a new great power rivalry in the subcontinent that is increasingly tied to the politics of energy security.

Energy Considerations in India's Security Policy

A decade ago, "energy security" hardly figured as an element in either India's foreign policy practice or in the national discourse on its external relations. The first references began to emerge in official Indian formulations in the 1990s, as the first results from India's new economic expansion began to make an impact on policy.[2] Since then, energy security has emerged at the top of India's foreign policy agenda and has impacted on a range of areas. The foremost is the set of issues linking energy, environment and development. New Delhi has been called upon to manage the growing tension between the imperative of greater energy use to sustain its current high levels of economic growth on the one hand and the demands for cleaner environment at home and external pressure to contribute to the management of global warming on the other. Energy security has also been the principal justification offered by Manmohan Singh in pursuing India's controversial civil nuclear initiative with the United States. Energy security has also emerged as a major driver of India's new emphasis on regional and sub-regional cooperation in South Asia. Building pipelines to neighbouring regions like the Gulf and Southeast Asia that run through Pakistan and Bangladesh has become an important national priority. Energy considerations have compelled India to actively look for equity oil assets around the world, from Latin America to Siberia. Ensuring the flow of oil into India has been an objective that has galvanized the Indian Navy into developing a more activist profile in the Indian Ocean and taking a lead role in securing its sea lanes. Energy security is not merely an additional demand on Indian foreign policy. The scale and scope of India's energy security requirements are beginning to affect the very basic principles that have guided India's foreign policy for decades. The following highlights a few consequential areas of intersection between energy issues and India's foreign policy formulation.

---

[2] One of the earliest examinations was from the Jaswant Singh, who held the portfolios of planning, external affairs, defence, and finance in the government led by Atal Bihari Vajpayee during 1998–2004. See Jaswant Singh, *Defending India* (London: St. Martin's Press, 1999).

First, as India explores the prospects for building strategic partnerships with all the major powers, energy cooperation has emerged as a major factor in making a transition from its traditional emphasis on non-alignment to a new readiness to consider an alliance-like relationship with the United States. Recognizing the need to regain India's access to global nuclear energy markets and alter its uncomfortable standing in the global non-proliferation order, the present government in India, as well as its predecessor, has staked considerable domestic and international political capital on a transformation of the relationship with the hegemonic power of the international system, the United States. Since conducting a series of nuclear tests in May 1998, the transformation of relations with the Washington and altering India's position in the global nuclear order have constituted an all-consuming passion for New Delhi. India recognized that only a breakthrough in the ties with the United States would enable it to end its isolation from the commercial nuclear technology flows that followed its first nuclear test in May 1974. Neither the domestic criticism that India is abandoning its foreign policy legacy nor the international perception that New Delhi is drawing too close to an unpopular Bush Administration has stopped Indian governments past and present from their determination to pursue the civil nuclear initiative with the United States and redefine its relations with the United States.[3] In the end, the Manmohan Singh government also had to put its own political future on the line in the eventual defence of the nuclear deal with the United States.

Two, the pursuit of nuclear diplomacy with the United States was not without consequences for India's search for energy security on other fronts. While a new relationship with the United States promised to improve India's energy security by enabling it to pursue a massive nuclear power programme, it also threatened to undermine India's ties with other countries, most notably Iran. From the moment the U.S. and India announced their civil nuclear initiative in July 2005, New Delhi's ties with Iran inevitably became a complication in its operationalization. Opponents of the nuclear initiative in the United States seized upon India's cooperation with Iran to either block its progress in the U.S. Congress or impose

---

[3] For a discussion, see C. Raja Mohan, *Impossible Allies: Nuclear India, United States and the Global Nuclear Order* (New Delhi: India Research Press, 2006.)

unacceptable conditions on the conduct of India's foreign policy. As it weighed the importance of ending its nuclear isolation of more than three decades in the context of U.S. concerns about the Iranian atomic weapons programme, India had to make some major decisions. During 2005–2006, India voted twice with the United States and against Iran at the board of governors of the International Atomic Energy Agency. This uncharacteristic vote would not have happened if there is no nuclear deal to pursue with the United States. The vote, however, inevitably produced a political backlash in India, raising questions about New Delhi's commitment to an independent foreign policy. Called upon to manage the competing pulls, India sought to sustain its engagement with Iran and reassure its domestic constituencies that there is no fundamental change in its foreign policy orientation.

Three, the recognition of the centrality of imported energy for India's future growth has produced a range of new imperatives for India's foreign policy. These included a furious attempt to expand national investments in equity oil around the world.[4] India's emphasis on equity oil has not been very different from that of China's. Many in the West have questioned the wisdom of India and China in attempting to "own" oil assets around the world, and have suggested a focus on market mechanisms to ensure reliable supply of oil. Like Beijing, India is unlikely to defer to this advice. Both China and India point to the strategic relationships between the United States and key oil-producing countries like Saudi Arabia and the centrality of non-market mechanisms in the U.S. policy to the Persian Gulf region. India, like China, is more likely to follow what the U.S. does rather than what it says. India appears strongly committed to strengthening its political capacity to ensure imported oil at reasonable prices. This has involved stepping up cultivation of special relationships with oil producers that involve a lot more than mere economic engagement.[5]

Finally, India has to manage a new tension between the traditional impulses of multilateralism that defined its foreign policy and the imperative

---

[4] Sebonti Ray Dadwal and Uttam Kumar Sinha, "Equity Oil and India's Energy Security," *Strategic Analysis*, Vol. 29, No. 3 (July–September 2005), pp. 521–28.

[5] S. N. Malakar, ed., *India's Energy Security and the Gulf* (New Delhi: Academic Excellence, 2006).

of pursuing its deepening national interest in ensuring adequate energy supplies at reasonable costs. Much like China, India has found itself to be at odds with the international community in insisting on deepening bilateral economic and energy relationships with such states as Sudan and Burma. Expanding investments in the Sudanese oil sector reinforced India's traditional reluctance to support interference in the internal affairs of developing countries and maintain silence despite growing international concerns about Khartoum's policies towards the Darfur region.[6] India's determination to maintain its partnership with the Burmese military regime, despite its many political transgressions, has come under severe international criticism.[7] India's policy of constructive engagement with Burma has been driven by a perceived need to prevent growing Chinese influence in a country that borders it in the east. After its support of the Burmese democracy movement in the late 1980s, India has shifted towards a relentless effort at improving its influence there.[8] India's policy towards the Sudan and Burma has raised not only questions at home about the role of ethics in India's foreign policy but also questions internationally, about whether India is prepared to abide by widely accepted international norms. Put another way, the big new question is whether India is a "responsible stake-holder" in the international system.[9] The stronger the Indian economy and the more widespread the notion of India as an emerging great power, the greater will be the pressures on New Delhi to abide by pre-existing norms. But India's interests, especially in the energy area, will be so demanding that it will be difficult for New Delhi to sacrifice them in order to please the international community. Managing this tension is bound to test all the political skills at India's command.

---

[6] See Ann Ninan, "India's 'See No Evil, Hear No Evil' Policy in Sudan," Indian Resource Center, September 12, 2002, available at www.indiaresource.org/issues/energycc/2003/indiaseenoevil.html (accessed April 30, 2008).

[7] "India's Identity Crisis in Myanmar," Editorial in the *International Herald Tribune*, October 15, 2007, www.iht.com/articles/2007/10/15/opinion/edindia.php (accessed April 30, 2008).

[8] For a comprehensive discussion, see Renaud Egreteau, *Wooing the Generals: India's New Burma Policy* (New Delhi: Authors Press, 2003).

[9] See Xenia Dormandy, "Is India, or Will it Be, a Responsible International Stakeholder?" *The Washington Quarterly*, Vol. 30, No. 3 (Summer 2007), pp. 117–30.

The Imperatives and Obstacles to Regional Energy Cooperation

Not all consequences of the energy imperative, however, are negative from the larger perspective of South Asian security. Within the subcontinent, energy security considerations are compelling India and her neighbours to rethink their traditional negative attitudes towards regionalism. That South Asia is the world's least integrated region is no longer in doubt. Decades of inward-looking economic policies and entrenched bilateral political tensions – particularly between India and Pakistan – have prevented a substantive movement towards regional cooperation. Although the South Asian Association for Regional Cooperation was set up in the early 1980s, it has not become a vehicle for deepening regional cooperation.[10] Part of the failure of South Asian regionalism is rooted in the fact that what is being attempted is not "economic integration" but a "re-integration." The subcontinent was indeed a single economic entity until 1947. The region's globalization under British colonialism led to a steady integration of its markets. The Great Partition of 1947 along religious lines tore asunder the common economic spaces of the subcontinent. This was further reinforced by political conflict and economic policies across the region that devalued trade. The recent wave of globalization has generally encouraged South Asian states to see the value of regional cooperation. Nevertheless, the bitter legacies of the 1947 Partition have made it difficult to depoliticize economic and energy cooperation. We have also seen, in the last few years, new security issues complicating the potential forward movement on regional energy cooperation.

Most analysts from the region and beyond agree that it is India –as the largest economy and the natural leader of the region –that must take the lead in dealing with the energy security challenges of the subcontinent. There are some indications of a major change in New Delhi's traditional negative attitudes towards regional economic and energy cooperation. After decades of focusing on the global stage – either through the non-aligned movement or on great-power relations – India now recognizes the importance of promoting South Asian regionalism. This is not merely about good intentions. New Delhi has understood that a more tranquil

---

[10] For a recent analysis, see Alyson J. K. Bailes, et al., *Regionalism in South Asian Diplomacy*, SIPRI Policy Paper No. 15 (Stockholm: SIPRI, February 2007).

subcontinent might hold the key to its own prospects as a rising power on the world stage. In recent years India has begun to emphasize the need for a peaceful periphery and the prospects for promoting it through a more purposeful SAARC. As a consequence, the traditionally moribund SAARC has begun to show signs of life, as it moves towards the implementation of a free trade agreement, and take up such new areas as energy cooperation and the modernization of intra-regional connectivity. Giving up its traditional approach of over-negotiating trade agreements with its neighbours, India is even prepared to offer unilateral economic concessions to accelerate the pace of regional integration. Speaking at the 14th SAARC summit in New Delhi in April 2007, India's Prime Minister, Manmohan Singh, declared that "India is ready to accept asymmetrical responsibilities, opening her markets to her South Asian neighbours without insisting on reciprocity" and promised duty-free access to a range of goods from the neighbouring countries.[11] The spirit of enlightened self-interest has also begun to have some impact on the strategic thinking of Pakistan and Bangladesh, the other large nations of the subcontinent, who have tended to refuse in the past any economic cooperation with India entirely for political reasons. Important voices in India's neighbourhood have begun to see the value of integrating with the Indian economy in order to ensure their own rapid economic growth. As India emerges as one of the largest economies of the world, it no longer makes sense for the rest of the region to deliberately shut themselves out of it for political reasons. The challenge, however, has been to let enlightened economic interest prevail over accumulated mutual suspicions.

The complementarity of economic interests between India and her neighbours manifests itself strongly in the area of energy. Nepal and Bhutan, for example, are rich in hydroelectric resources, which could be harnessed for national development as well as exports to the power-starved Indian markets. Bangladesh, for example, has natural gas reserves that have become a vehicle for cross-border energy and economic cooperation between New Delhi and Dhaka. Yet, it has been difficult to have consistent progress on energy cooperation in the region. While Bhutan has managed

---

[11] See "PM's address to the 14th SAARC Summit," April 3, 2007, available at www.pmindia.nic.in/speech/content4print.asp?id=517 (accessed April 30, 2008).

to develop its hydroelectric resources in cooperation with India, Nepal and Bangladesh have been hobbled by profound insecurity vis-à-vis New Delhi. Both Kathmandu and Dhaka have tended to see their energy resources as "sovereign assets" that cannot be shared with India and resisted their pragmatic utilization. While these fears might seem irrational, it is really up to India to find ways to reassure its smaller neighbours that economic cooperation is not about diluting sovereignty. This in turn involves the crafting of creative policies in New Delhi that will consciously aim to reduce the fears of "Indian hegemony" in the subcontinent. In the case of Nepal, there has been some progress, as India takes the government out of the energy negotiations with the smaller countries and lets private sector companies engage the smaller neighbours in practical energy cooperation. With Nepal liberalizing the investment norms for the hydel sector, many Indian companies have managed to win contracts for hydel power development and sale of electric power to the north Indian market. Bangladesh, however, has proved less amenable to this approach, and has turned down a significant investment proposal from the reputed Indian business house, the Tatas. After many years of unsuccessful negotiations to utilize Bangladesh's hydrocarbon resources for industrialization of the nation and leverage exports to the Indian market, the Tatas pulled out in frustration in 2008.[12]

India's difficulties in energy cooperation cannot but be seen in the larger context of its bilateral relations and the burden of the 1947 Partition.[13] It is really up to India to find ways to end the economic partition of the subcontinent and re-imagine the post-Partition geography of the region. New Delhi now senses that it needs a new framework of cooperation with Pakistan and Bangladesh to ensure the flow of hydrocarbons from the east and to the west of the subcontinent. This would imply the opening up of India's frontiers with Pakistan and Bangladesh on terms that are seen as equal and for mutual benefit, and facilitate the overland flow of goods as

---

[12] "Tatas Pull out of $3bn Projects in Bangladesh," *Indian Express* (New Delhi), August 1, 2008, www.indianexpress.com/story/343145.html (accessed April 30, 2008).

[13] For a discussion of Indo-Bangla relations, see Harsh V. Pant, "India and Bangladesh: Will the Twain Ever Meet?" *Asian Survey*, Vol. 47, No. 2 (March/April 2007), pp. 231–49.

well as hydrocarbons. This, however, has not been easy. In early 2005, New Delhi decided to seek negotiations with its neighbours in pursuit of three pipeline projects – the TAPI pipeline to bring gas from Turkmenistan to India via Afghanistan and Pakistan, the IPI pipeline linking Iran with India through Pakistan, and a third one to bring gas from Burma to India through Bangladesh. India's decision to move forward on these pipelines involved overruling the entrenched opposition from the Indian security establishment that was loath to let Pakistan "control" the nation's energy supplies or allow it to prosper from transit fees that would have accrued. Yet, India and its neighbours have found it difficult to move forward on any of the pipeline projects.

The TAPI pipeline, which involves bringing central Asian energy through Afghanistan, has a long history but its prospects remain dim so long as the internal situation in that country remains unstable. Worse still, the border between Pakistan and Afghanistan has become inflamed since the resurgence of the Taliban in 2006. The TAPI project is also caught up in the potential commitments that Turkmenistan might have made to Russia.[14] In contrast the prospects for the IPI pipeline seemed a lot better.[15] Iran, trying to break out of its economic isolation, has been a keen proponent of the project. India and Pakistan, which had opposed this project for different reasons in the past, were quite supportive by the early years of this decade. For India, while energy imports from Iran were of interest, it was the changed approach to Pakistan that moved it in favour of the project. Since 2004, India has seen the pipeline as a way to build economic cooperation with Pakistan and leverage it for a larger transformation of bilateral relations. Pakistan, whose traditional instinct was opposed to expanded economic interaction with India, was keen on building the pipelines as a way of enhancing its standing in the region. Pakistan's leadership, always

---

[14] For a recent discussion of some of the issues, see John Foster, "A Pipeline Through a Troubled Land: Afghanistan, Canada and the New Great Energy Game," *Foreign Policy Series* (Canadian Centre for Policy Alternatives), Vol. 3, No. 1 (June 19, 2008), available at www.policyalternatives.ca/documents/National_Office_Pubs/2008/A_Pipeline_Through_a_Troubled_Land.pdf (accessed April 30, 2008).

[15] For a comprehensive analysis of the project, see Shiv Kumar Verma, "Energy Geopolitics and Iran-Pakistan-India Gas Pipeline," *Energy Policy*, Vol. 35, No. 6 (June 2007), pp. 3280–301.

acutely conscious of its geopolitical location at the crossroads of the Persian Gulf, Central Asia and the subcontinent, sensed new possibilities of emerging as a bridge state between the three regions. Despite considerable progress in the trilateral and bilateral negotiations among the three nations, the IPI project has now run into opposition from the U.S., which is determined to isolate Iran. The negotiations on the Burma-Bangladesh-India pipeline project never really took off. Bangladesh, with less national confidence than Pakistan, remains deeply ambivalent about opening its territory for economic interaction with India. Dhaka sought Indian concessions on a range of other issues as a precondition for letting energy flows across its territory.[16] While the case for regional energy cooperation is now widely accepted in all the capitals of South Asia, its realization depends on the ability of these nations to depoliticize energy cooperation, separate it from the larger bilateral political disputes and let the private sector take the lead. This, in turn, depends on India's leadership and initiative to overcome the accumulated distrust of its neighbours. Even when the region summoned the political will to move forward, the larger geopolitics shaping South Asia's relations with the abutting regions and the interests of the great powers has had powerful potential to trump the prospects for regional energy cooperation.

South Asia and the Great Game

The undivided subcontinent under British rule was the principal force that defined the security politics of the entire Indian Ocean littoral – including the east coast of Africa, the Persian Gulf and Southeast Asia. The security of India was indeed the objective of the British imperial defence system and India in turn paid and manned the machinery of managing the security politics in a large space that spanned from the Cape of Good Hope to Malacca.[17] The British power in India also defined the political evolution

---

[16] P. R. Kumaraswamy and Sreeradha Datta, "Bangladeshi Gas Misses India's Energy Drive," Energy Policy, Vol. 34, No. 15 (October 2006), pp. 1971–73; see also Sreeradha Datta, "Bangladesh Factor in Indo-Myanmarese Gas Deal," *Strategic Analysis*, Vol. 32, No.1 (January 2008), pp. 103–22.

[17] For a recent review of the British Imperial defence system with India at its centre, see John Peter Brobst, *The Future of the Great Game: Sir Olaf Caroe, India's Independence, and the Defense of Asia* (Akron: University of Ohio Press, 2005).

of the inner Asian regions, including Afghanistan, Central Asia, Xinjiang, Tibet and northern Burma. What began as a great game in the late eighteenth century – to exclude rival European powers from controlling the approaches to India – became intimately linked to energy politics after the discovery of the oil fields in the Arabian Peninsula and the Persian Gulf. As the British contemplated the withdrawal from India in the middle of the last century, the question of securing the oil producing regions shaped the process of decolonization as well as the new security arrangements in South West Asia. The "wells of power" thesis outlined by Olaf Caroe, one of British India's last foreign secretaries, in the middle of the last century underlined the centrality of the subcontinent in the defence of Gulf oil and the difficulties in sustaining that defence in the face of the Partition in 1947.[18]

The post-war Western security arrangements directed against the Communist powers – Soviet Union and China – saw the incorporation of Pakistan into the new U.S. alliances – the Central Treaty Organisation and the Southeast Asia Treaty Organisation – that aimed to supplant the British imperial defence system. The new arrangements, however, were never credible. Part of the reason for the collapse of CENTO and SEATO lay in the partition of the subcontinent and the adoption of a non-alignment posture by India and other large newly independent countries in the region.[19] Although post-Partition India continued to nurse ambitions of exercising influence in the region stretching from Aden to Malacca, it found itself in opposition to the West and increasingly marginalized from the security politics of the region. Given its geopolitical position, Pakistan, however, remained critical to the evolution of the security dynamics of the region and played a crucial role in the Cold War confrontation between Washington and Moscow. Amidst the changing regional and international distribution of power, India and Pakistan today look forward to playing a much larger role in the energy politics of their neighbouring regions. As nuclear weapon powers with significant conventional military capabilities, India and Pakistan are beginning to loom larger than during the Cold War in

---

[18] See Olaf Caroe, *The Wells of Power: The Oil Fields of South-Western-Asia: A Regional and Global Study* (London: Macmillan, 1951).

[19] For a comprehensive discussion, see Raju G. C. Thomas, *Great Power Triangle and Asian Security* (Lexington, MA: Lexington Books, 1983).

shaping the security politics of the Persian Gulf, Afghanistan and Central Asia.

With the gathering confrontation between Washington and Teheran, South Asia's relationship with Iran has emerged as a major consideration for the United States. While the U.S. strongly opposes the IPI pipeline, India and Pakistan cannot afford to toe Washington's line given the domestic dynamics of Islamist politics. Despite a deeper relationship with the United States, India was not prepared to abandon its negotiations with Iran on building an overland natural gas pipeline through Pakistan. Instead, it embarked on a complex balancing act that advanced its ties with Washington without giving up its relationship with Iran.[20] Pakistan, which shares a long border with Iran, prefers a careful management of the relationship with Iran rather than to confront it. Iran has also pressed for an observer status in the SAARC, along with the U.S., the E.U., China, Japan, South Korea, Mauritius and Myanmar. The growing security linkages between Iran and South Asia are also reflected in the growing restiveness among the Baloch people, who straddle the border regions of Pakistan and Iran, which is critical for any overland transportation of natural gas from Iran to South Asia.[21] Baloch insurgency against Pakistan and Iran has led to speculation that India and the United States are both involved in fomenting it.

Meanwhile, the rapid economic growth in South Asia and the renewed economic boom in the six GCC countries are beginning to deepen the integration between the two regions. Unlike in the past, when GCC countries tended to focus more on Europe and the United States, they are today

---

[20] See Christine C. Fair, "India and Iran: New Delhi's Balancing Act," *Washington Quarterly*, Vol. 30, No. 3 (Summer 2007), pp. 145–59; Harsh V. Pant, "A Fine Balance: India Walks a Tightrope between Iran and the United States," *Orbis*, Vol. 51, No. 3 (Summer 2007), pp. 495–509.

[21] See Frederic Grare, "The Resurgence of Baluch Nationalism," *Carnegie Paper*, No. 65 (Washington, D.C.: Carnegie Endowment for International Peace, January 2006); see also Chris Zambelis, "Violence and Rebellion in Iranian Balochistan," *Terrorism Monitor*, Vol. 2, No. 13 (June 29, 2006); available at www.jamestown.org/single/?no_cache=1&tx_ttnews[swords]=8fd5893941d69d0be3f378576261ae3e&tx_ttnews[exact_search]=Violence and Rebellion in Iranian Balochistan&tx_ttnews[tt_news]=821&tx_ttnews[backPid]=7&cHash=5677afd721 (accessed April 30, 2008).

increasingly looking East for long-term economic cooperation. India, along with China, is now among their largest oil buyers and energy security is beginning to bind the Gulf on the one hand and South and East Asia on the other. On the security side, the militaries of both Pakistan and India have had a range of linkages with the Gulf. Those ties must be expected to grow in the coming years. The U.S. has also begun to factor India into its larger calculus on protecting the sea lanes in the Indian Ocean as well as exploring the potential for security cooperation with India in the Persian Gulf region. India came close to sending a division of its army to Iraq after the U.S. invasion and occupation of the Gulf nation in early 2003. Although it held back, the idea that India and the U.S. might have complementary interests in the Gulf has begun to take root in New Delhi.[22] Meanwhile, India is stepping up its own military diplomacy in the Gulf, deepening ties with traditional friends like Oman and building new bridges to Saudi Arabia.[23] Until recently, the security paradigms in South Asia and the Gulf were seen as two separate boxes. Amidst the growing inter-penetration of the two regions, that approach will no longer be sustainable. Although the U.S. will remain the dominant factor shaping the security politics of the energy rich Gulf region, India and Pakistan are likely to reclaim at least a part of the historic role of the subcontinent in managing the security of the GCC states.

Unlike the Gulf, South Asia, especially Pakistan, has retained its importance in the security dynamics of Afghanistan. Amidst the new importance of Central Asian energy resources and Afghanistan's geopolitical location, South Asia is being drawn into the new Great Game in a variety of ways. Russia and China are challenging the post 9/11 U.S. military presence and political influence in the region through the Shanghai Coop-

---

[22] Stephen Blank, "India and the Gulf After Saddam," *Strategic Insights*, Vol. III, No. 4 (April 2004), available at www.ccc.nps.navy.mil/si/2004/apr/blank Apr04.asp (accessed April 30, 2008).

[23] Joshua Richards and Teresita Schaffer, "India and the Gulf: Convergence of Interest," *South Asia Monitor*, No. 113 (Washington, D.C.: Center for Strategic and International Studies, December 2007); available at www.csis.org/media/csis/pubs/sam113.pdf (accessed April 30, 2008).

eration Organisation (SCO).[24] Meanwhile, the U.S., in its effort to promote the autonomy of Central Asia from Russia and China, has sought to promote greater integration between Central Asia and South Asia as a potential counter to the SCO. Although India and Pakistan are observers in the SAARC, both of them are today tied far more closely, in different ways, with the U.S. strategy in Afghanistan. Pakistan is the frontline state in the U.S. war on terror in Afghanistan and India is among the major economic donors in the reconstruction of Afghanistan. The U.S. has also blessed Afghanistan's entry into the SAARC. Washington's strong support for the TAPI pipeline must also be seen in this context.

The successful integration of South and Central Asia, however, depends on creating a stable and peaceful Afghanistan. As the U.S. war against Al Qaeda and the Taliban enters a crucial phase, the Durand Line between Pakistan and Afghanistan has become the principal fault line. The Afghan war is now spilling over into the tribal areas east of the Durand Line and threatening the very territoriality of the Pakistani state. Amidst its improved relationship with Islamabad, India has begun to recognize the importance of the Pakistan Army in stabilizing the badlands to the west of the subcontinent. Until now, New Delhi has resisted the temptation to take advantage of Pakistan's troubles. On the great-power rivalries in Central Asia, both India and Pakistan are torn between competing impulses. India has strong security interests in Afghanistan and Central Asia but is limited by the lack of geographic access to the region.[25] India has been comfortable working with Russia in Central Asia but is deeply suspicious of a growing Chinese influence in the region. It also has no interest in seeing U.S. and NATO forces withdraw from the region. And despite its strong all-weather friendship with China, Pakistan is inextricably enmeshed with the U.S. strategy in Afghanistan. One factor that could significantly alter the dynamics of Central Asia is security cooperation between India and Pakistan. This need not necessarily be an impossible proposition. If India and Pakistan – a big *if* indeed – can resolve their deep

---

[24] See Martha Brill Olcott, "The Great Powers in Central Asia," *Current History*, October 2005, www.currenthistory.com/org_pdf_files/104/684/104_ 684_331.pdf (accessed April 30, 2008).

[25] See Stephen J. Blank, "India's Rising Profile in Central Asia," *Comparative Strategy*, Vol. 22, No. 2 (April-June 2003), pp. 139–57.

differences on Jammu and Kashmir and end their traditional rivalry in Afghanistan, they can revive the strategic unity of the subcontinent and raise the region's influence in the Gulf and Central Asia.

South Asia and Great Power Rivalry

Over-arching the intra-regional dynamics within the subcontinent and the inter-regional play between South Asia on the one hand and the neighbouring regions on the other hand is the evolving framework of great power relations. After the Cold War, it appeared that the traditional rivalry among the great powers in South Asia was dissipating. All great powers – including the U.S., Europe, Russia, China and Japan – looked beyond the traditional zero-sum game in the subcontinent towards improving ties with both India and Pakistan. This happy situation, however, might be beginning to come to an end, thanks to the deeper strategic involvement of the United States in the subcontinent, the reassertion of Russia, the rise of China and Japan's attempts at becoming a normal power. The slow but steady rise of India, meanwhile, suggests that the subcontinent need not remain a mere theatre for great-power rivalry but a catalyst for its change. India is now being considered as a "swing state" in the global balance of power. This altering framework of great power relations begins to acquire greater complexity and energy and resource security emerges as critical concerns. A few broad trends are already visible.

First, as the world's fastest growing economies, China and India, are determined to ensure the necessary external supply of much needed energy resources and other raw materials. As a consequence, they are inevitably stepping on each other's toes in the region and around the world. First, the search for equity oil in the farthest corners of the earth has put the oil companies of China and India in constant competition. Although they have often talked about mitigating their rivalry, the two sides have remained at odds. Indian political leaders continuously benchmark their performance on equity oil investments with that of China. Prime Minister Manmohan Singh, for example, urged India's national oil companies "to think big, think creatively and think boldly." He continued: "They have to be more fleet-footed in making use of global opportunities, both on the

supply and demand side. I find China ahead of us in planning for the future in the field of energy security."[26]

China and India are not merely looking for access to energy resources. They are also driven towards gaining political influence in the oil-producing regions. It is a matter of time before the two countries get involved in protecting the regimes that provide energy resources. This is already visible in Burma, where the two countries are competing for energy resources as well as political influence.[27]

Energy security calculus is also feeding into the military modernization of China and India, especially in the search for blue-water naval capabilities. A sense of rivalry between China and India in the maritime domain is already evident as part of a larger geopolitical jousting between the rising Asian giants.[28] With both China and India increasingly dependent on imported energy, protecting the sea lanes of communication has emerged as a major naval priority for both. This, in turn, has demanded creating access arrangements for their navies and building maritime infrastructure at crucial locations in order to facilitate force projection. China's current port construction in the subcontinent and future plans – at Gwadar (Pakistan), Chittagong (Bangladesh), Sittwe (Burma) and Hambantota (Sri Lanka) – has revived Indian fears of a Chinese encirclement.[29] China has never accepted the notion of Indian primacy in the Indian Ocean or the subcontinent and has always claimed the right to develop its own strategic relations in these two regions. This traditional land-based challenge to India has now begun to encompass the waters of South Asia. China, of course, has its own reasons for elevating its profile in the South Asian maritime environment. Beijing has genuine concerns that its energy supplies might

---

[26] See "PM's Inaugural Address at Petrotech, 2005," New Delhi 2005, available at www.pmindia.nic.in/speech/content4print.asp?id=69 (accessed April 30, 2008).
[27] See Stein Tønnesson and Åshild Kolås, *Energy Security in Asia: China, India, Oil and Peace* (Oslo: International Peace Research Institute, Oslo, 2006).
[28] David Scott, "The Great Power Great Game Beteen China and India: The Logic of Geography," *Geopolitics*, Vol. 13, No. 1 (January 2008), pp. 1–26.
[29] Gurpreet S. Khurana, "China's 'String of Pearls' in the Indian Ocean and its Security Implications," *Strategic Analysis*, Vol. 33, No. 1 (January 2008).

be choked off in the Malacca Straits and, as a consequence, has focused on alternative routes by connecting South Asian ports to Western China.[30]

Meanwhile, India's own rising naval profile in the South China Sea and beyond is being carefully assessed in Beijing. India's joint naval exercises with the U.S. and Japan in the Pacific Ocean in April 2007 and much larger multilateral exercises in September 2007 with the U.S., Japan, Australia and Singapore in the Bay of Bengal have generated fears in the region about the formation of an "Asian NATO."[31] India sees these exercises as part of an effort to promote regional maritime security, while Beijing might view them as the precursor to a strategy of containment. As elements of a "security dilemma" crystallize between India and China, energy security is very much in the front and centre of the new dynamic.

The intersection of energy security and balance-of-power issues in South Asia is also illustrated vividly by the Bush Administration's civil nuclear initiative towards India. In agreeing to carve out an exception for India from the global non-proliferation regime, and only for India, the Bush Administration has emphasized the importance of energy security considerations and the need to integrate New Delhi into the global non-proliferation order. Beijing, however, has reasons to see this differently and consider it as part of the construction of a new strategic partnership between India and the U.S. aimed at balancing China's rise.[32] Not surprisingly, China is the only power with nuclear weapons that has been hesitant in welcoming the Indo-U.S. civil nuclear initiative. At the same time, Beijing has also been reluctant to openly oppose the deal, on which India has invested so much political capital.[33] When the initiative finally came up for endorsement by the 45-nation Nuclear Suppliers Group in Septem-

---

[30] Ian Storey, "China's Malacca Dilemma," *China Brief*, Vol. 6, No. 8 (April 12, 2006); available at www.jamestown.org/single/?no_cache=1&tx_ttnews%5Bswords%5D=8fd5893941d69d0be3f378576261ae3e&tx_ttnews%5Bexact_search%5D=China%92s%20Malacca%20Dilemma&tx_ttnews%5Btt_news%5D=31575&tx_ttnews%5BbackPid%5D=7&cHash=48879a4259 (accessed April 30, 2008).

[31] Praful Bidwai, "Five Nation Asian Drill Presages Asian Nato?" September 8, 2007, available at antiwar.com/bidwai/?articleid=11574 (accessed April 30, 2008).

[32] See Zhang Guihong, "U.S.- India Strategic Partnership: Implications for China," *International Studies*, Vol. 42, Nos. 3–4 (2005).

[33] For a parsing of the early Chinese position, see C. Raja Mohan, "China's Stand on Indo-U.S. Nuclear Deal," *The Straits Times*, July 29, 2007.

ber 2008, Beijing's open position generated a furious reaction in New Delhi. As the United States and India mounted political pressure on China, Beijing chose to back down.[34]

In conclusion, energy considerations have undoubtedly emerged as a defining element in the security politics of South Asia – within the region, between the subcontinent and its neighbourhood, and in its relations with great powers. On the face of it, the subcontinent needs more purposeful multilateral cooperation at all the three levels to address the challenges of energy security. But efforts in that direction, weak and vulnerable as they are at the moment, could well be complicated by deepening conflicts within and across the subcontinent's frontiers and the emerging great power tensions.

[34] Bhaskar Roy, "N-Deal, China and the Assassin's Mace," *Sify News Online*, September 9, 2008, http://sify.com/news/fullstory.php?id=14754917 (accessed June 21, 2009).

Part II:
External Dimensions and Linkages

5. Perceptions and Strategies on Energy Security: The Case of China and Japan

Janet Xuanli Liao*

Introduction

China and Japan are two major oil consumers in the world today, ranking as the second and third biggest consumers after the United States, respectively. In 2007, the two countries consumed nearly 597 million tonnes (mts) of oil, accounting for 15 per cent of the world total.[1] Consequently, energy security, in particular oil security, has become one of the top issues on the governments' agendas in both China and Japan. Given the huge economic scale of China and Japan and the likely impact of their oil demands on the world oil markets, it is essential to explore the perceptions held by the two Asian powers on energy security and the strategies they have employed to enhance such security. Despite the similar strategies taken by China and Japan to ensure their energy security, namely the non-market approach, it is interesting to note that their perceptions over energy security have experienced some evolution over the past fifty years, and the strategies they took on securing oil supply have also changed gradually over time.

This chapter intends to examine the evolution of perceptions and strategies on energy security in China and Japan since the 1970s, with oil as the focus of analysis. The chapter maintains that the governments in both China and Japan have taken "strategic" means to enhance energy security based on their belief that oil is a "strategic commodity." The priorities used to be given to "availability" and "reliability" of energy supply, while the "cost" issue was often granted secondary significance. Following the improved status of energy security and the better awareness of environmental and climate damages caused by unsustainable economic develop-

---

* Janet Xuanli Liao is Lecturer at the Centre for Energy, Petroleum and Mineral Law and Policy (CEPMLP), University of Dundee, Scotland, UK.

[1] *BP Statistical Review of World Energy, June 2008*, p. 12.

ment, both China and Japan have paid more attention to "sustainability" in their energy strategies, but their positions on the issue differ substantially. This chapter argues that a perspective taken by a government can certainly help define its approach on energy security, but the degree of the nation's economic development and the level of energy efficiency also play a role in refining such a perspective.

The discussion below attempts to illustrate the case in four sections. It firstly analyses the perspectives held by China and Japan on energy security and the strategies taken by the two nations. The second part examines the strategies of the Japanese government in securing its oil supply since the 1960s, and the reasons behind its evolving perceptions on energy security. The third section investigates China's energy security strategy since the mid-1990s, and the mechanism utilized to implement such strategy. The fourth section is the conclusion, which will highlight the findings and identify likely implications of different mechanisms on energy security in a wider context.

Energy Security for China and Japan

The term "energy security" has been used for nearly a century, since Winston Churchill, as first Lord of the Admiralty, first talked about energy security on the eve of World War I, with the Royal Navy switching its fuel from Welsh coal to Persian-Iranian oil. According to Churchill, the focus of energy security was oil and the fundamental principle to ensure oil security was "diversification of supply."[2] Thereafter, energy security has remained as a serious concern to most governments, especially the oil importing countries. However, no single definition on energy security has been agreed so far. The only consensus on defining "energy security" seems to be on four key elements: accessibility, affordability, reliability and sustainability. For instance, the World Energy Assessment Report in 2000 stated that, "Energy security means the availability of energy at all times in various forms, in sufficient quantities, and at affordable prices. These conditions must prevail over the long term if energy is to contribute

[2] Jan H. Kalicki and David L. Goldwyn, eds., *Energy & Security: Toward A New Foreign Policy Strategy* (Washington, D.C.: Woodrow Wilson Center Press, 2005), p. 52.

to sustainable development."[3] However, disagreements remain with respect to the significance of the individual element, the undisrupted "supply" or the affordable "cost," which also lead to different preferences over the strategies for energy security.[4]

Two major approaches are traditionally believed available for governments to ensure the security of energy supply. One is the "strategic approach," which emphasizes control of the resources and favours a major role by the government in sponsoring energy related activities, such as "direct government participation in both enhancing domestic energy production and in investing in overseas sources of energy." Some other non-market activities, including establishment of strategic oil stockpiles, pursuit of energy diplomacy and provision of foreign assistance, are also important parts of the "strategic approach."[5] The other school is the "market approach," which advocates that the risk of supply disruption can be reduced via enhancing the efficiency of the domestic or international markets. This thinking argues that with the regular discovery of new oil deposits and the development of the international oil markets, oil has become less strategic and thus should be dealt with via market mechanisms. Government intervention is only needed in terms of a market failure.[6]

With the introduction of the environmental factor into the definition of energy security in the new century, a "new energy paradigm" has been proposed by some scholars. According to Flavin and Dunn, the new energy paradigm should not be based on "a finite stock of fossil fuels, but on a virtually limitless flow of renewable energy," therefore, it would "likely to broaden the geopolitics of energy, which traditionally has been preoccu-

---

[3] José Goldemberg, ed., *World Energy Assessment: Energy and the Challenge of Sustainability* (New York: UNDP, 2000), p. 11.

[4] Christian Constantin, *China's Conception of Energy Security, Sources and International Impacts*, The Centre of International Relations (UBC), Working Paper, No. 43 (March 2005), p. 3.

[5] Philip Andrews-Speed et al., *The Strategic Implications of China's Energy Needs*, Adelphi Paper, No. 346 (New York: Oxford University Press, 2002), pp. 18-19.

[6] Constantin, *China's Conception of Energy Security, Sources and International Impacts*, p. 4.

pied with resource conflict, to include the new dynamic of environmental cooperation."[7]

As the world's second and third largest oil importers, Japan and China have viewed oil as a "strategic commodity" until recent years, and have both taken a strategic approach as the major means to ensure energy supply. Their perceptions and strategies on energy security have experienced certain change over the past few years, with increasing attention paid to the environmental concerns. However, the practice of China and Japan on energy security over the past few decades has suggested that compared with the concern over energy "supply" (availability) that overruled all the time, the "cost" element would always come secondary. Indeed, the governments of Japan and China have both intentionally paid high cost, whenever necessary, to ensure that oil supply is not only "available" but also "reliable," through strategic oil stockpiles, foreign assistance and energy diplomacy.

Resource-scarce Japan started to rely on oil imports in the 1960s to sustain its rapid economic growth. With stable supply from the international oil majors who were in control of the Middle East oil, the Japanese government focused on ensuring stable supply at the lowest possible cost throughout the 1960s.[8] After the first oil crisis in 1973, Japan changed the priority of its energy security policy to ensure stable oil supply even at higher cost; it also reinforced the efforts to develop "autonomous oil" in order to offset negative impact on its economy triggered by higher oil prices. Other measures taken by the Japanese government included energy diplomacy, enhancement of energy efficiency and establishment of strategic oil stockpiles. Based on the much improved energy condition derived from such strategies, the Japanese government pursued a more sensible energy strategy in the 1990s for "optimal balance between supply and

---

[7] Christopher Flavin and Seth Dunn, "A New Energy Paradigm for the 21st Century," *Journal of International Affairs*, Vol. 53, No. 1 (1999), pp. 167-68.

[8] Ken Koyama, *Japan's Energy Strategies Towards the Middle East* (PhD Dissertation, The Centre for Energy, Petroleum, Mineral Law and Policy, University of Dundee, UK, 2001), pp. 47-49.

cost," and further shifted to a more environmentally friendly energy policy at the turn of the century.[9]

With regards to China, energy security had not become a serious concern for the government until the mid-1990s with its switch to net oil importer status. The past 15 years witnessed a gradual change in China's energy security strategy – from one that gives priority to availability and reliability even at high cost, to one that emphasises energy efficiency and sustainable development. Of course, further efforts are required from the Chinese government to ensure a more balanced development between energy security and sustainability in regard to the environment and climate change, especially if China wishes to play a greater role on the international stage.

The discussion below will examine the evolution of Japan and China's perspectives and strategies on energy security, to illustrate the dominant factors driven such a change at different time and under different circumstances.

Japan's Perceptions and Strategies

As having mentioned earlier, Japan's reliance on oil imports started in the 1960s. Prior to that, the country relied on 76 per cent of its domestic sources of energy supply, with coal accounting for 45.8 per cent and hydropower for 21.2 per cent.[10] In 1961, the Japanese government decided to switch its primary energy supply from coal to oil, partly because oil was cheaper than coal and easier to utilize, and partly that the international oil majors were keen to expand market to Japan, and thus promoting crude oil imports coupled with expanding refining capacity in Japan.[11] Faced with a rapid growth in oil imports – from 46 per cent in 1960 to 90 per cent in 1973 – the strategy taken by the Japanese government on energy securi-

---

[9] Koyama, *Japan's Energy Strategies Towards the Middle East,* p. 58; Takao Kashiwagi, et al., "The new direction of Japanese energy policy and the role of gasification," Gasification Technologies 2004, Washington, D.C., October 3-6, 2004, http://www.gasification.org/Docs/2004_Papers/18KASH.pdf (accessed May 9, 2005).

[10] Koyama, *Japan's Energy Strategies Towards the Middle East*, pp. 39-42, 74.

[11] Natural Gas Association (NGA), *Nihon no Sekiyu to Tennen gasu* [Japan's Oil and Natural Gas] (Tokyo: Tennen gasu kogyokai [NGA], 1998), p. 241; Koyama, *Japan's Energy Strategies Towards the Middle East*, pp. 41-42.

ty in the 1960 was focused on stable supply but at the lowest possible cost. In order to reduce the high reliance on the oil majors for oil supply, which accounted for 70 per cent of Japan's total oil imports by the late 1960s, the Japanese government asked the domestic oil companies to obtain autonomy in oil production (*jishu kaihatsu*), with a target set to reach 13 per cent in 1965 and 30 per cent in 1985.[12]

The first oil crisis in 1973 had a great impact on Japan's perception of energy security. In addition to the high oil price caused by the crisis, the oil embargo pursued by the Arab countries, from October 1973, generated great concerns in Japan about the likely shortage of oil supply. By the time of the oil crisis, Japan's reliance on oil had reached 78 per cent of its total primary energy consumption, of which 87.8 per cent was from the Middle East countries. Although Japan was not listed as an "enemy" by the Arab countries for oil embargo, Tokyo's "neutral position" with regard to the Israel-Arabic war was viewed as "unacceptable" to the Arab states, and it was thus excluded from the list of "friends" as well. Accordingly, the Arab countries decided to reduce ten per cent of oil supply to Japan as a punishment, and a further five per cent of supply reduction would be applied every following month. Under such pressure, Japan was forced to switch its policy to supporting the Arab countries against the Israel occupation despite the objection by the United States.[13]

Since there is virtually no state-owned oil company in Japan,[14] the Japanese government set up a special agency, the Japan National Oil Corporation (JNOC, which was changed to the Japan Oil, Gas, and Metal Corporation, JOGMEC in 2002) under the Ministry of International Trade and Industry (MITI), in 1967, to form joint investments with private oil compa-

---

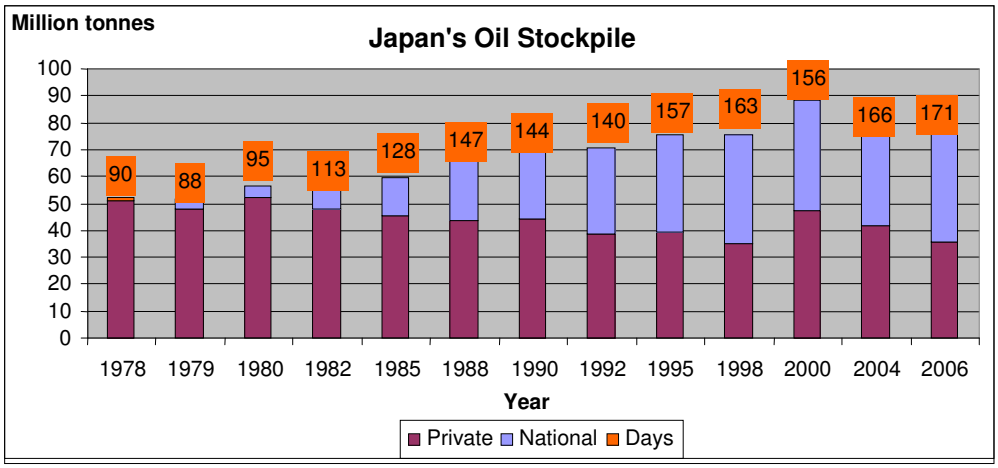
[12] Koyama, *Japan's Energy Strategies Towards the Middle East*, pp. 45-48.

[13] Fan Li, *Zhanhou Riben dui Zhongdong zhengce yanjiu 1952-1996* [Post-war Japanese Policy towards the Middle East 1952-1996] (Tianjin: Tianjin Renmin Chubanshe, 2000), pp. 46-57; Koyama, *Japan's Energy Strategies Towards the Middle East*, pp. 51-2.

[14] The Japanese government established a state-owned upstream company, in December 1955, called the Japan Petroleum Exploration Co., Ltd. (JAPEX), for petroleum exploration and development in Japan and abroad. But soon after in April 1970, JAPEX became a private company and was listed on the Tokyo Stock Exchange in December 2003. See *Japan's Oil and Natural Gas*, pp. 240-42; The JAPEX Profile, http://www.japex.co.jp (accessed April 10, 2009).

nies for policy implementation. JNOC often made a 50:50 share arrangements with the private companies in overseas petroleum development, and the INPEX Corp. and the Japan Oil Development Corp. (JODOC) were the major companies involved in such activities. In dealing with the project that the private companies were reluctant to be involved in but MITI wished to pursue, JNOC could even provide 100 per cent of initial investment and bear the full cost if things did not work out.[15] Some MITI officials did suggest setting up some national oil companies, but such an idea had not been realized due partly to the disagreement within the government,[16] and partly because of the limited capital and power owned by the MITI. As a result, the Japanese government could not exert much control over the oil companies, and the 30 per cent target of "autonomous oil production" set by the government never became a reality either. That being said, JNOC contributed greatly to the building of substantial strategic petroleum stockpiles in Japan, which reached 171 days of oil consumption in 2006, amongst the government share was over 90 days, the highest amongst the OECD countries.

Figure 1. Japan's Oil Stockpile, 1978-2006



Source: Agency for Natural Resources and Energy, METI, "Energy in Japan, 2006," http://www.enecho.meti.go.jp/topics/energy-in-japan/energy2006E.pdf (accessed April 10, 2007).

---

[15] Jan-Hein Chrisstoffels, *Getting to Grips Again with Dependency: Japan's Energy Strategy* (The Hague: Clingendael International Energy Programme, August 2007), pp. 10-11.

[16] The author's interviews with some specialists in Tokyo, June 2008.

Since the aftermath of the first oil crisis, the Japanese government emphasized securing the volume of oil supply even at the cost of other policy objectives such as lower energy costs. In order to reduce the cost of oil imports, the Advisory Committee for Energy (ACE) submitted a report in 1978 suggesting that Japan reduce its dependence on oil imports through international cooperation and prepare for an emergency within the framework of the International Energy Agency. In the "long term energy supply and demand outlook," the ACE set a new target based on a proposed slower growth of Japan's oil imports, with 370mts for 1985 and 388mts for 1990. The Japanese government also made great efforts to promote energy conservation and diversification away from oil to other energy sources, which enabled a successful implementation of the ACE targets. After reaching a peak in 1973 at 265mts, Japan's oil imports declined gradually, and the amount of oil Japan imported was 201.4mts in 1985, 234.5mts in 1990, and 205mts in 2007.[17]

Japan's perception of energy security underwent another shift in the 1990s, based on the idea of "optimal balance between security and cost": to lower the cost and ensure energy supply at the same time. Measures for the implementation of this strategy included energy conservation and diversification of energy sources in order to decrease dependency on oil. However, given the fact that oil was responsible for greater than 50 per cent of Japan's total primary energy supply, to secure a stable supply of oil was still viewed as a major concern in Japan's energy policy.[18] Accordingly, Japan started deregulation in the oil industry from the 1990s in order to improve the competitiveness of the industry, with a five-year plan for step-by-step implementation. To date, Japan has become the most energy efficient country in the world, with its energy efficiency enhanced by nearly 50 percent between 1980 and 2006.[19]

The new feature which appeared in Japan's thinking on energy security was the consideration of environmental protection, which was stipulated in The Fundamental Law of Energy Policy (FLEP), proclaimed in 2002.

---

[17] Koyama, *Japan's Energy Strategies Towards the Middle East*, p. 54; *BP Statistical Review of World Energy*, 1986, p. 19; 1991, p. 17; 2008, p. 21.

[18] Koyama, *Japan's Energy Strategies Towards the Middle East*, p. 58.

[19] Masaki Hisane, "Japan's new energy strategy," *Asia Times Online*, January 13, 2006, p. 2.

The FLEP set up three guiding principles for policy demand and supply: energy security, environmental protection and economic efficiency (the so-called "3Es"). Under energy security, diversifying primary energy resources and increasing self-sufficiency were listed as the key issues. In terms of environmental protection, three factors were addressed, namely, to prevent the green-house effect, to preserve the regional environment, and to transform into a recycling society. Finally, the enhancement of economic efficiency, activation of market mechanism, and promotion of deregulation policies facilitating the two principles above were considered as the key issues.[20]

Based on the new principles, Ken Koyama, from the Institute of Energy Economics, Japan, has conceptualized a new definition on "energy security" which is as follows: "To secure sufficient energy supply at reasonable prices for the achievement, pursuit and maintenance of maximizing economic/social welfares and sustainable development of national economy and citizens."[21]

China's Perceptions and Strategies

China had been self-sufficient in oil supply since the mid 1960s due to the discovery of the Daqing and another couple of oil fields, Shengli and Dagang. Prior to that, China relied on oil imports from the Soviet Union in the 1950s and early 1960s, but due to the limited oil demand at the time[22] and its rich coal reserves, energy security did not form a major concern for the Chinese government. Driven by a much stronger economy, China switched to become a net oil importer in 1996, and relied on nearly 70mts

---

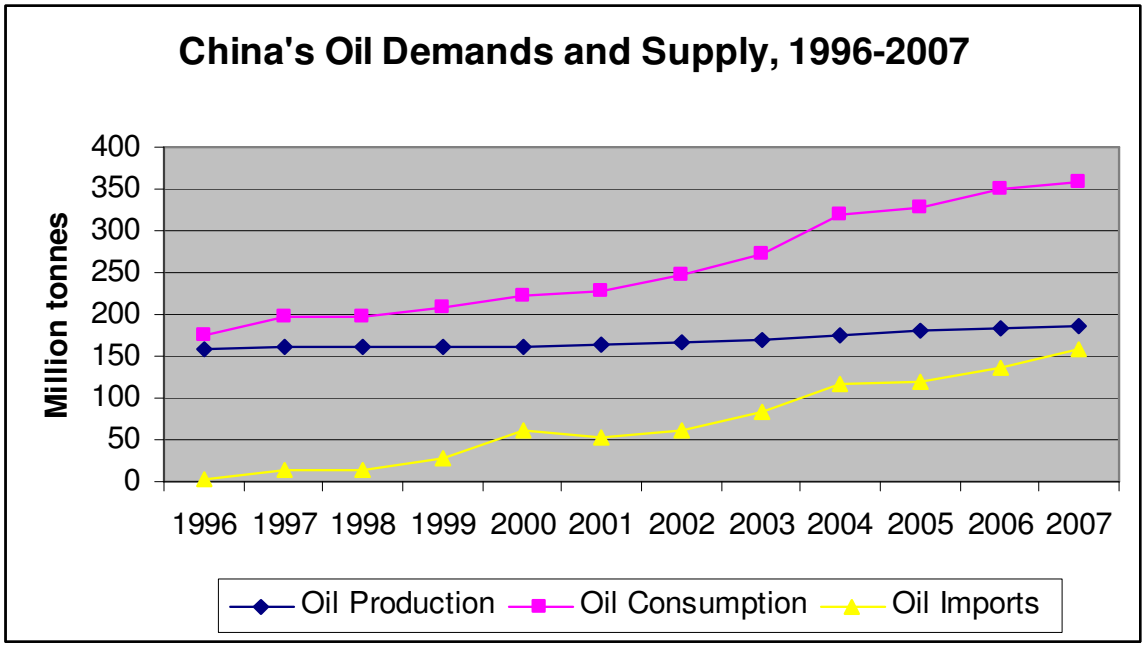
[20] Takao Kashiwagi, et al., "The new direction of Japanese energy policy and the role of gasification."

[21] Ken Koyama, "Japan's New National Energy Strategy," August 30, 2006, http://gc.nautilus.org/Nautilus/east-asian-science-security-network/archives/350.pdf (accessed September 28, 2006)

[22] China's annual oil-imports at the time were only about 1.6 million tonnes in average due to the undeveloped economy. Refer to Tatsu Kambara, "The petroleum industry in China," *China Quarterly*, No. 60 (1974), p. 703, Table 1.

of oil imports by 2000;[23] energy security became a priority in China's economic and foreign policy agenda as a result.

Figure 2. China's Oil Demands and Supply, 1996-2007



Sources: BP Statistical Review of World Energy, 2005-08, various years.

As shown in Figure 2, during the first few years following China's shift to net crude oil importer status from 1996, the amount of China's oil imports remained very small, ranging from only 1.7mts to less than 30mts annually. Therefore, there was, initially, a heated debate in the country about whether China should give up the long-standing principle of self-reliance, and instead rely on foreign oil supply. It did not take long for the debate to fade away, as China's oil import volumes continued to increase strongly. By 2003 China's total oil imports reached 97.4mts and the IEA forecasted a further rise to 310mts by 2030, accounting for 80 per cent of China's total oil demands. Against this background, the Chinese leadership accepted that oil import dependence would be unavoidable and would remain for the long-term.[24]

---

[23] Tian Chunrong, "An analysis of China's oil imports and exports in 2003," *Guoji Shiyu Jingji* [*International Petroleum Economics*], No. 3 (2004), p. 11, Table 3.

[24] Mikkal E. Herberg, "Asia's Energy Insecurity: Cooperation or Conflict?" *Strategic Asia 2004-2005: Confronting Terrorism in the Pursuit of Power*, Ashley J. Tellis

Indeed, there seems no clear definition on energy security in government documents or scholarly works in China. As Erica Downs correctly pointed out, "Analysts in China often use the same shorthand definition as their U.S. counterparts – adequate, affordable and reliable supplies – but generally do not elaborate on what they mean by each of these terms."[25] However, the Chinese practice over the past decade has suggested that the Chinese energy security strategy was, originally, focused on "availability" and "reliability" of energy supply, while the cost issue was always of secondary significance. The approach employed to ensure energy security by the Chinese government was also largely strategic in nature based on the belief that oil is a strategic commodity.

Domestically, the central government emphasized maximisation of oil production despite the high cost involved to guarantee certain level of self-reliance.[26] Internationally, the Chinese government has encouraged overseas oil developments by offering low-interest loans to a few national oil companies (NOCs), including the China National Petroleum Corporation (CNPC, incorporated in 1988), the China Petrochemical Corporation (Sinopec, incorporated in 1983), and the China National Offshore Oil Corporation (CNOOC, set up in 1982). The three NOCs are all listed in the international stock markets but they are not truly commercialised by Western standards. Transformed from governmental ministries to NOCs, these Chinese oil companies are expected to share a responsibility to help the Chinese leadership ensure stable oil supply. In return, they enjoy a prescribed regional monopoly in the domestic oil market.[27] Beijing also retains control over the appointment and dismissal of the NOCs' leader-

---

and Michael Wills, eds. (Washington, D.C.: National Bureau of Asian Research, September 2004), pp. 348-49, https://www.nbr.org/publications/issue-.aspx?id=106, (accessed December 6, 2006).

[25] Erica Downs, *The Brookings Foreign Policy Studies, Energy Security Series, China* (Washington, D.C.: The Brookings Institution, December 2006), p. 13.

[26] Department of Communications & Energy, State Planning Commission of PRC, '97 *Baipishu Zhongguo nengyuan* [*' 97 White Paper China Energy*] (Beijing: Zhongguo wujia chubanshe, 1997), pp. 49-50.

[27] Shi Dan, "Reform of the Chinese oil industrial system: achievements, problems and measures for further progress" (in Chinese), paper delivered at the Expert Workshop on "Shaping China's energy security: actors and policies" by the Centre études Asie (France), Beijing, September 15, 2006, p. 4.

ship. The CEOs are assessed "not only on how well they run their companies, but also on how well they serve the CCP's (Chinese Communist Party) interests." If they can demonstrate success in both areas, the NOCs' executives have a chance to be promoted to higher positions.[28] In addition, Beijing pursued energy diplomacy to help the NOCs' activities to ensure the oil supply. At the first stage, China's overseas oil development was limited to the regions along the "energy belt," namely, Russia, Central Asia and the Middle East.[29] Since the turn of the century, the Chinese search for oil has expanded globally with Africa and Latin America being new additional focal points.

Such a strategy has worked reasonably well in terms of ensuring the amount of oil supply for China's economic development, and is also successful in enhancing reliability by diversifying the sources of oil supply. By 2006, China's had managed to reduce its reliance on Middle East oil imports to 45.2 per cent (from 61 per cent in 1998) and oil from Africa had grown to 31.5 per cent (from 10.8 per cent in 1995) of its total oil imports, which is expected to reach 35-40 per cent of China's oil imports in the next five to 10 years.[30] Nevertheless, China's energy diplomacy and the NOCs overseas activities have also encountered severe criticism from the international community, especially with regard to China's role in Sudan's Darfur crisis and with regards to the Iranian nuclear programme.[31]

Moreover, China started building national strategic petroleum reserves (SPR) in 2004, with four bases established, two in the coastal Zhejiang province, and one each in northern China, Shangdong and Liaoning. Ac-

---

[28] Downs, *The Brookings Foreign Policy Studies, Energy Security Series, China*, p. 23.

[29] Andrews-Speed, et al., *The Strategic Implications of China's Energy Needs*, pp. 46-69.

[30] Tian Chunrong, "An analysis of China's oil imports and exports in 2006," *Guoji Shiyu Jingji*, No. 3 (2007), pp. 16-17; Kerry Laird, "China looks to increase oil imports from Africa to 40%," Rigzone, March 17, 2008, http://www.rigzone.com/news/article.asp?aid=58422 (accessed April 10, 2008).

[31] See for instance, Morton Abramowitz and Jonathan Kolieb, "Why China Won't Save Darfur?" *Foreign Policy* (June 2007), http://www.foreignpolicy.com/story/cms.php?story_id=3847 (accessed January 20, 2008); "EU turns up heat on China over Darfur crisis and divest from PetroChina," *Sudan Tribune*, March 18, 2008; and, Associate Press, "Russia, China block new Iran nuclear sanctions," September 23, 2008.

cording to a newspaper report, the government plans to build up a four-level oil stockpiling system: the national SPR by the central government, the regional SPR by the local governments, the commercial stockpiles by the major NOCs, and those by the medium and small sized companies.[32] However, since China has not issued a law on strategic petroleum reserves, it would be difficult for the central government to identify how the system would work, and how to divide responsibilities between the governments, and the governments and the state-owned companies.

The last few years have witnessed gradual changes in China's conception on energy security, triggered by the ever-rising oil demand, the widespread pollution, and the worldwide concerns over climate change. In March 2006, Beijing issued the 11th Five-Year Guidelines (2006-2010), which pledged to construct "an environment friendly and resource conservationist society." It also set ambitious targets to improve energy efficiency by cutting energy consumption by 20 per cent per unit of GDP and to cut total discharge of major pollutants by 10 per cent.[33] On March 19, 2007, Ma Kai, head of the National Development and Reform Commission, further claimed that it would be unsustainable for China to continuously consume 15 per cent of the world's energy to produce 5.5 per cent of the global GDP, and it was imperative for China to restructure its economy in order to pursue a more sustainable development.[34] It may take some time for Beijing to build up a "circular economy" with better energy efficiency, but it was obvious that its perspective on energy security began to involve more concerns on sustainability, such as sustainable development, alternative fuels, and conservation.[35]

The global financial crisis which started in 2007 and the subsequent economic downturn is negatively impacting the efforts made by the Chinese government to achieve the targets set for environmental protection. Faced with millions of jobless forces, the central government has slashed the por-

---

[32] "Zhongguo jiang chuojian siji shiyou chubei tixi" (China will build up a four-level oil stockpiling system), *China Daily*, July 18, 2007.

[33] "China sets new targets in five-year plan," *People's Daily*, March 8, 2006.

[34] "Ma Kai: China to Move Away from Energy-intensive Growth," *Xinhua*, March 19, 2007.

[35] Constantin, *China's Conception of Energy Security, Sources and International Impacts,* p. 18.

tion of the stimulus package earmarked for environmental projects, from US$51 billion to US$31 billion, for other uses.[36] However, this situation should not last long and could be improved with the recovery of the world economy. A more fundamental challenge facing the Chinese government, in fact, is the lack of a well-established legal framework to ensure the implementation of its energy strategies. Despite the increasing attention paid by the Chinese government to encouraging more investment in alternative energies and to energy efficiency, no institutional instruments were available for enforcement, leaving alone the fragmented policy-making process in China's energy sector.[37] The good news is that the top Chinese officials have not given up their "green" ambitions, and are still calling for development of new energy and for building up a nationwide "low carbon" lifestyle.[38]

Conclusion

Like most of the other countries, the perceptions of China and Japan on energy security have experienced considerable changes over the past few decades, according to the energy situation facing them. Despite the different situation on domestic energy production between China and Japan, the two countries share a lot in their perceptions on energy security: both are primarily concerned over the amount of oil supply, and the cost factor was often given secondary significance. The concern over undisrupted supply of oil has also been a serious matter, which compelled both Japan and China to move away from relying on the Middle East oil supply. China seems to have done better through its energy diplomacy, though at the cost of its international image for dealing with "rogue states." Japan has achieved little in diversifying away from the Middle East oil supply, but its high strategic oil stockpiles have enhanced its position in dealing with

---

[36] Jonathan Ansfield, "Slump tilts priorities of industry in China," *New York Times*, April 19, 2009.

[37] *Joint-Statement by Energy Ministers of China, India, Japan, South Korea and the United States*, Beijing [in Chinese], December 16, 2006, http://www.ndrc.gov.cn/nyjt/nyzywx/t20061219_101585.htm (accessed December 18, 2006); Downs, *Energy Security Series, China*, pp. 16-24.

[38] "Chinese Vice-Premier Underscores Development of New Energy," *Xinhua*, April 19, 2009; "China Calls for a 'Low Carbon' Lifestyle Nationwide," *Xinhua*, April 22, 2009.

likely disruption of oil supplies, and its position as the world's most energy efficient country has also set a good example for China and the rest of the world.

The introduction of the environmental/climate change concerns has reflected the new thinking in the Chinese and Japanese governments. In this regard, Japan is in a much more advanced position and is attempting to play a leading role in tacking climate change, which seems to do with the level of its economic development and with its high energy efficiency. As a later comer in the ranks of the oil importing countries, China has been faced with the challenge of energy security for only 15 years. It is thus natural to see a lot of problems associated with the Chinese energy strategies, in both the domestic and international domains. China needs to learn from, and to cooperate with, Japan, to enhance energy security together. The two countries have, indeed, started cooperating on energy efficiency improvement and on environmental protection, and Japan even viewed such cooperation as one of the main pillars in its new National Energy Strategy.[39] However, the two countries have not managed to get rid of the realist zero-sum thinking in their strategies of energy security, and have chosen to compete over energy resource exploration, as shown in their dispute over the Russian oil pipelines and over East China Sea gas exploration. If they pursue such strategies continuously, it may serve one country's interest for the short run but will unavoidably cause damage to their long-term interest. Such behaviour will also undermine the regional prosperity and stability of East Asia.

---

[39] Shoichi Itoh, *Energy Security Revisited: A Catalyst for Multilateral Cooperation in the Asia-Pacific Region and the Role of the U.S.-Japan Alliance*, Center for Global Partnership, August 29, 2006, http://www.cgp.org/index.php?option=article&task=default&articleid=337 (accessed October 15, 2006).

6. Australia's Role in Feeding Asia's Energy Demand

Richard Leaver*

Introduction

Beginning with the path-breaking 1996 work of Kent Calder, analysts of East Asia have sporadically and somewhat begrudgingly become sensitized to the rising importance of national energy trade deficits in international security equations, especially in the oil and gas sectors.[1] I emphasize the sporadic nature of this realization because the advent of the Asian Financial Crisis more or less immediately after the publication of Calder's work seemed to push in the opposite direction. By late 1998, Asian demand for world oil was sharply down, and international prices had dipped to what was arguably their lowest level in real terms over the whole of the post-war era. But today, it is as if the respite of those immediate post-crisis times simply did not occur. Current projections for national oil and gas balances across Asia are now every bit as bad as those made by Calder before the crisis, and prices – an issue he did not really analyse – are a whole lot worse.

In this region-wide context of energy deficits, Australia's Howard government sought to position itself as "the odd man in" (to use the apposite phrase once coined by Gareth Evans, foreign minister in the Hawke and Keating governments). Indeed, in mid 2006, John Howard came away from serial talks with George W. Bush and Canada's Stephen Harper to declare, in a widely publicized speech, that Australia had the potential to become an "energy superpower."[2] Howard was not, of course, talking

---

* Richard Leaver is Reader in International Politics at Flinders University in South Australia.

[1] See in particular, Kent Calder, *Asia's Deadly Triangle* (London: Nicholas Brealey, 1996), Chapter 3.

[2] For the argument, see John Howard, "Address to the Committee for Economic Development of Australia," Sydney Convention and Exhibition Centre, Sydney,

about Australia's liquid fuel situation, where the nation's longer-term fate seems very much in line with Asian energy deficit norms.[3] He was talking about Australia's position in relation to uranium, coal and gas – all markets where Australia currently enjoys at least a regional presence as a significant exporter, and where there is considerable potential, under appropriate circumstances, for more supply-side growth.

This chapter therefore surveys the historical, material and ideational resources that lie behind these energy superpower hopes. It argues that, on the first two scores, Howard's hopes are not as unrealistic as they might initially seem. But it proceeds to argue that the big issue that is most likely to thwart the realization of these hopes is ideational – to wit, the low quality of two-way assurances about the security of supply, on the one side, and the adequacy of price, on the other, that dogs energy markets. As a net energy exporter in a region of net energy importers, market-based interdependence, which is always a two-edged sword, is as likely to be characterized by conflict as cooperation. So the potential for a multilateral regional response critically rests on initiatives to improve upon the institutional quality of markets. On this score, there is nothing much in sight that is made in Australia.

Some Historical Perspectives

Looking back over the Australian experience of previous eras of high-energy prices, it is relatively easy to find convincing reasons why Howard should have come to the conclusion about Australia's potential to become an energy superpower. I say relatively easy because there were large ele-

---

July 18, 2006, http://pandora.nla.gov.au/pan/10052/20060921-0000/www.pm.gov.au/news/speeches/speech2024.html (accessed November 2007).

[3] According to Geoscience Australia, crude oil resources now stand at their lowest level since 1967. There is a 50 per cent probability that production will remain at current levels until 2009, declining thereafter by 65 per cent by 2025. See *Submission by Geoscience Australia to the Senate Rural and Regional Affairs and Transport Committee Inquiry into Australia's Future Oil Supply and Alternative Transport Fuels*, February 2006, available at www.aph.gov.au/Senate/committee/rrat_ctte/oil_supply/submissions/sub127.pdf (accessed November 2007).

ments of luck in the Australian experience of the energy crisis of the 1970s – an experience that, in any case, was not an unalloyed story of virtue.[4]

Australia's luck came in two distinct waves. The first had domestic origins – the timely mid-1960s discovery of the greatest of all Australian oil provinces in Bass Strait.[5] While not large by world standards, these reserves nonetheless proved sufficient to ramp up the degree of local oil self-sufficiency very rapidly. Hence Australia moved quickly from 10 per cent to 70 per cent self-sufficiency in oil during the years leading up to the first OPEC oil shock. This put it on a par with the United States when the oil shock arrived – a position as good as it got for an advanced capitalist country at that time.[6] In retrospect, it is legitimate to wonder about the fate of the Australian dollar – and, indeed, of the whole Australian economy – under a marginally different scenario where, say, this "import substitution effect" had lagged by just five or so years.

The second wave of Australian good luck arrived towards the end of the 1970s from Japan. When high oil prices struck, Japan not only had no domestic oil, but it also had none of the alternative energies that might substitute for it. Furthermore, unlike the absence of oil, which might be regarded as "geological bad luck," the absence of substitutes had been very carefully constructed. This process of construction centred on the relentless rationalization of Japan's domestic coal industry that commenced in the 1950s.

For while it was being repeatedly proved that Japan had no significant reserves of oil, the country had moderately proportioned domestic reserves of low-grade coal all along. These reserves were, however, of no use whatsoever to the heavy and chemical industries that dominated early

---

[4] For a more complete account of the role of luck in previous Australian energy policy, see my "Factoring Energy Security into Australian Foreign and Trade Policy: Has Luck Run Out?" *International Journal of Global Energy Issues*, Vol. 29, No. 4 (2008). Much of the argument in this portion of the chapter draws inspiration from this work.

[5] For the best account of the discovery and development of the Bass Strait, see Rick Wilkinson, *A Thirst for Burning: The Story of Australia's Oil Industry* (Sydney: David Ell Press, 1983), Chapter 2.

[6] For a graphical demonstration of this shift to a high level of domestic self-sufficiency, see C. E. B. Conybeare, *Oil Search in Australia* (Canberra: ANU Press, 1980), p. 87, Figure 13.

post-war reconstruction, for all their attention was fixed on high-grade metallurgical coal, an essential input for top quality steel. Consequently, Japan's domestic coal industry struggled to survive through the long boom in the face of increasingly free competition from imports of both oil and coking coal.[7] With prices of imported oil and black coal both falling, the beginning of the end for Japan's domestic coal industry commenced, with massive labour disputes in the coal mines during the late 1950s.

But even as Japan's coal industry moved progressively closer to the brink of total extinction, a good portion of it might still have been saved with a view to enjoying a bright future supplying electricity utilities – if, that is, thermal coal was regarded as in the least bit important. However, until oil prices resumed their sharp upward trajectory on the back of the Iranian revolution, positive views of coal-fired electricity were almost impossible to find in Japanese policy circles. Consequently, when Tokyo eventually turned its mind to the emerging number one task of economizing on oil consumption, domestic coal had already been through its death throes. Thermal coal therefore had to be imported in order to fire the boilers that would soon be turning 30 per cent or so of Japan's generating sets. And even more so than with coking coal, Australia sat in the box seat as the principal supplier.

For Japan, the turn to imported thermal coal brought about the dramatic shrinkage of oil's share in the generation of electrical power. In 1980, utilities accounted for about 27 per cent of all Japanese liquid fuel consumption. Thereafter, with total national demand for oil never significantly exceeding 1973 levels, electricity's share of oil consumption halved in absolute terms – the largest end-use decline inside what was an extraordinarily impressive national process of adjustment to high oil prices. And for Australia, the expansion of thermal coal exports to Japan – and soon thereafter in other East Asian rapidly industrializing countries – somewhat reflexively catapulted it up the big league table of coal exporters. By the mid

[7] Another graphic best makes this point about the decline of Japan's domestic coal, see Ronald A. Morse, "Japan's Energy Policies and Options," in Ronald A. Morse, ed., *The Politics of Japan's Energy Strategy*, (Berkeley: Institute of East Asian Studies, University of California, 1981) p. 2, Figure 1.

1980s, it had replaced the United States at the top of that table, a status that it still retains by a considerable margin.

As Garside has noted, Japan's post-war coal rationalization "mirrored" pre-war coal rationalization in Britain.[8] But from an Australian perspective, the most pertinent mirror asks whether the Japanese experience foretells the Australian future. Australia became a net energy exporter of significance in the previous age of regional energy deficits. The issue before us now is whether it can, in broad outline, follow that pattern once again.

Some things suggest a positive answer. On the import side, it is clear that the need to import energy looms even larger on the regional horizon than it did 35 years ago. In this respect, Howard's hope for Australia as an energy superpower is not without support. But the realization of his vision will also require an impressive foundation of Australian energy resources – the supply-side issue to which the argument now turns, if only briefly.

The Resources of Would-Be Superpowers

Anyone who has followed post-Cold War debates about the constitution of hegemons and superpowers already knows that would-be superpowers must have an impressive base of material resources – and an equally impressive set of ideas about how those material resources can be deployed.[9] So what are the Australian capacities in these respects?

The material base seems clear enough. It largely consists of two resources that missed out on the 1970s resource export boom – uranium and liquid natural gas – plus some prospects for a second coming of thermal coal under carbon capture and storage (CCS) technology. The ideational resources are, however, of a more questionable quality.

---

[8] W. R. Garside, "A very British phenomenon? Industrial politics and the decline of the Japanese coal mining industry since the 1950s," *Australian Economic History Review*, Vol. 45, No. 2 (2005).

[9] The argument has many fathers these days, but it began life as part of the neo-Gramscian assault on the neo-realist theoretical citadel in the period of the second Cold War. The critical work in bringing the idea of ideational power in from the cold was provided by G. John Ikenberry and Charles A. Kupchan, "Socialization and Hegemonic Power," *International Organization*, Vol. 44, No. 3 (1990).

In uranium, a mixture of high-grade and low-cost Australian deposits threatens to dominate a world market where prices have now left behind the depressed trajectory of the last quarter century. There is now a considerable exploration boom under way in South Australia, the home of the Olympic Dam mine of BHP Billiton (BHPB), with lesser degrees of exploration in some other states. Under the Australian version of federalism, state governments are the gatekeepers over the mining industry, and although they are divided over whether to allow uranium mining, there is a new bipartisan political consensus at the federal level that this export-oriented industry should no longer be restrained. In 2007, this new consensus swept away a "three mines policy" that had held sway for nearly a quarter century. Meanwhile, on the sidelines, the long-awaited expansion at Olympic Dam threatens to triple its size within a decade, while a competitive fringe of smaller deposits will come on stream, some backed by foreign (including Chinese) capital. New bilateral safeguards agreements have already opened the way for Australian sales into markets in China, Taiwan and Russia.[10] With something close to 40 per cent of the global share of low cost reserves, the government and the industry are looking for a similar share of the market under conditions of expanding demand.

Even more so than uranium, Australian gas missed out on the 1970s resources boom that, as previously noted, so obviously served the interests of Australian thermal coal producers. The Northwest Shelf discoveries of LNG only began to come into the international market in the late 1980s, with Japan once again as the lead customer. Although the reserves of the shelf and allied provinces (including, recently, coal seam methane) now constitute a world-class resource, domestic sales from these fields have been severely restricted under the combined effects of the "internal tyranny of distance" and the politically animated preference of state governments for local energy sources. But in an age of rising energy prices, a

[10] India is a different matter. The Howard government eventually came out in favour of sales to New Delhi, conditional on the conclusion of the 123 Agreement with Washington and subsequent IAEA safeguards. But the Labor opposition refused to go along, choosing to maintain the traditional Australian policy of not selling uranium to the NPT's non-signatories. Consequently, so long as the 123 Agreement fails to clear the Indian parliament, the new Rudd government will not have its mettle tested.

more integrated national energy market and increasing greenhouse gas awareness, these gas resources offer the potential for 50 per cent emission reductions in comparison to thermally equivalent quantities of coal, and traditional resistances at home and abroad to the consumption of gas and LNG are beginning to disperse. China was therefore an eager customer for Australian LNG in 2002, especially after the federal government intervened in the deal to produce the sweetener of a low price. But Japan, increasingly keen to match Chinese competition, came back onto the LNG scene with renewed vigour after that, and market prospects further afield are increasingly bright. The multi-year, multi-billion dollar deals done with both Asian economic giants around the edges of the 2007 Sydney APEC point unerringly in this direction.[11]

Thermal coal faces, of course, much more difficult times. Across the region, awareness of the limitations of the atmospheric capacity to host coal smog is, quite apart from greenhouse gas warming, reducing the desire to burn it. And once the Australian federal government began to back out of its anchorage to the position of climate change sceptic – a change which began in the aftermath of the 2004 election[12] – then carbon sequestration and storage technologies began to attract federal R&D funds, albeit in small volumes. Ideas of an Asia Pacific Partnership for Clean Development and Climate (the AP6) became associated with this showcasing in late 2005,[13] but since the technologies associated with carbon sequestration have yet to be proven on an industrial scale, the size of the showcase is still vastly overshadowed by the dimensions of the problem. Nonetheless, given the significance of coal in the energy profiles of the Asian great powers, future possibilities for cooperative research into the development and deployment of this technology seem real enough. Success on this technological front might, however, come at some cost to the growth of

---

[11] For instant reflections of the significance of these deals, see Stephen Wyatt, "Record gas sale and at full price too," *Australian Financial Review*, September 7, 2007.

[12] The subtlety of the initial shift was missed by many, but not Melissa Fyfe, "Australia Alters Stance on Climate Change Pact," *The Age*, December 20, 2004.

[13] For an enthusiast's defence of the AP6 idea, see Aynsley Kellow, "A New Process for Negotiating Multilateral Environmental Agreements? The Asia-Pacific Climate Partnership Beyond Kyoto," *Australian Journal of International Affairs*, Vol. 60, No.2 (2006).

Australia's thermal coal trade, since high-grade black coal of the kind that Australia currently exports would lose some of its advantage if locally available brown coals suddenly became more socially acceptable.

Ideational Resources

What, then, can be said of the critical ideational aspect of the current Australian prospectus for energy superpower status?

One of the great Australian oddities is that in spite of its rising importance as an energy exporter, there has been no sustained line of thinking about how to leverage the power of the national resource base. During the period of the first two oil shocks, there was a brief moment in time when both the Labor and Coalition governments seemed to be drawn towards possibilities for "resource diplomacy." The attractions of this theme were loose but nonetheless sufficient to see federal governments become one of the last signatories to the International Energy Agency (IEA), the OECD's consumer counterweight to the "producer power" of the OPEC countries. It is also notable that, after joining, Australia never moved to build up the kinds of liquid fuel stocks that were the bread and butter of the original IEA mandate.[14]

Two consequences follow. First, if there ever is another energy security problem of the same kind as in 1973, then Australia will indeed be hard-pressed to survive it without real physical shortages – and it will certainly not be in a position to share its very modest stocks of liquid fuels with anyone. This apparent reluctance to embrace fully-fledged consumer co-operation talks to the fact that Australia is, after all, a net energy exporter rather than a net importer. The second consequence is more alerting still. If there is to be a regional-scale multilateral response to the mounting problem of energy security, then IEA practice would not seem to be a model from the point of view of Australian governments. Multilateralism as defined by the IEA is unlikely to work on a regional scale.

Having said that, Australian governments have nonetheless become converts to the role of markets in aspects of international energy, and espe-

[14] For a recent and reasoned critique of Australia's distinctive stockpile policy, see Michael Richardson, "Dangerously Near Bottom of the Barrel," *Australian Financial Review*, August 15, 2007.

cially about the potential of market forces to resolve the various kinds of political tensions and potential conflicts. This message began to grab hold of Australian policy even while the oil market was still regarded as under the influence of the OPEC cartel, for it was intimately associated with the rise of "free market socialism" under the 1983 Hawke Labor government. This belief in the virtues of market transactions in energies was a classical example of an elite idea that rose to power without ever being endorsed by the rank-and-file of the political party whose leaders championed it.[15] It would later prove to be an easy ideological crutch for Coalition governments to lean upon – although, by virtue of their rural socialist rump, arguably a leaning point they would have found difficult to invent themselves.

Over the lifetime of the Howard governments, Labor's free market orientations were therefore ripe for adoption by the Coalition. Consequently, even after the relative decline of APEC's region-wide free trade visions, the Howard government kept taking proposals for free trade in the energy sector up to the regional forum, hoping to achieve rapid liberalization in a domain where it thought start-up costs were low and benefits were high. These Australian plans were for accelerated liberalization in due course rejected – as, ultimately, was the whole idea of enhanced voluntary sector liberalization.[16] But Australian officials (and ex-officials) still kept hopes alive by, among other things, shaping the work of the APEC secretariat on the subject of energy trade and security.[17] The freeing up of regional markets has, therefore, remained right at the centre of things so far as Austra-

---

[15] As O'Faircheallaigh observed, the idea of free markets was at considerable variance with the written-down policy of the ALP about minerals and energy at that time; see Ciaran O'Faircheallaigh, "Minerals and Energy Policy," in Christine Jennett and Randal G. Stewart, eds., *Hawke and Australian Public Policy: Consensus and Restructuring* (South Melbourne: Macmillan, 1990), pp. 140–42.

[16] For local reportage of the decline of the Enhanced Voluntary Sector Liberalisation (EVSL) process at the Kuala Lumpur APEC, see Saiful Azhar Abdullah, "Ministers turn EVSL problem over to WTO," *The New Straits Times,* November 16, 1998.

[17] Note here that the work by the Sydney-based consultancy firm *ResourceLaw International* for the APEC secretariat, in particular its "Great Expectations: Cross-Border Natural Gas Trade in APEC Economies," *Report to the APEC Energy Working Group*, November 2004, available at www.apecsec.org.sg (accessed October 10, 2007).

lian governments are concerned. None of this is likely to change with the return of the ALP to power in Canberra.

The high point of the new Coalition order was reached in 2004 when the first-ever White Paper on energy policy was released by the Howard government.[18] At its centre, it openly acknowledged the decline of Australia's liquid fuels balance – the energy issue that, as previously noted, had totally preoccupied governments of earlier times. But instead of putting Canberra into a tight spin, in this instance the tendency to liquid fuel deficits was argued to be overwhelmed by the countervailing tendency to export surpluses in all other energy categories – gas, uranium and coal. The policy implication was clear: so long as Australia remained a net energy exporter, the liquid fuels balance did not really matter, and continuing to argue for energy liberalization served Australian interests best. In this respect, the document was the just the latest testament to the continuing power of free-market thinking.

There are a host of troubles that lurk within this White Paper and its penchant for free market thinking, but only the most important can be discussed here. For a start, free market thinking ignores the uncomfortable fact that free market agents no longer dominate global energy markets, if indeed they ever did. In coal, for example, the national organization of consumers on the demand side of the market contrasts with their disorganization on the supply side – a disorganization that, in Australia, extends down to the level of the firm, and bespeaks the unwillingness of federal governments to intervene in the organization of production.[19] And in uranium, the strategic nature of the commodity couples with the need for international safeguards to ensure that the market is never going to be free from higher levels of national and international control.[20] Indeed, through the 1980s and 1990s, the over-supply of the basic raw materials of

---

[18] Australian Government, *Securing Australia's Energy Future*, 2004, www.efa.com.au/Library/CthEnergyWhitePaper.pdf (accessed October 10, 2007).

[19] An empirical analysis of the structure of this regional market is provided by Rudianto Ekawan, Michel Duchêne and Damien Goetz, "The Evolution of Hard Coal Trade in the Pacific Market," *Energy Policy*, Vol. 34, No.14 (2005).

[20] For a useful periodization and overview of the uranium market, see Thomas L. Neff, "Legacies form the Future: The History of Uranium," *Nuclear Engineering International*, Vol. 50, No. 606 (2005).

the nuclear age has led to downward-trending prices and an immense firm-level shakeout within the industry – so much so that a small number of vertically integrated conglomerates now dominate the nuclear industry on a global scale as never before. But most importantly of all, the world's oil and gas markets – the markets that still function as the backstop energies of our age – are more than ever before dominated by national companies on the supply side, and the trend that started in this direction nearly four decades ago in the Middle East is now starting to permeate the major non-OPEC producers as well.[21] Outside of Australia, therefore, when international energy issues are discussed in terms of market theories, it is the theme of market failure that is most often at the forefront.

The tension in East Asia between the singular Australian government attachment to free markets in energy and the more general regional scepticism about this liberal approach has many manifestations. One of the most instructive in recent times arises out of the Australian dialogue with Japan and China over free trade agreements (FTAs). Japan is, of course, by far the most important consumer of Australian exports of coal, uranium and LNG but China has been making substantial purchases in the last two of these sectors, in particular in recent times. Rising energy prices – spectacularly so in the uranium spot market – plus broader geo-strategic competition between the two Northeast Asian giants have meant that Australian negotiators interested in advancing sectorally comprehensive free trade agreements have found themselves on the receiving end of requests for "energy security" – where this seems to mean absolute guarantees about the volume of future supply (guarantees that would presumably have to be at the expense of the other rival great power).[22] But since Canberra does not own Australian energy companies and has only feeble mechanisms for controlling the energy sector, its trade negotiators are in no position to begin satisfying such concerns. The result, therefore, has

---

[21] For a thorough exploration of the significance of this theme, see Valérie Marcel, *Oil Titans: National Oil Companies in the Middle East* (Washington, D.C.: The Brookings Institution, 2005).

[22] For reportage of the use of energy security as an FTA "spoiler," see Peter Alford, "Jolted Japan Reaffirms Free Trade Commitment," *The Australian*, August 11, 2007; Tracy Sutherland, "Japan FTA on Menu but No Rice with That," *Australian Financial Review*, July 7-8, 2007.

been institutionalized disharmony in a context where, previously, the hopes for transcending the potential for conflict had been strong.

New Forces, New Government, Recycled Tools

In 2006, two new forces with radically different origins began to impinge upon the Howard government's construction of energy policy. The first of these consisted of a double shift in U.S. civil nuclear policy: the Bush-Singh push to renew bilateral civil nuclear cooperation with India, followed six months later by the Global Nuclear Energy Partnership (GNEP) where a "technical fix" to the proliferation potential of the civil nuclear fuel cycle was proposed. The second shift was domestic, and consisted of a drought-induced rejection by the Australian public of the Howard government's self-defined position as a leading diplomatic advocate of climate change scepticism. And for a period, it seemed as if these two forces might combine to open up an effortless rationale for the domestic transition to nuclear power under Howard.

The high point in the trajectory of this possibility was reached in September 2007 during the Sydney APEC, immediately after which the Howard government put its signature to the GNEP.[23] But by that stage, the almost unobtrusive nature of the signing ceremony bespoke what was, for Howard, an entirely unwelcome outcome. For what these two forces were in fact conspiring to produce was the possibility of a new Labor government in Canberra with rather different designs for the domestic energy scene. Indeed, this possibility was realized two months later with a decisive electoral victory for Kevin Rudd's ALP – so decisive, indeed, that a quick shift back to a Coalition federal government at any early date now seems hard to imagine. It is therefore apposite to comment on what this might portend for the future of Australian energy policy on a regional scale.

As a relative newcomer to the parliament, let alone the top echelons of the ALP, it is difficult to divine precisely what the new Rudd government will mean for the shape of Australian policy in many areas, and even more so because of the "me-too" character of much of the 2007 campaign. However, the desire to finally sign the Kyoto Agreement, albeit a decade after

[23] Some of the mysteries about Canberra's GNEP signature are explored by Katharine Murphy, "Don't mention the 'N' word," *The Age*, September 27, 2007.

its negotiation, stood among the few firm electoral commitments that distinguished the major players from each other. And so, too, did Rudd's desire to end any flirtation with the domestic use of nuclear power. Both of these changes will give a considerable boost to renewable energies, but also the push for clean coal and the transitional use of gas to lower Australia's record footprint in the per capita greenhouse gas stakes. These shifts of emphasis figured very prominently in the ALP's energy policy during the election, although the impact of that policy was considerably diminished by being issued just a matter of days out from the vote.[24] The practical matter of parliamentary dynamics will, however, work to reinforce these differences over the medium term, since Rudd will have to deal in the Upper House where The Greens will be part-holders of the balance of power for some years to come. They are likely to keep tugging Rudd's government quite insistently down the renewables road as the price for parliamentary support on other issues. Perhaps more importantly, Labor-supporting coal unions stand strongly behind carbon capture and storage, viewing it as the last great hope for their industry in the long term.[25]

So far as Howard's "energy superpower" theme is concerned, the overall impact of the change of government on the actual trajectory of energy exports is not likely to be substantial. Bear in mind that Howard's phraseology had always appeared to be bound up with Bush's GNEP. Both Howard and Harper used it within days of each other,[26] and probably as a signal to Bush that neither wanted to rule out their interest in uranium enrichment. Rudd will, almost certainly, hold a dead bat to the GNEP, which will not be difficult since the document that Howard signed was in any case non-binding. Conversely – and for many, somewhat paradoxically – he will stand squarely behind the continued expansion of the uranium ex-

---

[24] See Senator Chris Evans, "Securing a Sustainable Energy Supply for Australia's Future," *Election 07 Policy Document*, available at www.alp.org.au/download/now/071122___securing_a_sustainable_energy_supply_for_australias_future_xx.pdf (accessed December 29, 2007).

[25] The lock-in of coal unions behind the ALP's vision and method for Kyoto was one consequence of the Howard government's advocacy of nuclear power; see for instance, Lauren Wilson, "Nuclear Threatens our Jobs: Coal Union," *The Australian*, July 30, 2007.

[26] For reportage on Harper's usage, see Jane Taber, "PM Brands Canada an 'Energy Superpower,'" *The Globe and Mail*, July 15, 2006.

port industry although, as previously indicated, there will be no future possibility of Australian sales to India even if the 123 Agreement is finally ingested by the Indian parliament. So the continuities will be large. But precisely for this reason, Rudd will also have to deal with a range of issues that Howard had pushed off into the future.

The manner in which he deals with those delayed issues will largely be determined by the tools at hand. First and foremost, there are the orientations that come from Rudd's own Beijing experience as a mandarin-speaking diplomat and his long-term interest in foreign affairs, both of which he has been able to indulge since his elevation to shadow foreign minister. The potential value of these orientations was evident during the Sydney APEC, when his linguistic abilities in particular were shown to have dramatic effect. The point about their value has been hammered home in a more practical manner in recent times, for Rudd's half-hour phone conversation with Wen Jiabao seems to coincide with an important shift in China's position about future concessions on greenhouse gases.[27] So one should expect a Rudd government that, at the margins, will be closer to China than a Howard government ever wanted to be – and that the two marginal losers, in a relative sense, will be Japan first and the U.S. second.[28]

At another level, Rudd's years in the shadow role also saw him dusting off foreign policy designs that were highly reminiscent of the Hawke and Keating eras. Under Latham, he issued a very lengthy and detailed document that not only trumpeted "comprehensive engagement" with Asia as one of the "three pillars" of future Australian policy but also resurrected the forgotten word of multilateralism, a theme that suffered exile in the 12

---

[27] See Matthew Franklin and Stephen Fitzpatrick, "Rudd to Bridge Climate Gap between China and West," *The Australian*, December 6, 2007; Clinton Porteous, "Hometown Meeting for Cabinet – Getting to Know You: the U.S. and Us," *The Courier-Mail*, December 6, 2007.

[28] Rudd, for instance, was very cool about the loose search during early 2007 for modalities to tie India into the U.S.-Australian-Japanese triangle—just as, before that, he was equally cool about the idea of the triangle itself. The common element in both of his moments of reserve was an aversion to the mere suggestion of the containment of China. For a critical analysis of his emerging position, see Greg Sheridan, "Truth Crucial to Regional Security," *The Australian*, March 15, 2007.

years of Howard government diplomacy.[29] Then, when Beazley returned to the leadership, Rudd followed this up with a word-perfect reconstruction of middle-power theory of the kind that Evans did so much to invent in the early Cold War period.[30] Much the same pattern of more multilateralism and less bilateralism could also be observed in trade policy – but more important still, greater attention to improving upon the rather tawdry export performance of recent years by what are essentially unilateral measures.[31]

My point is not to prosecute a general case about whether these orientations are right or wrong. The answer, I suspect, would be "yes" to both, with the rider that everything ultimately depends on the conditions. But what does seem clear, and especially in the context of energy trade, is that multilateral enthusiasm in the marketplace plus a marginal drift towards closeness with China will not be a helpful combination. For this is the quarter from which some serious transforming challenges began mounting under Howard and are now coming to a head – challenges that, either directly or indirectly, have the capacity to bring about an Australian re-embrace of "resource nationalism." The chances are not so much that the Rudd government is new and inexperienced but rather that its own romanticism for the Labor tradition has, in combination with problems inherited from Howard, placed it on the wrong learning curve altogether.

Resource Nationalism, Once Again

The problem for which the new government is unprepared exists on the micro and macro scales, both centred on uranium mining. As indicated earlier, this industry began to experience an exploration boom when spot

---

[29] See Kevin Rudd, "The Three Pillars: Our Alliance with the U.S., Our membership of the UN, and Comprehensive Engagement with Asia," A Foreign Policy Statement by the Australian Labor Party, October 2004.

[30] Kevin Rudd, "Leading, not Following: The Renewal of Australian Middle Power Diplomacy," *Sydney Papers*, Vol. 19, No 1 (2007). The latter was originally presented as an address to The Sydney Institute on September 19, 2006, some three months before his rise to the top job.

[31] On this, see Simon Crean, "A Strong Future for Australia's Exports," Election 07 Policy Document. To see this document, follw the link, www.servicesaustralia.org.au/pdfFilesResearch/A-strong-exports.pdf (accessed March 15, 2008).

prices took off in 2005. Although prices have cooled down somewhat in recent times, much of the earlier vigour can still be found in the area of mergers and acquisitions. Six months after the successful conclusion of their bilateral safeguards agreement with Canberra, Chinese authorities celebrated by taking a majority equity position in one of the smaller Australian uranium companies, PepinNini Minerals.[32] In another six months, more or less immediately following approval by the Foreign Investment Review Board, they moved on to announce the establishment of a Strategic Reserve in natural uranium,[33] a move that telegraphed the possibility that the rate of exploitation at PepinNini would move towards full bore.

There is, in one respect, nothing new in this, since previous Australian uranium mines have travelled at the same breakneck development path.[34] However, in previous instances, stocks of mined ore have always been held domestically. By contrast, holding them abroad will have one of two novel effects, neither of which is likely to be welcome, and least of all by Labor governments. In the simplest case, foreign stockpiling will simply depress the immediate trajectory of uranium export prices. In the more complex case, Chinese authorities might regard the export/import price as an internal transaction, a "transfer price" whose actual level would have no bearing whatsoever upon the ultimate profitability of their integrated supply chain. Left free to choose, the natural inclination of any semi-sovereign entity would be to set their transfer price as close as possible to the cost of production, if only to minimize taxes due to Australian authorities.

In either its simple or complex form, there is the making of an interstate commercial conflict lurking here, since matters of "national interest" are quickly building up behind the unfettered workings of the allegedly liber-

---

[32] Jamie Freed, "Sinosteel Signs Uranium Deal," *The Sydney Morning Herald*, September 14, 2006.

[33] Zhao Huanxin and Wan Zhihong, "Uranium Reserve to be Built," *China Daily*, April 19, 2007.

[34] The Nabarlek mine, the first mine in the Kakadu region to move off the books, was based around the proposal that all mining would be concluded in six months, with processing drawn out over the following decade. In the event, these timetables proved too demanding in a falling market, but the general sequencing was nonetheless maintained.

alized uranium market. If there is any saving grace, it is simply that PepinNini is small beer. Since being purchased in 2004 for a bargain price, the company's deposits have been financially rewarding for early Australian investors, but it has nonetheless been correctly described as "a minnow";[35] full development at Croker Wells will possibly cost US$200 million, with Sinosteel's total investment perhaps reaching US$40 million. So whatever happens here will be of no great moment for the Australian industry as a whole.

But that argument weighs in the opposite direction when looking at the range of issues now springing out of the second case, the expansion of BHPB's Olympic Dam uranium mine. Not all that long ago, the long-awaited full expansion of Olympic Dam appeared almost an accomplished fact. When, in 2005, BHPB snapped up the mine from WMC Resources for what spot markets were soon suggesting was a bargain-basement price, the cost for tripling the size of the mine seemed fixed at around US$5 billion. A figure of that rough magnitude had been floating around for at least three years as part of the WMC culture, whose senior Adelaide staff were absorbed into the BHPB empire to give it some competence in uranium. They also brought with them a commodious relationship with the state Labor government of Mike Rann, who was without inhibitions of any kind in trumpeting the social payoffs to come from hosting the world's largest uranium mine. In the fuel of the future, he once blustered, South Australia was not just the Texas of the uranium market, but its Saudi Arabia.[36]

It is not yet possible to be certain about where and why the subsequent fall from grace commenced. Most likely the fall commenced when BHPB began to run its famously conservative financial slide rule over the project, for five hundred or so staff were soon working on a multi-year pre-feasibility study for the expansion. But rather than gathering pace, this study began to push back the timeline for ultimate development as the passed-down cost estimates buckled at the seams. Critical to this was the

---

[35] See Matthew Stevens, "Minnow's Mighty U-turn gives China some Critical Mass," *The Australian*, September 14, 2006.

[36] See Ian Grayson, "SA the 'Saudi' of Uranium: Premier," *The Australian*, May 12, 2007.

question of water. Under full expansion, it was clear that the mine was going to be a massive consumer, about half the size of the city of Adelaide. In its present form, the mine was guaranteed all its water at zero cost from the Great Artesian Basin but this was quickly ruled out as a source for the expanded mine. Given the parlous state into which the Murray-Darling system was falling, it soon became clear that the water would have to come from a dedicated desalination plant of substantial size, probably larger than the separate plant that the state government would soon be forced to contemplate for augmenting Adelaide's water needs.

Desalination is never cheap at the best of times, but in these two instances, costs began to escalate by virtue of their siting on gulf waters. The need to maintain these shallow maritime environments in a manner favourable to the local fishing industry means that the brackish refuse water from both plants is going to be contentious. And this might be particularly expensive for BHP, where geography alone suggests long pipelines. Early public estimates put costs at perhaps US$200 million for the desalination plant and US$300 million for the pipeline, but these were soon proving wildly optimistic.

The first public signs of serious trouble over such matters surfaced, however, with a new senior BHP management team in Melbourne. One of its first substantive acts was to float the idea that unsmelted copper ore produced in the expansion might be exported direct to China without processing. This by-passing of local value-adding was immediately rebuffed at both the federal and state levels, with Rann saying that the state government would not view the mine as "some kind of quarry from which both jobs and minerals are exported." Although it was initially described as "Plan B," the idea nonetheless refused to disappear, since it offered one way around the infrastructure problems exemplified by the water issue.[37] At much the same time, the most senior of the old Adelaide-based WMC managers were sent packing, taking with them the personalized relationship between the mine and the Rann government. Consequently, the flow of paperwork between the company and the state government began to

[37] For contemporary evidence that the issue lives on, see Barry FitzGerald, "BHP Pushes 'China Option' for Cheaper Olympic Dam Expansion," *The Age*, November 30, 2007.

back up at a time when BHP was reportedly looking to accelerate the rate of progress of the expansion.[38]

All of these issues were then rolled into a much larger framework when, in early November 2007, BHPB laid out a proposal to merge with Rio Tinto through a three–to-one share exchange. If successful, the merger would create a mining company with market capitalization of around A$400 billion, placing it among the five largest companies in the world. The deal appeared to be animated by the prospects of synergies from future iron ore production in the Pilbara, but Rio also had majority positions in Australia's second largest uranium mine, the Ranger mine in Kakadu, and also in Namibia's Rossing mine. The merger therefore had equally momentous implications for market structure at the front end of the supply chain in the global nuclear fuel cycle.[39] Meanwhile, as part of its defence against the merger, Rio claimed that BHPB sources were now costing the Olympic Dam expansion at A$20 billion, four times the original WMC figure. In addition, they argued, a significant part of BHPB's interest lay not in iron ore so much as the easy additions that Ranger output could add to future BHPB forecasts of uranium production.[40]

Around the same time as this merger was floated, in a move ostensibly intended to focus foreign investors upon higher value-added areas, Beijing's National Development and Reform Commission banned foreign investment altogether in rare and non-renewable minerals, and commenced development of a list of strategic and sensitive minerals whose exports will be prohibited.[41] This more nationalistic mood was also found in reac-

---

[38] Needless to say, such issues were poorly reported in the local press. The best of what there was came from independent sources - in particular, Bill Nicholas, "Roxby Rethink: Changes at BHP Causing New Tension," *The Independent Weekly* (Adelaide), No. 153, September 15-21, 2007.

[39] The point is emphasized by Jo Clarke, "BHP Nuclear Hopes Come at High Price," *Australian Financial Review*, December 3, 2007, who correctly notes that a controlling position in the yellowcake market could be expected to make reactor owners nervous.

[40] David Robertson, "Costly Project Threatens BHP Takeover Bid," *The Times* (London), November 26, 2007.

[41] For the best coverage, see Cary Huang, "Beijing Forbids Foreign Mining of Rare Minerals," *South China Morning Post*, November 8, 2007; and Andrew Trounson, "China Raises Hurdle for Miners," *The Australian*, November 9, 2007.

tions to the proposed merger. Since 2005, Beijing has exhibited great sensitivity to all things BHPB after the company extracted 70 per cent price rises from the annual iron ore negotiations that make up the so-called benchmark system.[42] Given that a further 50 per cent rise was coming up for consideration, and that BHPB was also considering swinging its ore sales over to a new indexed pricing system,[43] it was no surprise that Chinese authorities and their steel majors regarded the prospect of enhanced market power for BHP with alacrity. A range of possible counter-measures have been hinted at in dispatches: the drafting of domestic legislation to prevent the incursion of foreign monopolies; the possibility of using their new US$200 billion sovereign wealth fund, China Investment Corporation, to take a blocking interest in Rio Tinto in partnership with some Chinese steel companies; and the lodgement of the whole issue with the WTO on the grounds that the merger will inhibit market competition.[44]

No doubt the Rudd government will quickly conclude that these possible counter-measures are not without cost to the Chinese – costs that are sometimes so high as to be self-defeating. For example, Beijing could indeed warp its incomplete competition policy in a manner that would allow it to exclude BHPB from its domestic market. But the cost of realizing this objective would be intolerable, since its exclusion would simply drive up the price that other foreign suppliers could then expect to receive for their iron ore. It is indeed open to Beijing to take an investment stake in Rio using its recently established sovereign wealth fund – but this would have little chance of passing the "national interest test" overseen by Canberra's Foreign Investment Review Board (FIRB). Rudd's rub here will come with the expected approval of the proposed merger by Australia's competition regulator, the ACCC, which seems increasingly likely to bow

---

[42] On those price rises, see Xie Ye, "Nation Steels Itself Against Further Price Hikes," *China Daily*, April 9, 2005.

[43] For details, see Jamie Freed, "BHP Takes Stand on Ore Pricing," *The Age*, October 31, 2007.

[44] For reportage of some of these measures, see Rowan Callick, "Chinese Attack BHP Bid," *The Australian*, November 22, 2007; and Stephen Wyatt, "Rumours Swirl of Chinese Spoiler Bid," *Australian Financial Review*, November 28, 2007.

down before the argument that Pilbara iron ore is, after all, an export commodity.[45]

At the same time, the prospects of any kind of successful WTO action are low. Energy and resource markets of all kinds have never fallen inside the purview of the GATT/WTO system. Deprived of the civilizing influence of the GATT, energy markets have therefore not been subject to the kinds of quasi-legal evolution that usually marks international markets in manufacturing sectors. Consequently, appeals to the principle of non-discrimination will, in this case, make no headway. Consequently, unless the merger dies of natural causes (and the balance of current opinions suggests it will eventually succeed, albeit at a higher price), then there is going to be some degree of Sino-Australian political tension generated out of it.

Conclusion

These two matters offer an elegant demonstration of some old and robust generalities – that all cross-border transactions of goods and services have, by definition, political underpinnings, and that the costs and benefits of such transactions run in both directions. They can also be regarded as illustrations of an argument about the genesis of resource nationalism, which is the generic name for conflicts of this kind: namely, that resource nationalism is the reaction against liberalization in markets for energy and resources. If this sounds somewhat counter-intuitive, then it is worth remembering that precisely this kind of argument was, 20 years ago, championed by one of the grandfathers of the PECC and APEC movements, the Australian economist Peter Drysdale.

In his most important book, Drysdale noted some good reasons why free market theories did not work well for trade in energy and resources. Projects and investments have to be large and lumpy, while markets are big and seek secure supply; and as a consequence, political risks build up on both sides of the market behind consumers and producers. The formal

---

[45] There are, of course, other issues, and most are canvassed by Allan Fels and Fred Brenchley in their "A Stride Away from Stamping Ground," *The Age*, November 16, 2007. However, the issues they mention do not seem to be gaining in importance.

freeing up of trade in resources, he therefore argued, "is not necessarily a sufficient guarantee of either an optimal level of specialization in trade or a reliable flow of trade in resource goods."[46] Bringing security to the Asia-Pacific energy and resource trade required, he thought, "a framework of understandings, institutions and agreements," a framework that he largely saw in the widespread use of contract pricing.

With that contract system now outmoded in coal and under threat in iron ore, there are good reasons to worry about the rise of a corrosive process where the manipulation of national vulnerabilities in the energy and resource sectors moves to the centre of the Asia-Pacific trade in these bulk commodities. If so, an Australian government armed with free-market theories and a mandarin speaking leader will be asking more of his linguistic capabilities than it is reasonable to expect.

---

[46] Peter Drysdale, *International Economic Pluralism; Economic Policy in East Asia and the Pacific* (Sydney: Allen & Unwin, in conjunction with the Australian Institute of International Affairs, 1988), p. 139.

7. Russia's Energy Policy Towards Asia: Opportunities and Uncertainties

Shoichi Itoh *

Introduction – Russia Looks East

The *World Energy Outlook 2006*, published by the International Energy Agency (IEA), made the forecast that world energy demand would increase by 53 per cent by 2030, against the background of sharp increases in demand in China and India.[1] The "Asia/World Energy Outlook 2006," published in September of the same year by the Institute of Energy Economics, Japan, estimated that China and India would account for about a quarter of worldwide primary energy consumption by 2030, as well as accounting for about 40 per cent of the global increase in energy consumption (and about 40 per cent of the increase in oil consumption).[2]

According to the *Russian Energy Strategy toward 2020*, the share accounted for by the Asia-Pacific region in Russia's crude oil export destinations would increase from 3 per cent at the beginning of the twenty-first century to 30 per cent in 2020. Russia is formulating a plan for providing eastern countries with a maximum of 100 million tons of crude oil in 2020.[3] In an

---

* Shoichi Itoh is Senior Research Associate at the Economic Research Institute for Northeast Asia (ERINA), Japan.

[1] The World Energy Outlook 2006 Maps Out a Cleaner, Cleverer and More Competitive Energy Future, *International Energy Agency*, November 7, 2006, www.iea.org/Textbase/press/pressdetail.asp?PRESS_REL_ID=187 (accessed August 1, 2007).

[2] Institute of Energy Economics, Japan, "Asia/World Energy Outlook 2006," September 2006, www.eneken.ieej.or.jp/en/data/pdf/362.pdf (accessed August 1, 2007).

[3] "Нефтегазовый комплекс Восточной Сибири и Дальнего Востока: состояние, тенденции развития и перспективы сотрудничества со странами Азиатско-Тихоокеанского региона (АТР)" [The Oil and Gas Complex of the eastern Siberia and Far East region: conditions, development tendencies and prospectives of cooperation with the countries of the Asia-Pacific region], April 26, 2006,

interview carried in the Russian newspaper *Rossiyskaya Gazeta* in February 2006, the Minister of Industry and Energy Viktor Khristenko focused on the fact that European energy demand would peak in the future, while Asia-Pacific energy markets are achieving the highest growth rates in the world, and reaffirmed Russia's willingness to be proactive in entering the latter markets while making use of its unique geographical conditions.[4]

There is another reason behind Russia's decision to focus on the Asia-Pacific region as a destination for its exports of crude oil. According to statistics from the Ministry of Economic Development and Trade, about 96 per cent of crude oil produced in Russia in 2006 was sent to European markets,[5] but because "Urals crude oil" is cheaper than "North Sea Brent crude oil" and buyers can beat down the price, Russia is losing about US$6–7 billion annually. According to a remark made by Mr. Khristenko during a meeting of the Government Committee on the Fuel and Energy Sector, if the East Siberian–Pacific Ocean (ESPO) pipeline project is realized, 11.6–26 per cent of the total volume transported by pipeline would be sent to the east.[6] Transneft Vice-President Sergey Grigoriev has revealed the company's plan to introduce uniform charges for the transport of crude oil to markets in Europe and Asia, but after the construction of the first phase of the ESPO pipeline, there are those who are of the opinion that oil companies can offset the cost of discounts in European markets by earning the so-called "Asian Premium."[7]

---

www.minprom.gov.ru/activity/energy/appearance/17 (accessed April 30, 2008).

[4] "На все четыре стороны: простираются сегодня нефтегазовые интересы России" [For all the four directions spreading the interests of Russia], *Rossiiskaya Gazeta*, February 22, 2006.

[5] Sergei Glazkov, "Eastern Pipeline Will Provide New Options," *Russian Petroleum Investor*, June–July 2006, p. 21.

[6] "О перспективах развития и использования систем транспортировки углеводородного сырья и продуктов его переработки," [On development prospective and the usage of system of transportation of hydrocarbons and its products] October 9, 2006, www.minprom.gov.ru/activity/energy/appearance/22 (accessed April 30, 2008).

[7] "Восточный тариф: 'Транснефть' перераспределит нефть между Европой и Азией" [The Eastern Tariff: 'Transneft' will reallocate the oil between the Europe and Asia], *RusEnergy*, September 6, 2006.

The extent to which Russia can strengthen its presence as a big energy power in the Asia-Pacific will be directly affected by the future of the ESPO pipeline project and the associated development of oil production in east Siberia. In the case of Russia's failure in securing continued increases in the production of crude oil and a comparable quantity of reserves, Moscow will lose not only the business profitability of the ESPO pipeline, but also a crucial leverage to expand its influence in the Asia-Pacific.

Hitherto, more than 70 per cent of crude oil and 80 per cent of natural gas production in Russia has taken place in western Siberia. Figure 1 shows the region-by-region predictions of crude oil production given in *Russian Energy Strategy toward 2020* (hereafter referred to as *2020 Energy Strategy*), which was published by the Russian government in August 2003.[8]

According to this, similarly to natural gas,[9] the volume of crude oil production in western Siberia will peak around 2010 and it is envisaged that the subsequent decrease in output from that region will gradually be covered by production from eastern Siberia and the Far Eastern region. The figures published forecast that, even under an optimistic scenario, after the volume of crude oil production in western Siberia increases slightly from 325 million tons in 2005 to 348 million tons in 2010, output will decline to 315 million tons by 2020.

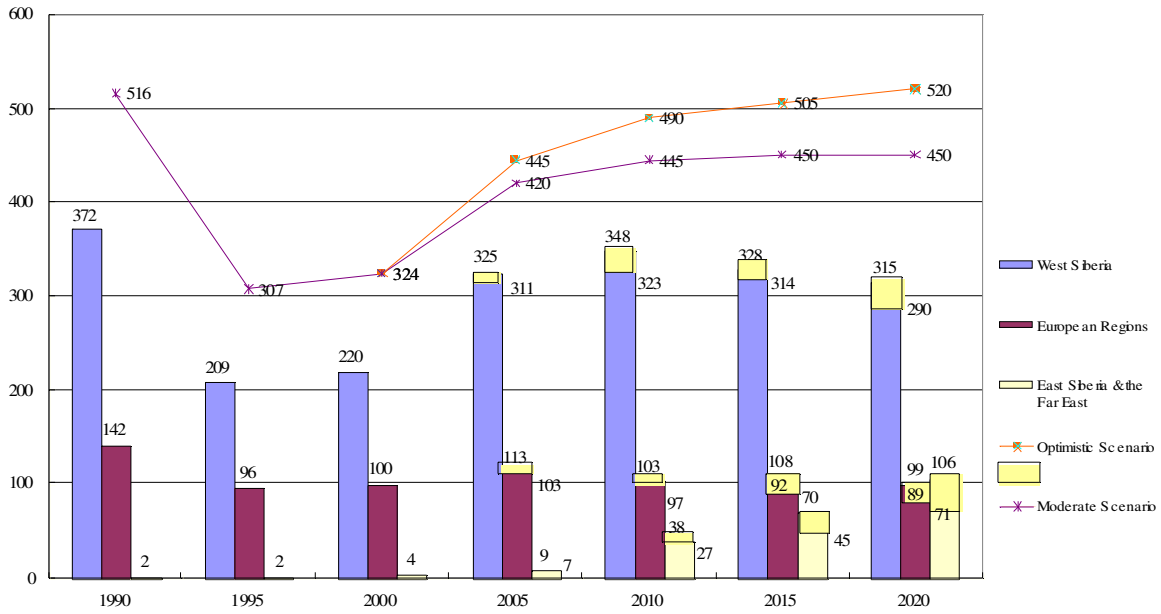
From 2010 to 2020, while the share of western Siberia in the volume of Russia's crude oil production will fall from 71 per cent to 61 per cent, the share accounted for by eastern Siberia and the Far Eastern region is forecast to rise from 7.8 per cent to 20 per cent.

---

[8] In fact, Russia's performance of crude oil production was higher than this official document had predicted at 470 million tons as of 2005.

[9] Regarding natural gas, by an optimistic scenario, natural gas production in western Siberia will likely peak around 2010, at a maximum volume of 572 billion cubic meters. While this amount is predicted to decrease to 541 cubic meters by 2020, the volume of eastern Russia's production is expected to increase from 8 billion cubic metres in 2005 to 106 billion cubic meters in 2020. *Энергетическая стратегия Россиина период до 2020 года* [The Energy Strategy of Russia toward 2020], p. 72, www.minprom.gov.ru/docs/strateg/1 (accessed April 30, 2008).

Figure 1. Crude Oil Production Forecast to 2020 (million tons)



Source: *Энергетическая стратегия Россиина период до 2020 года* [The Energy Strategy of Russia toward 2020], p. 62.

Is a "Black Gold Rush" Around the Corner?

The Russian government aims at shipping 30 million tons of crude oil in the first phase of the ESPO pipeline project and 80 million tons subsequently, when the second phase (i.e. from Skovorodino to the Pacific Ocean) is brought to fruition in the future. In July 2006, when the first G8 summit hosted by Russia was held in St Petersburg, the Minister of Energy and Industry Viktor Khristenko remarked at a press conference that the scepticism that had existed hitherto about whether enough crude oil to fill the ESPO pipeline could be secured before the first phase got up and running had been swept away. Furthermore, he even hinted at the possibility that the construction of the second phase would begin by 2015 and the full 80-million-ton volume would be supplied earlier than had been planned.[10]

At the same time, however, when President Vladimir Putin held talks with Prime Minister Junichiro Koizumi with regard to the question of whether

[10] "Восточный тариф: 'Транснефть' перераспределит нефть между Европой и Азией" [The Eastern Tariff: 'Transneft' will reallocate the oil between the Europe and Asia], *RusEnergy*, September 6, 2006.

the pipeline would reach the Pacific coast, he stated that the outlook was unclear and that it would depend on whether sufficient crude oil could be secured.[11] Was President Putin merely trying to throw Japan off balance or was he just speaking the truth?

As recent as July 2007, both the Ministry of Energy and Industry and the state oil pipeline company Transneft emphasized that enough crude oil for the first phase's pipeline would be secured solely in east Siberia and the construction of the second phase would likely begin within six to seven years after the first phase's commencement of operation.[12]

However, doubts have been raised with regard to increases in eastern Siberia's proven reserves, which will guarantee a steady level of production. As early as September 2006, Sergei Fëdorov, Director of the Department for Government Policy and Regulation on the Use of Energy Resources at the Ministry of Natural Resources, asserted that even the realization of producing 30 million tons annually in east Siberia was impossible at the start of the first phase.[13]

Optimism and the Current Reality

The *2020 Energy Strategy* expresses the expectation that production in eastern Siberia and the Sakha Republic alone will reach 50–80 million tons by 2020, under moderate and optimistic scenarios, respectively.[14]

In the "Eastern Siberia and Sakha Republic Geological Survey and the Use of Hydrocarbon Resources Program toward 2020" (hereafter referred to as the "Eastern Siberia Survey Program") adopted by the Ministry of Natural Resources in 2005, the quantity of crude oil produced in the regions is tar-

---

[11] "Pacific Pipe Depends on Oil, Putin Warns," *The Moscow Times*, June 17, 2006.

[12] "Христенко: первый этап ВСТО будет обеспечен нефтью" [Khristenko: the first stage of the ESPO pipeline will be provided by crude oil], July 10, 2007, www.vstoneft.ru/news.php?number=428 (accessed April 30, 2008).

[13] "Трудная нефть Восточной Сибири: перейти на нее полностью ВСТО сможет лишь после 2025 года" [The difficult crude oil of eastern Siberia: shift on it in full the ESPO pipeline can only happen after 2025], *RusEnergy*, September 8, 2006.

[14] *Энергетическая стратегия Россиина период до 2020 года* [The Energy Strategy of Russia toward 2020], p. 63, www.minprom.gov.ru/docs/strateg/1 (accessed April 30, 2008).

geted at reaching 13.2 million tons by 2010, rising to 37.3 million tons by 2015, 56 million tons by 2020, and 80 million tons by 2025.[15]

According to the Institute of Oil and Gas Geology (IGNG) of the Siberian Branch of the Russian Academy of Sciences in Novosibirsk, the volumes of crude oil production in eastern Siberia and the Sakha Republic, the development areas for the crude oil shipment for the ESPO pipeline, are projected to rise to 12.5 million tons in 2010, 42 million tons in 2015, 60 million tons in 2020 and 110 million tons in 2030 (Table 2).

Assessments on the current state of development are not necessarily as optimistic as those indicated by the prospects. *Russian Petroleum Investor*, one of the most widely read energy journals on Russia among energy experts, reported in its summer 2007 issue that work conducted in the region over the past several years was primarily geophysical research work and was not supported by deep parametrical drilling, being indispensable for ensuring successful oil search.[16]

In March 2007, Aleksei Varlamov, Deputy Minister of Natural Resources, stated that the oil reserves in the adjacent areas of the ESPO pipeline route amounted to 1.1 billion tons of which a little more than 500 million tons are classified as category C1 (proven reserves).[17] Strictly speaking the rest of the "reserves" still remains unproven (appraised, inferred, or probable category) (Table 3).

---

[15] "Статс-секретарь-заместитель Министра природных ресурсов РФ Владимир Лозбинев выступил на заседании Правительства РФ с докладом на тему: "О ходе обеспечения нефтяными ресурсами нефтепроводной системы "Восточная Сибирь - Тихий океан" [Official Secretary Deputy Minister of Mineral resources of Russian Federation Vladimir Lozbinev delivered a speech entitled: "About the process of providing the oil transportation system 'Eastern Siberia-Pacific Ocean' by petroleum resources], July 19, 2007, http://control.mnr.gov.ru/part/?act=print&id=3901&pid=11 (accessed April 30, 2008).

[16] "Will There be Sufficient Crude Oil for the ESPO pipeline?" *Russian Petroleum Investor*, June/July 2007, p. 16.

[17] Объем ресурсной приближенной к трубопроводу ВСТО, составляет около 1,1 млрд. тонн нефти" [The volume of approximate resources to the pipeline "ESPO" is about 1,1 billion tonnes of crude] *Pravo TEK* [Law TEK], March 13, 2007, http://lawtek.ru/news/ tek/34381.html (accessed April 30, 2008).

Table 2. Crude Oil (Including Condensate) Production Forecasts in Eastern Siberia and Far Eastern Russia Towards 2030 (Unit: 1 million tons)

	2004	2005	2010	2015	2020	2025	2030
Sakha Republic							
Srednebotuobinskoe	0.01	0.02	0.81	2.13	2.17	2.17	1.75
Talakanskoe	0.20	0.30	1.60	5.21	5.21	5.11	4.51
Chaiandinskoe	0.00	0.00	0.10	0.95	2.12	2.12	2.12
Verkhnevilyuchanskoe	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Srednevilyuiskot	0.18	0.09	0.25	0.28	0.28	0.27	0.25
Other deposits expected to be discovered	0.03	0.03	0.60	0.80	1.00	3.50	14.97
Subtotal	0.4	0.4	3.4	9.4	10.8	13.2	23.6
Irkutsk Oblast							
Kovyktinskoe	0.00	0.01	0.54	0.94	1.09	1.09	1.09
Verkhnechonskoe	0.00	0.00	0.81	6.94	9.34	9.34	8.84
Dulisminskoe	0.01	0.02	0.05	0.30	0.31	0.31	0.29
Iaraktinskoe	0.05	0.06	0.30	0.55	0.60	0.60	0.50
Other deposits expected to be discovered	0.02	0.02	0.02	0.40	2.10	5.50	19.28
Subtotal	0.1	0.1	1.9	9.1	13.4	16.8	30.0
Krasnoiarsk Krai (including Evenki Autonomous Okrug)							
Yurubcheno-Tokhomskoe	0.04	0.06	4.07	14.38	21.42	21.43	21.43
Kuyumbinskoe	0.02	0.04	3.00	8.05	11.05	11.06	11.06
Sobinskoe	0.01	0.01	0.04	0.39	0.82	0.62	0.5
Other deposits expected to be discovered	0.00	0.00	0.10	0.70	2.50	6.90	23.41
Subtotal	0.1	0.1	7.2	23.5	35.8	40.0	56.4
Eastern Siberia & Sakha Republic							
	0.6	0.6	12.5	42.0	60.0	70.0	110.0
Sakhalin Oblast							
Sakhalin I (Lunsk, Pil'tun-Astokh)	1.6	1.7	8.5	8.5	8.5	8.1	7.3
Sakhalin II (Chaivo, Odoptu, Arktun-Dagi)	0	0.1	12.5	12.5	12.5	12.5	12.1
Other deposits expected to be discovered	2.1	2.2	2.0	4.0	9.0	12.0	15.6
Subtotal	3.7	4.0	23.0	25.0	30.0	32.6	35.0
Eastern Siberia & the Far Eastern Region							
Total	4.3	4.6	35.5	67.0	90.0	102.6	145.0

(Institute of Oil and Gas Geology (IGNG) of the Siberian Branch of the Russian Academy of Sciences, Novosibirsk) Source: А. Коржубаев [A. Korzhubayev], "Прогноз развития нефтяной т газовой промышленности в России и перспективы формирования новых направлений экспорта энергоносителей" [The Forecast of oil and gas development in Russia and prospective of a creation of new directions of energy resource export], *Проблемы Дальнего Востока* [The Problems of the Far East], No. 6 (2005), p. 51.

Table 3. Approximate Correspondence of Russian and Foreign Classifications of Reserves

Russia			**US, Canada, Saudi Arabia**				**France, Germany, The Netherland**
Reserves	Explored	**A**	Identified	Demonstrated	Drilled	Proved	Proved
		B			Undeveloped		
		C1			Indicated	Probable	Probable
	Appraised	**C2**		Inferred			
Resources	Prospective	**C3**	Possible				
	Predicted	**D1**	Hypothetical				
		D2	Speculative				

Source: Ministry of Natural Resources / inserted in "The Vankor Miracle: Exploration and Development are Done Simultaneously at the Field," *The Russian Energy*, No. 22 (263) (June 9, 2007), p. 2.

Additionally, according to the Chairman of the Federation Council's Committee on Natural Resources and Environment Protection, Viktor Orlov, if a coefficient of 0.66 is applied to the Russian evaluation of reserves of A + B + C1, they are more or less equivalent to the proven reserves by Western standards.[18]

In February 2005, the Deputy Minister of Natural Resources Anatoly Tëmkin reported at the State Duma hearing that, if relying on existing reserves in eastern Siberia and the Far Eastern region, it would be possible to continue producing 30 million tons annually up to 2030, but if this figure goes up to 50 million tons annually, it would be necessary to upgrade

[18] "Добыча нефти растет: надолго ли ее хватит России в таких темпах" [The Production of oil increases: how long Russia enjoys such dynamic], *RusEnergy*, May 11, 2004; 佐藤章 [Akira Sato]「ロシアの石油・天然ガス埋蔵量の 定義について」[Concerning the Definition of Russian Oil and Natural Gas Reserves]『石油・天然ガスレビュー』[*Oil and Natural Gas Review (JOCMEC)*], Vol. 39, No. 2 (March 2005) (in Japanese)], pp. 35–46. For more on Russian domestic definitions of reserves, see "Категории запасов и ресурсов углеводородов по их действующей российской классификации" [The categories of reserves and resources of hydrocarbons according to existing Russian classification], *Kommersant*, April 26, 2005.

the portion positioned as "resources" to the status of "reserves" and begin developing them as early as 2010–2012.[19]

Calculations by the Ministry of Natural Resources as late as spring 2007 suggest that while the potentially stable amount of crude oil production in east Siberia is around 25–50 million tons, it is crucial to expand the volumes of reserves to achieve more than 25 million tons of annual production.[20]

The Deputy Minister of Industry and Energy, Andrei Dement'ev, remarked at a government meeting as late as July 2007 that it is necessary to raise the level of reserves in commercial categories to approximately 1.48 billion tons by 2020 and 1.8 billion tons by 2025 in order to pump the maximum amount of 80 million tons of crude oil for the ESPO pipeline. At the same time, Deputy Minister Dement'ev stated that the volumes of crude oil production in eastern Siberia and the Sakha Republic might reach approximately 40 million tons by 2015 and approximately 80 million tons by 2025. The vast majority of the expected production, however, will rely on the virtually unexplored resources categorized as C3 and D1 (Figure 2).[21]

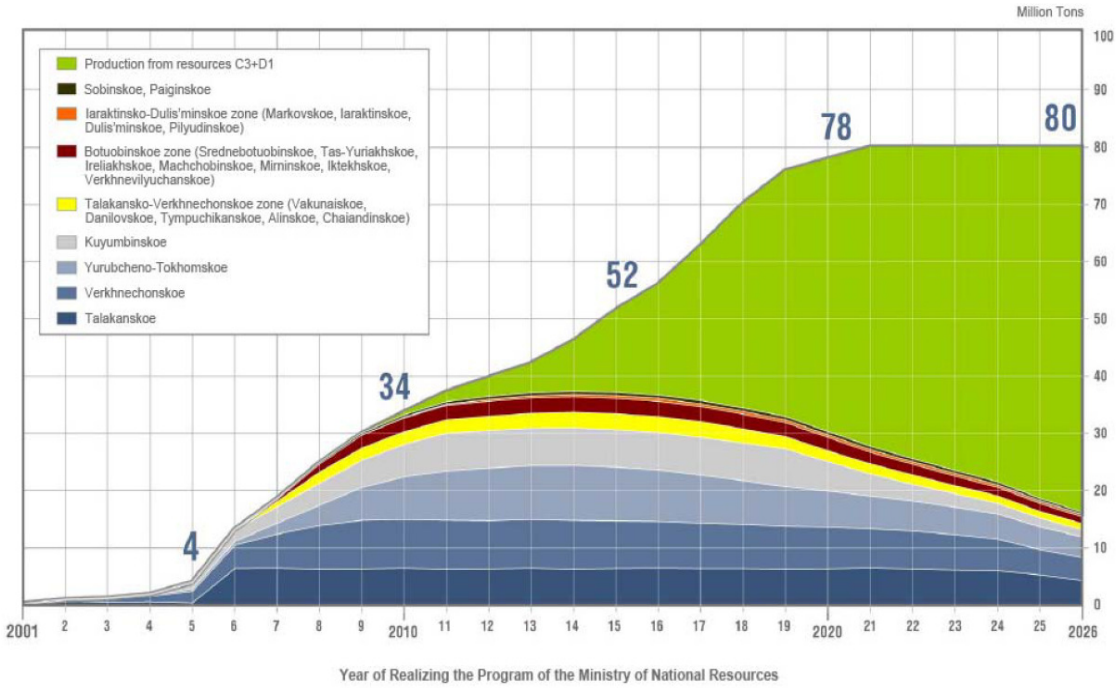
---

[19] "Доклад Заместителя Министра природных ресурсов РФ А.А.Темкина 'О программе геологических поисков и разведки месторождений нефти и газа в Восточной Сибири и на Дальнем Востоке России'" [The Report of Deputy Minister of the Mineral Resources of Russian Federation A.A. Temkin "On the Programme of Geological Prospection and Exploration of oil and Gas fields in the eastern Siberia and in the Far East of Russia"], February 17, 2005, www.mnr.gov.ru/part/?act=more&id=110&pid=351 (accessed April 30, 2008).

[20] "Тезисы доклада заместителя Министра природных ресурсов РФ Алексея Варламова на заседании коллегии МПР России, состоявшемся 10 апреля 2007 года" [Proceedings of the report of Deputy Minister of Mineral Resources (MMR) of Russian Federation Alexei Varlamov on the MMR committee on April 10, 2007], www.mnr.gov.ru/files/part/6109_tezisy.doc (accessed April 30, 2008).

[21] "О Ходе реализации строительства нефтепроводной системы 'Восточная Сибирь–Тихий Океан' и обеспечении ее нефтяными ресурснами" [On the realization of the construction of the oil transporting system "eastern Siberia-Pacific Ocean" and providing it by oil resources], July 20, 2007, www.minprom.gov.ru/appearance/report/48 (accessed April 30, 2008).

Figure 2. Estimated Volumes of Crude Oil Production in Eastern Siberia and the Sakha Republic



Source: The original Russian version was downloaded from the homepage of the Ministry of Industry and Energy, www.minprom.gov.ru/appearance/report/48/VSTO.ppt (accessed August 7, 2007).

Feasible Ambitions?

As early as November 2006, at a Japan-Russia symposium held in Tokyo, the Deputy Director of Rosneft's Strategic and Overseas Projects Department Valerii Rusakov revealed that the company had planned to supply 60 per cent of crude oil when the ESPO pipeline came online, with half of this being dispatched from the Vankorskoe oilfield.[22] Likewise, Transneft President Semen Vainshtok announced that Transneft had already received declarations of crude oil shipments via the ESPO pipeline by oil

[22] "Роснефть заполнит Восточный нефтепровод на 60%" [Rosneft will fulfil the Eastern pipeline on 60%], November 9, 2006, www.vstoneft.ru/news.php?number=195 (accessed April 30, 2008). Rosneft President Bogdanchikov declared that the volume of production from the Vankor oilfields group would reach 43 million tons by 2015. The Vankorskoe oilfields are located in the northwest area of Krasnoiarsk Krai, which belongs to eastern Siberia in the administrative term. But it remains within the boundary of west Siberian Lowland from the standpoint of geological stratum. In the contemporary Russian discourse about Vankorskoe field in the context of its importance for the ESPO pipeline, however, its geographical affiliation to eastern or western Siberia has been vague.

companies amounting to more than the first phase's maximum capacity, in which Rosneft would account for 25 million tons from Vankorskoe oilfields in the Krasnoiarsk Krai, when the first phase of the ESPO pipeline goes online in 2009.[23] He also added that Transneft secured as much as 36 million tons, including confirmation of 7 million tons from the Talakanskoe oilfields by Surgutneftegaz and 4 million tons from the Verkhnechonskoe oilfields by Rosneft and TNK-BP.

But even the forecast of Vankorskoe oilfields has not necessarily been as optimistic as the statements by Rosneft and Transneft. Calculations by the All-Russian Research Institute for Construction and Operation of Pipelines, Enterprises of Fuel and Energy Sector (VNIIST) suggest more conservative prospects of eastern Siberia's crude oil production capability, including the Vankorskoe oilfields group as of 2010 (Table 3).[24]

It is suggested that the acceleration of exploring and developing the Vankorskoe oilfields has been politically motivated to a large extent. Rosneft revealed that as much as 756 million tons out of 1,214 million tons of reserves (C1 + C2) belonged to C2 by the beginning of 2007.[25] Unlike traditional cases, the Central Commission for Reserves under the Ministry of Natural Resources hastened to approve Rosneft's halfway field development plan without enough level of exploration prior to production due to the lack of time in advance for the commencement of the ESPO pipeline's first stage.

---

[23] "Дементьев: ВСТО будет заполнен нефтью Восточной Сибири" [Dementiev: the ESPO will be fulfilled by east Siberian crude], July 12 2007, www.vstoneft.ru/news.php?number=434 (accessed April 30, 2008); "Первая очередь ВСТО переполнилась: Загрузку трубы более чем на 80% обеспечит 'Роснефть'" [The first queue of the ESPO is overloaded: Rosneft will supply the pipe for over 80%], July 13, 2007 According to Transneft President Vainshtok, the declarations of oil shipment by other companies included: 200 million tons and plus from Talakanskoe by Surgutneftegaz; 700–800 thousand tons from Dulis'minskoe oilfields by Urals Energy; and the rest from Verkhnechonskoe oilfields by Rosneft and TNK-BP.

[24] The Vankorskoe oilfield group includes North Vankorskoe mining deposit and the others. But this paper uses "Vankorskoe oilfields" as a generic term of all the mining deposits belonging to the so-called Vankorskoe oilfield group.

[25] "Ванкорское чудо: торождение разведывается и разрабатывается одновременно" [The Vankor Miracle: oilfield is prospecting and exploring simultaneously], *RusEnergy*, June 8, 2007.

Table 3. Projected Sources of Crude Oil for the ESPO Pipeline as of 2010

Mineral Deposits	Million Tons
Talakan-Verkhnechonskoe Oilfield Group	10.6
Yurubchenskoe Oilfield Group	2.6
Vankorskoe Oilfield Group	10.0
West Siberia	6.8
Total	**30.0**

Source: "Вся надежда на Ванкор: Восточная Сибирь пока не может обеспечить нефтью ВСТО"» [All hopes for Vankor: Eastern Siberia cannot supply the ESPO by crude yet], *RusEnergy*, February 6, 2007.

The economic feasibility of the Vankorskoe project, however, has remained unknown. Other than the question of sustaining the stable level of crude production and increases in proven reserves, the great distance of the pipeline from Vankorskoe oilfields to the starting point of the ESPO pipeline, Taishet, is yet another concern against the backdrop of unknown shipping tariffs.

While Transneft's construction of a new pipeline to connect the Vankorskoe oilfields with the pipeline (approximately 540 km) from Purpe in Iamalo-Nenets Autonomous Okrug of Tumen Oblast in Western Siberia is to be completed by autumn 2008,[26] the existing pipeline stretching from Purpe to Taishet via Surgut in Khanty-Mainsk Autonomous Okrug of Tumen Oblast, Aleksandrovskaia in Tomsk Oblast, and Anzhero-Sudzhensk in Kemerovo Oblast is more than 3,000 km long. Adding up the distance from Taishet to Skovorodino, it comes to approximately 5,800 km long.[27]

While introduction of a unitary tariff system to even out the charges for crude shipment upon the commencement of the ESPO pipeline has been currently under consideration by the Russian government at Transneft's

[26] "Нефтепровод с Ванкора тянется к ВСТО" [The oil pipeline from the Vankor is drawing out to ESPO], May 24, 2007, www.vstoneft.ru/news.php?number=386 (accessed April 30, 2008).

[27] "Вся надежда на Ванкор: Восточная Сибирь пока не может обеспечить нефтью ВСТО" [All hopes for Vankor: Eastern Siberia cannot supply the ESPO by crude yet], *RusEnergy*, February 6, 2007.

request,[28] there appear to be no concrete visions of economic (or business) profitability to satisfy Transneft, Rosneft and other investors.

As recent as June 2007, Evgenii Galichanin, Chairman of the Committee on Energy, Transportation and Communication in the State Duma (the Lower House of the Russian Parliament), noted at the Moscow International Oil and Gas Exhibition that the quantity of Russia's crude exports to the Asia-Pacific was projected to reach 44 million tons by 2010 and 70 million tons by 2015: Western Siberia accounts for 30 million tons, eastern Siberia 20 million tons, and Sakhalin 20 million tons,[29] that is, even if the ESPO pipeline can ensure as much as 50 million tons of crude oil by 2015, 30 million of which must rely on the supplies from western Siberia. While Vankor-sourced crude is planned to supply the ESPO pipeline via the long detour in western Siberia, how much crude can be expected by this route in the near future remains to be seen.[30] There are also forecasts that it will be necessary to supply at least 30 million tons to the ESPO pipeline from western Siberia until 2030.[31] Given that west Siberian oil production is projected to peak in the foreseeable future, however, how much oil can be supplied from there to the east remains to be seen.

Vigilance Against Foreigners Despite High Development Costs

Speaking to Parliament in April 2006, the Deputy Minister of Industry and Energy, Andrei Dement'ev, stated that 40–50 per cent of the crude oil lying beneath Russia was located in the eastern regions but he did not mention any figures as a breakdown (proven, estimated, projected) so there

---

[28] Ibid; "О ходе обеспечения нефтяными ресурсами нефтепроводной системы 'Восточная Сибирь - Тихий океан'" [About the process of providing the oil transportation system "Eastern Siberia-Pacific Ocean" by petroleum resources], July 19, 2007, http://control.mnr.gov.ru/part/?act=print&id=3901&pid=11 (accessed April 30, 2008).

[29] "Эксперты Госдумы ожидают рост экспорта нефти и газа в Азию" [The Experts of State Duma expect the increase of the oil and gas export growth to Asia], *Нефтегазовая Вертикаль* [Neftegazovaya Vertical], June 27, 2007, www.ngv.ru/shownews.aspx?newsID=96080 (accessed April 30, 2008).

[30] Today, it is unclear in many cases that to what extent Russian officials presuppose the prospects of Vankorskoe oilfields, when they talk about the need of crude oil from "western Siberia."

[31] Sergei Glazkov, "Eastern Pipeline Will Provide New Options," *Russian Petroleum Investor*, June-July 2006, p. 21.

are still question marks over this.[32] Due to the high development costs, including infrastructure that has not yet been put in place, the eastern regions have not been included in full-scale exploration and exploratory drilling but today, they are being placed at the heart of Russia's national energy strategy.

There have emerged, however, concerns about the slow pace of geological survey and the inadequate amount of explored reserves among experts and high-ranking officials. According to the Director of IGNG, Aleksei Kontorovich, geological survey of Eastern Siberia alone needs at least US$15 billion in investment.[33] In summer 2007, Deputy Minister Dement'ev remarked that US$23 billion would be necessary to ensure oil reserves.[34]

Oil companies have been lagging behind the original plans of the greenfield development of eastern Siberia where they can engage in geological investigation only for three to five months a year due to the harsh climatic conditions.[35] It also seems that they have recognized all sorts of investment risks, and considered available capital and technology.

IGNG estimates that, whereas the average cost required to increase reserves by a ton is US$2.50 in western Siberia, it is US$4.00–$5.60 in eastern

---

[32] "Нефтегазовый комплекс Восточной Сибири и Дальнего Востока: состояние, тенденции развития и перспективы сотрудничества со странами Азиатско–Тихоокеанского региона (АТР)" [The Oil and Gas Complex of the eastern Siberia and Far East region: conditions, development tendencies and prospectives of cooperation with the countries of the Asia-Pacific region], April 26, 2006, www.minprom.gov.ru/activity/energy/appearance/17/print (accessed April 30, 2008).

[33] "Вторая стратегическая попытка" [A Second Strategic Endeavour], Continent Sibir, June 3, 2005.

[34] "О Ходе реализации строительства нефтепроводной системы 'Восточная Сибирь–Тихий Океан' и обеспечении ее нефтяными ресурснами" [On the realization of the construction of the oil transporting system 'eastern Siberia-Pacific Ocean' and providing it by oil resources], July 20, 2007, www.minprom.gov.ru/appearance/report/48 (accessed April 30, 2008).

[35] "Will There be Sufficient Crude Oil for the ESPO Pipeline?" *Russian Petroleum Investor*, June/July 2007, p. 17.

Siberia.[36] It used to be predicted that the cost of developing oil and natural gas in eastern Siberia and the Sakha Republic would be US$67–87 billion by 2030.[37] The estimates, however, are on the rise. Prime Minister Mikhail Fradkov noted during his visit to the Sakha Republic in March 2007 that while US$102 billion of investments were needed to ensure 50 million tons of crude oil production in east Siberia towards 2025, only 30 per cent of the original plan was invested by the oil companies as recently as 2006.[38] He warned that oil companies had carried out only 5 per cent of their obligations of geological surveys, threatening the profitability of the ESPO pipeline project.[39]

Meanwhile, the Putin administration positioned energy resources such as crude oil and natural gas, as well as other sub-soil resources, as strategic materials that determine the fate of the nation, and gradually eliminated the influence of foreign companies, which began to strengthen in the 1990s. In May 2005, President Putin instructed the government to formulate a bill limiting foreign investment in companies linked with national security. In October of the same year, the Ministry of Natural Resources formulated a bill as an amendment to the Law on Use of Sub-Soil Resources (enacted in 1992), defining oilfields with at least 150 million tons of reserves, gas fields with at least one trillion m^3 of reserves, copper deposits of at least 10 million tons and gold deposits of at least 700 tons as

---

[36] "Тяжелые потери: Сырьевая база нефтедобычи имеет мало шансов на рост в обозримом будущем" [Severe losses: Raw materials base has little chances for the growth in the foreseeable future], *RusEnergy*, April 4, 2006.

[37] "Цена Находки: Трубопровод из Сибири к Тихому океану может быть построен, но лишь за счет многомиллиардных затрат на геологоразведку" [The Price of Nakhodka: The Pipeline from Siberia to the Pacific Ocean can be constructed, but with the multibillion expenses fro the geo prospection], *RusEnergy*, December 5, 2003.

[38] "Премьер нашел трубопровод: склонить нефтяников к восточносибирским инвестициям" [Prime-Minister has found the pipeline: to incline oilmen to east-Siberian investment], *Kommersant*, March 14, 2007; "Нефть зарывают в землю: Нефтяники выкачивают только треть сырья" [Crude is burying to ground: the Oilmen exploring only third part of raw materials], *Vedomosti*, April 11, 2007.

[39] "Миллиарды в трубу: Гигантский сибирский нефтепровод рискует оказаться убыточным" [Billions in pipe: the gigantic Siberian pipeline is risky to be unprofitable], March 14, 2007, www.sakha.gov.ru/print.asp?n=4456 (accessed April 30, 2008).

"strategic deposits," and stipulating the condition that the share of stock held by foreigners should be less than 50 per cent. (In other words, it was mandatory for Russians to hold 50 per cent + 1 share). However, on the grounds that the definition of "strategic deposits" did not adequately protect national interests, the bill was rejected at the request of the presidential administration immediately before its first reading at the State Duma.[40]

In May 2006, when President Putin held a meeting with Minister of Natural Resources Yuri Trutnev, he instructed the minister to reconsider the "strategic deposits" criteria.[41] In June of the same year, the minister unveiled a new bill in which the deposit reserves targeted by restrictions on entry by foreign investors (as stated above) were set at 70 million tons or more in the case of oilfields, at least 50 billion m^3 in the case of natural gas fields, at least 500,000 tons in the case of copper deposits and at least 50 tons in the case of gold deposits. According to Mr. Trutnev, based on this new definition, while around 30 oilfields and 40 natural gas fields across Russia will fall into the "strategic deposit" category, an appropriate framework with a focus on the entry of foreign capital into eastern Siberian "strategic deposits" that will be supplied to the ESPO pipeline is still being developed, in cooperation with the Federal Agency for Subsoil Use.[42]

While some are of the opinion that the introduction of the definition of "strategic deposits" will work to the advantage of large state-owned companies such as Rosneft and Gazprom when aiming to introduce foreign capital,[43] the Federal Security Service (FSB), which most fears the loss of Russia's national security and interests, has apparently put forward the

---

[40] "Трутнев отсортировал месторождения" [Trutnev has sorted oilfields], *Vedomosti*, October 18, 2005; "Стратегический маневр" [A Strategic Manoeuvre], *Vedomosti*, November 3, 2005.

[41] "Иностранцам ходу нет: Добыча нефти и газа – дело российских компаний" [No room for foreigners: the eploratio of oil and gas is a business for Russian companies], *Vedomosti*, June 6, 2006.

[42] *Interfax*, June 19, 2006.

[43] "Лучше нынешнего, хуже прошлого: Последняя версия закона о недрах – в пользу 'Газпрома' и 'Роснефти'" [Better than existing, but worse than previos: the last version of law of subsoil is for the benefits of 'GazProm' and 'Rosneft'], *Vedomosti*, July 6, 2006.

opinion that the conditions for foreign investors, regarding which companies can participate in "strategic deposits," should be made even stricter.[44]

Implications from the Emergence of Cooperation among the Consuming Countries in Asia

While Putin's diplomacy has demonstrated a clear ambition to reinforce its position in the Asia-Pacific, where Moscow wishes to expand the share of its energy supplies within the country's total trade, it appeared that the aggravation of Sino-Japanese relations during the Koizumi period turned out "pennies from heaven" to be exploited to maximize Russia's geopolitical and economic interests.[45] Meanwhile, both Beijing and Tokyo have been by and large perplexed by Moscow's opportunism, and conducted a futile scramble over getting access to the ESPO project.[46]

Notwithstanding the huge potential of energy interdependence, mutual distrust in energy cooperation is worsening in Sino-Russian relations.

---

[44] "Стратегический спор: ФСБ, ФАС и администрация президента думают, как ограничить иностранцев" [The Strategic Argument: FSB, FAS and the administration of President think how to constrain foreigners], *Vedomosti*, October 24, 2006.

[45] "Национальные инетересы трубопроводы – это геополитика", [The national interest of pipelines is geopolitics], *Red Star*, October 21, 2005; "Наше дело - труба. Несмотря на сопротивление Японии, ТЭК Сибири и Дальнего Востока будут развивать в интересах китайской экономики" [Our business is pipe. Although for opposition of Japan, the energy complex of Siberia and Far East will be developed to the interests of China], *Nezavisimaya Gazeta*, October 31, 2005.

[46] Media reports on this very topic have been numerous. For example, 「中日争夺俄输油管道：俄能源部选择的最终方案对中国更为有利」[Sino-Japanese competition over Russia pipeline: Russia's decision on the final route is more beneficial for China (in Chinese)] *Huanqiu Ribao*, March 12, 2003；「原油をめぐる日中の覇権ゲーム」 [The Sino-Japanese Domination Game for Oil (in Japanese)], *Sankei Shinbun*, January 28, 2003. For various interpretations of Sino-Japanese competition over the ESPO project, see Leszek Buszinski, "Oil and territory in Putin's relations with China and Japan," *The Pacific Review*, Vol. 19 No. 3 (2006), pp. 287–303; Lyle Goldstein and Vitaly Kozyrev, "China, Japan and the Scramble for Siberia," *Survival*, Vol. 48, No. 1 (2006), pp. 163–178; Xuanli Liao, "The Petroleum Factor in Sino-Japanese Relations: Beyond Energy Cooperation," *The International Relations of the Asia-Pacific*, Vol. 7 (2007), pp. 23–46.

China still must endure Russia's "paranoid" attitude emanating from the so-called "China threat" (*Zhongguo weixielun*), which is deeply rooted in the Russian mindset.[47] In this context, securing a supply route from Russia should be interpreted as no more than one of many alternatives, as access to other routes from Central Asia, North Africa and South America has also been seriously encouraged so as to maintain independence from Russia.[48] It is worth mentioning that the suspension of natural gas supplies to Ukraine in January 2006, regardless of Moscow's intentions, was serious enough to remind Beijing of the nightmare they had endured at the beginning of the Sino-Soviet conflict in 1960.[49] This incident was ranked in the top of ten major events concerning the oil economy in 2006 by one of the most widely read Chinese energy journals, *International Petroleum Economics*.[50]

Moscow's expectation to play both ends against the middle between Beijing and Tokyo by "dangling the ESPO card" has borne no fruit, whereas the latter two countries have begun to normalize their relationship. In other words, Russia does not have any countermeasure against Sino-Japanese rapprochement. In fact, the temporary downturn in Sino-Japanese relations in the last few years of Jiang Zemin's term had more or less bottomed out by the end of the Koizumi administration. Overall, as Mike M. Mochizuki noted, China and Japan "are more likely to establish a

---

[47] 崔宪涛 (Cui, Xian Tao) 『面向二十一世纪的中俄战略协作伙伴关系』 [Strategic Partnership of China and Russia for the 21st Century] (in Chinese)] (Beijing: China's Central Party School Press, 2003), pp. 480-527].

[48] 陆南泉 [Lu, Nan Quan] 「从中俄原由管道合作项目探索对俄投资问题」 [Issues concerning investment in Russia - study on China-Russia oil pipeline cooperation projects, *Siberia Research*, Vol. 32, No. 4 (2005), pp. 25-26]; 吴磊 (Wu, Lei) 『中国石油安全』 [China Petroleum Security] (Beijing: China Social Science Press, 2003), pp. 267-68.

[49] The author's interview with energy experts in Beijing in January 2006.

[50] 本刊编辑部 (Editorial)『2006年国内外十大石油经济新闻』 [Top 10 international events affecting the oil economy in 2006], *International Petroleum Economics* (Beijing: China Petroleum Society, Petroleum Economics), pp. 2-11.

new equilibrium than to slide into a downward spiral" in the East Asian international system.[51]

Contrary to the prior internationally-widespread rumours about his Asian policy, Koizumi's successor, Shinzo Abe, has made a more or less conciliatory approach towards China in the energy field, despite the stalemate of the dispute over natural gas deposits in the East China Sea.[52] At the first Sino-Japanese summit to be held in over five years, immediately after Abe's ascension to power as prime minister, both leaders agreed on building a reciprocal strategic relationship in which energy and the environment are the priority areas for cooperation.[53]

Their common interests include diversification of energy sources, reducing reliance on fossil fuels, ensuring stable access to energy supplies and utilization of multinational frameworks. Japanese Minister of Economy, Trade and Industry Akira Amari noted that "cooperation between the two countries is much preferable to competition that gives suppliers the upper hand and increases uncertainty."[54]

China and Japan had no concrete form of policy adjustment towards supplying countries, including Russia, at the bilateral level until now. However, given the kinds of uncertainties and constraints concerning the development and production of hydrocarbon resources as well as Russia's

---

[51] "China-Japan Relations: Downward Spiral or New Equilibrium," in David Shambaugh, ed., *Power Shift: China and Asia's New Dynamics* (Berkeley: University of California Press, 2005), p. 135.

[52] The final solution of the Sino-Japanese dispute over the East China Sea is presently unforeseen, whereas ministerial level talks between the two governments have been institutionalized. The author is rather sceptical about the extent to which Sino-Japanese conflict on this issue can ultimately be analysed in the context of the struggle over energy resources per se. It has more to do with matters of national boundary demarcation and protection of sea lanes for military ships, implying that the solution must be sought in the context of the Taiwan Strait issue between Beijing and Washington.

[53] Ministry of Foreign Affairs of Japan,「APEC 首脳会議における日中首脳会談（概要）」[The Sino-Japanese Leaders' Meeting at the APEC Leaders' Summit (Summary)], November 18, 2006, www.mofa.go.jp/mofaj/kaidan/s_abe/apec_06/kaidan_jc.html (accessed April 30, 2008).

[54] "Japan and China Pledge Energy Dialogue," *International Herald Tribune*, December 17, 2006.

xenophobic attitudes towards foreign capital, there is a possibility that Beijing and Tokyo may increasingly find that competition over the ESPO project makes no sense due to the lack of economically lucrative results in the immediate future.[55]

Furthermore, the gradual development of Sino-Japanese energy cooperation has also been reinforced by multilayered international frameworks beyond the domain of Northeast Asia, covering the Asia-Pacific. In December 2006, the energy ministers of the five big energy-consuming countries in the region, namely the United States, China, Japan and South Korea and India, which account for half of the world's energy consumption, gathered for the first time in Beijing to talk about creating international energy cooperative measures for ensuring stable energy supply and energy conservation. They agreed to keep holding dialogue under this framework annually, and published a joint statement saying that they shared a common view of the importance of establishing an energy price mechanism based on market principles, constructing an oil stockpiling system, and the transparency of information with regard to consumption and stockpiling.[56]

At the Second East Asian Summit in January 2007, the leaders of the United States, Japan, China, South Korea, India, Australia, and New Zealand issued the Cebu Declaration on East Asian Energy Security, setting forth cooperation goals, including the reduction of dependence on conventional fuels and the encouragement of open and competitive regional and international markets providing affordable energy, and so on.[57]

While U.S.-Russia relations have gradually soured, Washington's arguments on "containing China," which appeared in the 1990s, have increasingly diminished in recent years. Even the U.S. concern about China's

---

[55] For possible forms and merits of energy cooperation among the consuming nations, formulated by Chinese, Japanese and South Korean energy experts, see *Co-existence Scenarios of North East Asian Energy Consuming Countries*, *The Institute of Energy Economics, Japan*, March 2006.

[56] 「石油備蓄や省エネで協調・日中米韓印が閣僚会合」[Japan-China-South Korea-Indian Cabinet-level Conference on Oil Reserves and Energy Conservation], *Nikkei Net*, December 17, 2006.

[57] Cebu Declaration on East Asian Energy Security, Cebu, Philippines, January 15, 2007, www.aseansec.org/19319.htm (accessed April 30, 2008).

"aggressive" advancement towards oil equities on the global scale has not discouraged the former from integrating the latter into various energy-related regional frameworks. Energy has increasingly become one of the main agendas in the U.S.-China strategic dialogue as well, whereas initial expectations about the U.S.-Russia energy dialogue against the background of the post-9/11 partnership have by and large reached a stalemate.

The United States' increasingly proactive initiatives towards energy issues in the Asia-Pacific have helped not simply to multiply policy coordination channels but also to consolidate Sino-Japanese energy dialogue, given that Washington and Tokyo share a common interest in engaging Beijing as a "responsible stakeholder" in the region, including energy issues. The Center for Strategic and International Studies published a report in February 2007, *The U.S.-Japan Alliance: Getting Asia through 2020*, written by Richard L. Armitage and Joseph S. Nye, which states the following:

> The United States, Japan, and others will be further affected by China's surging demand for energy and raw materials. Some of the consequences will likely be negative: higher prices for foreign crude, increasing environmental degradation, and competition over disputed maritime boundaries. But there will also be new opportunities for cooperation on energy efficiency, 'clean-coal technology', and nuclear power. It may also be the case that China's increasing reliance on the outside world will present the United States and its friends with foreign policy opportunities.[58]

Although there exists virtually no regional multilateral framework regarding energy security in which Russia could either play a leading role or alleviate tensions between consuming and supplying countries in the Asia-Pacific, it has increasingly become obvious that the major powers of the

---

[58] *The U.S.-Japan Alliance: Getting Asia through 2020*, p. 4. For a brief presentation of the author's view on the role of the U.S.-Japan alliance, see Shoichi Itoh, "Energy Security Revisited: A Catalyst for Multilateral Cooperation in the Asia-Pacific Region and the Role of the U.S.-Japan Alliance," *Japan Foundation for Global Partnership*, August 29, 2006, www.cgp.org/index.php?option=article&-task=default&article id=337 (accessed April 30, 2008).

region have found "common languages" for energy security without Moscow's participation.

Conclusion

There is no doubt that Russia has huge potential in theory to exploit and enhance its presence in the Asia-Pacific by way of increasing energy supplies from the eastern flank of the country, as its national energy strategy indicates. However, the translation of the potential into reality awaits the solution of a number of uncertainties in the foreseeable future.

Moscow's ambition for great power status has not necessarily entailed an economically logical set of policies to accelerate developments of hydrocarbon resources, which will require a massive scale of investments and introduction of new technologies. Behind the increasing "confidence" of its national power against the backdrop of high oil prices, Russia has ironically tried to drive out as much foreign influence as possible. God only knows when Russia will realize massive amounts of crude oil – hopefully followed by natural gas – supplies from east Siberia to the Asia-Pacific markets. But timing is everything in business. When it comes to the question of the east Siberian development, time is running out for Russia, not for others. Russia itself has recognized that it has been lagging behind the originally expected pace of exploiting the hitherto untapped vast eastern terrain of the country, whereas Moscow cannot overcome its downward spiral of traditional geopolitical mindset vis-à-vis other regional powers.

As I once stated in a co-authored article, "In reality, it is not China or Japan, but Russia that wants to bring large volumes of its oil and gas to the markets of the Asia-Pacific (Northeast Asia in the original text) in the most economical way. Also, it is not Japan and China who are the main contenders for a pipeline route, but rather diverse interests within Russia."[59]

To the extent that, in Stephen Blank's concise words, "Russia is weak on all measures in Asia, and, according to any index of power, unlikely to

---

[59] Shoichi Itoh, Vladimir I. Ivanov, Zha Daojing, "China, Japan and Russia: The Energy Security Nexus," in Niklas Swanström, ed., *Conflict Prevention and Conflict Management in Northeast Asia* (Uppsala: Central Asia-Caucasus Institute & Silkroad Studies Program, 2005), p. 139.

regain strength; it needs Asia's help to become competitive,"[60] Russia may be losing its own opportunity. Gilbert Rozman notes:

> On many occasions in the nineteenth and twentieth centuries Russia had a chance to strike a new balance among its objectives, but it was too confident of its own superiority and placed too little value on the benefits of regional integration. It still needs to reduce the emphasis on geopolitics. Given the fluidity of the current situations, however, Russia has a chance to act.[61]

There is no need for Russia to bite off more than it can chew and to behave (or even pretend to be) as a great power if it deliberately wishes not only to make the best of its opportunity with natural resources, but also to be welcomed as a "responsible stakeholder" of the Asia-Pacific's energy security, For example, if Russia were a rational actor, it could have avoided the geopolitical tone of energy projects in any direction and shown its own initiative to "open" the energy development of east Siberia for a multinational commercial scheme by speeding up the improvement of the investment climate with regard to the promotion of information transparency about reserves, the establishment of clear and stable legal frameworks, etc. Yet, whether Russia will appreciate multinational cooperation in the east, seeking a positive-sum game, by denying the applicability of a zero-sum game for its own sake, remains to be seen.

---

[60] Stephen Blank, "What is Russia to Asia?" *Orbis*, Vol. 47, No. 4 (2003), p. 569.
[61] Gilbert Rozman, "Russia in Northeast Asia," in Robert Legvold, ed., *Russian Foreign Policy in the 21st Century and The Shadow of the Past* (New York: Columbia University Press, 2007), p. 350.

8. The India-U.S. Nuclear Deal: Security Implications

Rajesh M. Basrur*

Introduction

In July 2007, the governments of India and the United States ended a prolonged period of wrangling and agreed on a text for the so-called "123 Agreement" on peaceful nuclear cooperation.[1] The agreement envisages among other things the separation of India's nuclear infrastructure into civilian and military sectors, international control over the former, and the supply of American nuclear fuel for the fulfilment of India's plans for expanded energy production. It is widely recognized that the sub-text of the agreement – its political dimension – is more important than its economic one. India's rapidly expanding economy certainly calls for augmenting its limited energy resources, but nuclear energy is not likely to amount to a significant proportion of its needs. Projections for energy sufficiency by the year 2030 show that nuclear energy will constitute no more than 6.6 per cent of its electrical power production of 456 GWe.[2] Most analysts accept that the United States is seeking a hedge against a potential threat from the rising power of China. One observer compares its significance

---

* Rajesh M. Basrur is Associate Professor at S. Rajaratnam School of International Studies, Nanyang Technological University, Singapore.

[1] For the full text of the Agreement for Cooperation between the Government of India and the Government of the United States of America Concerning Peaceful Uses of Nuclear Energy, see India, Ministry of External Affairs, August 1, 2007, http://meaindia.nic.in/ (accessed April 30, 2008). The term "123" is one of popular usage since it is held to fall under Section 123 of the U.S. Atomic Energy Act of 1954. As one observer has noted, the agreement does not explicitly derive its authority from the Act. B. S. Raghavan, "It Could Have Been Worse," August 6, 2007, www.rediff.com/news/2007/aug/06guest2.htm (accessed April 30, 2008).

[2] Leonard Weiss, "Power Points," *Bulletin of the Atomic Scientists*, Vol. 62, No. 3 (May/June 2006) http://thebulletin.metapress.com/content/d71g6943ph8ju506/ (accessed April 30, 2008).

with President Nixon's breakthrough with China during the Cold War.[3] India too wants to hedge against China, but even more, eyes the prospect of a seat at the table of the major powers by gaining indirect recognition of its status as a "responsible" nuclear power.

While these perceptions are accurate enough, not much attention has been paid to the wider strategic ramifications of the agreement. This chapter attempts to divine some of them. It touches on the ways in which the agreement may or may not affect the nuclear non-proliferation regime, India's status as a major power, India's relations with Pakistan, China and the United States, and India's role in the theatre of Asian security politics. Throughout, it is assumed that the agreement will go through unscathed as the probability of it doing so appears high. Nevertheless, it is possible that the deal will be scuttled at the bilateral level by domestic opposition in the United States or India (or both) or its full unfolding thwarted by China's refusal to allow it to pass the final hurdle of the Nuclear Suppliers Group (NSG). Hence, the differential effects of a successful/unsuccessful agreement will be considered.

The Non-Proliferation Regime

The agreement has been strongly opposed by many in the United States and the NSG on the ground that it will significantly weaken the nuclear non-proliferation regime. One way in which it is claimed this could happen is that by "rewarding" India for its disregard of non-proliferation norms, the U.S. would send an "inflationary signal to the global marketplace."[4] Such a signal, the argument goes, devalues the restraint exercised by countries which have foregone the nuclear option or turned back from it and encourages would-be proliferationists like Iran and others to nuclearize. This perception assumes that the decisions of states to forsake the nuclear option or to pursue it depend on what others, that have no direct bearing on their security, do. The evidence is to the contrary. As suppor-

---

[3] Nayan Chanda, "The U.S. and India: Nuclear Bonding," *Yale Global,* August 2, 2007, http://yaleglobal.yale.edu/display.article?id=9503 (accessed April 30, 2008).

[4] George Perkovich, "A Realist Case for Conditioning the India-U.S. Nuclear Deal," Carnegie Endowment for International Peace, Washington, D.C., May 15, 2005, www.carnegieendowment.org/publications/index.cfm?fa=view&id=18371 &pro g=zgp&proj=znpp (accessed April 30, 2008).

ters of the deal have argued, the decisions of North Korea and Iran to choose the nuclear weapons path were unrelated to India's nuclear choices, let alone to the subsequent initiation of the India-U.S. agreement.[5] More generally, detailed examination shows that when states choose to go or not to go nuclear, they are motivated by considerations of their own security, not by the behaviour of others who do not impinge upon their security concerns.[6] The unqualified domino theory of proliferation lacks supporting evidence.

A broader objection to the deal is that it will undermine a rule-based regime that needs further tightening.[7] Most objections of this kind fail to acknowledge that the "rule-based regime" is itself deeply flawed. Its weakness goes back to the "forgotten bargain" of the Nuclear Non-Proliferation Treaty (NPT) that involved a quid pro quo between the haves and the have-nots: that the former would move significantly toward disarmament in exchange for the latter's acceptance of the restrictions imposed by the regime.[8] So long as that bargain remains unfulfilled in its entirety – and it is a moot point that it will be fulfilled in the foreseeable future – the possibility of proliferation on security grounds will remain. It is precisely because there is no perception that the bargain will ever be fulfilled that the United States is seeking to alter the rules, arguing now that threats are not

---

[5] Ashton B. Carter, "America's New Strategic Partner?" *Foreign Affairs* (July/August 2006), www.foreignaffairs.org/20060701faessay85403/ashton-b-carter/america-s-new-strategic-partner.html (accessed April 30, 2008). See also the views of Walter Andersen in "Excerpts from Leventhal-Anderson Debate," Nuclear Control Institute, Washington, D.C., April 30, 2006, www.nci.org/06nci/04/Excerpts%20from%20Leventhal-Andersen%20Debate.htm (accessed April 30, 2008); and Richard Falkenrath's views in United States House of Representatives, Committee on International Relations, Statement of Richard A. Falkenrath, Senior Fellow, The Brookings Institution, May 11, 2006.

[6] T. V. Paul, *Power versus Prudence: Why Nations Forgo Nuclear Weapons* (Montreal: McGill-Queen's University Press, 2000).

[7] Michael Krepon, "A Guide to the Perplexed: Q & A on the U.S.-India Nuclear Deal," Henry L. Stimson Center, Washington, D.C., April 24, 2006, www.stimson.org/pub.cfm?id=286 (accessed April 30, 2008). Paul Leventhal's views in "Excerpts from Leventhal-Anderson Debate," George Perkovich, "Faulty Promises: The U.S.-India Nuclear Deal," *Policy Outlook*, Carnegie Endowment for International Peace, Washington, D.C., September 2005.

[8] Selig S. Harrison, "The Forgotten Bargain: Nonproliferation and Nuclear Disarmament," *World Policy Journal*, Vol. 23, No. 3 (Fall 2006), pp. 1–13.

entirely determined by capabilities alone, but by intent as well – a consideration which makes India, a democracy and a "responsible" nuclear power, acceptable within the fold.[9] That the threat argument for reframing the non-proliferation regime is not without foundation is illustrated by the simple and somewhat ironic fact that there is virtually no opposition to the deal from those whose commitments are held to be devalued. So far, the United States has insisted that the regime is not being dismantled and that the Indian case represents a unique exception. Even if the rule is seen to be amended, the conditions that allow future applications can hardly be held to be problematic. For instance, Pakistan's claim to similar treatment would be unexceptionable if it were to satisfy the requirements for such treatment, i.e. by demonstrating full commitment over time to being a responsible nuclear power and hence not a threat to the regime's objective of global stability. The exception would then become a rule that a new proliferant might be acceptable if it satisfies the required preconditions. To the extent that nuclear weapons continue to be acceptable to those who currently possess them, this may not be such a bad thing.

A case could be made that the 123 Agreement might have the opposite effect of strengthening the non-proliferation regime, though not in a dramatic way. First, the separation of India's civilian and military facilities places the greater civilian portion of its nuclear infrastructure under international control, which is not the case today. Second, the closer India-U.S. cooperation that will inevitably follow will facilitate the transfer of expertise in safety and security from the U.S. to India in ways that will not be possible without the agreement.[10] The process will take time as it requires the scraping away of long-accumulated distrust, but gradual cooperation between experts on both sides will eventually bring beneficial results. For instance, new joint efforts to combat the threat of nuclear/radiological terrorism will be possible. Third, closer India-U.S. cooperation will enable the

---

[9] On the American effort to change the terms of the non-proliferation regime, see Robert Ayson, "Selective Non-proliferation or Universal Regimes?" *Australian Journal of International Affairs*, Vol. 59, No. 4 (December 2005), pp. 431–37.

[10] Kenneth N. Luongo and Isabelle Williams, "Seizing the Moment: Using the U.S.-Indian Nuclear Deal to Improve Fissile Material Security," *Arms Control Today*, May 2006, www.armscontrol.org/act/2006_05/usindiafissilesecurity.asp (accessed April 30, 2008).

United States to persuade India to become more actively involved in multilateral efforts such as the Proliferation Security Initiative (PSI), which falls outside the existing NPT framework, towards which the latter has been ambivalent.[11] Arguably, it is in India's interest anyway to abide by the concerns of the non-proliferation regime and it has done so by being a responsible nuclear power. Nonetheless, by making India an insider to the non-proliferation regime rather than an outsider, the agreement will create the conditions for more active sharing in the goals and actions of the regime. On the whole, the potential benefits of the agreement for the non-proliferation regime would appear to outweigh its potential negative fallout. Perhaps there is no greater appreciation of this than the approval of Mohammed El Baradei, Director of the International Atomic Energy Agency (IAEA), who welcomed the agreement as bringing India "closer as an important partner in the non-proliferation regime."[12]

India's Status as a Major Power

There has been considerable discussion over India's potential emergence as a major power. Some have argued that India does possess the accoutrements of power in many ways but that its capacity to influence is less than its capacity to resist.[13] Besides, the view that India is an emerging power tends to downplay some of its serious problems: poverty, inequality, illiteracy, and poor welfare standards.[14] For the time being, that would seem to be true. However, the stepping up of India's growth in the early twenty-first century and new projections for its future growth indicate

---

[11] Michael A. Levi and Charles D. Ferguson, *U.S.-India Nuclear Cooperation: A Strategy for Moving Forward*, (New York: Council on Foreign Relations, June 2006), pp. 12–13.

[12] Cited in Mark Bucknam, "Power to the People: U. S. Nuclear Cooperation with India," *Strategic Insights*, Vol. VI, Issue 1 (January 1, 2007), www.ccc.nps.navy.mil/si/2007/Jan/bucknamJan07.asp (accessed April 30, 2008).

[13] For recent discussions on India's status as an emerging power, see Stephen P. Cohen, *India: Emerging Power* (Washington, D.C.: The Brookings Institution, 2001); Dinshaw Mistry, "A Theoretical and Empirical Assessment of India as A World Power," *India Review*, Vol. 3, No. 1 (January 2004), pp. 64–87; and George Perkovich, "Is India A Major Power?" *Washington Quarterly*, Vol. 27, No. 1 (Winter 2003–04), pp. 129–44.

[14] Amrita Narlikar, "All That Glitters Is Not Gold: India's Rise to Power," *Third World Quarterly*, Vol. 28, No. 5 (July 2007), pp. 983–96.

that its capacity to influence its international environment will grow rather more quickly than was expected even a decade ago. In January 2007, Goldman Sachs revised earlier estimates and projected a speedier pace of growth which would enable India to overtake Japan in GDP terms by about 2030 and the United States about a decade later.[15] While it is always tricky making such projections, the broad trend is confirmed by other studies.[16]

The key question here is whether the India-U.S. nuclear deal will have any appreciable effect on this process. India will become a major player on the Asian and global political stages in any case. However, capability growth need not by itself translate directly into power and influence. An existing order has a structural arrangement – institutions, ways of functioning, and especially an agenda – that is established by the powers that play a major role in it. The central issue is what happens when a new power emerges. In the past, new powers staking their claim to a seat at the table have faced serious hurdles and this has generated conflicts, sometimes violent ones, as in the case of Germany's search for status and power in the twentieth century. China has not faced difficulties of such magnitude, but is still confronted with numerous obstacles posed by differences with the United States. For India, the one remaining barrier to acceptance as a major power is its outsider status on account of its acquisition of nuclear military power. A successful deal will indirectly acknowledge India's status as a nuclear power, open the door to dual use technologies hitherto denied it, intensify its economic linkages with the United States and others and above all, make it a satisfied power. This in turn will enable it to play a more active *integrated* role as a big player in world politics. That is, India will be able to coordinate regional security better in conjunction with others, as it has already begun to do in South Asia, notably in Nepal in coordination

---

[15] Tushar Poddar and Eva Yi, "India's Rising Growth Potential," Economics Paper No. 152, Goldman Sachs, January 22, 2007, p. 5.

[16] Subbu Narayanswamy and Adil Zainulbhai, "India's Consumption Evolution," *Business Standard*, May 5, 2007; Jonathan Ablett, et al., *The "Bird of Gold": The Rise of India's Consumer Market*, McKinsey Global Institute, May 2007, pp. 13–14, 55–56.

with the United States.[17] As its power expands, this will become manifest in the wider framework of Asian politics. Still more broadly, India will become a more committed stakeholder in playing a more prominent role in regional and, eventually, global stability.[18]

India's rise as a power and its association with the United States and, more generally, with the larger capitalist world, will also bring adverse effects. Fundamentalist groups like Al Qaeda have long ago declared it as a target. In December 1999, Al Qaeda proclaimed its jihad against "Americans, Russians and Indians."[19] Groups such as the Hizb-ul-Mujahideen (HM) the Jaish-e-Mohammed (JeM) and the Lashkar-e-Taiba (LeT), which have been fighting against the Indian state in Kashmir, have links to Al Qaeda.[20] In August 2007, Al Qaeda released a video accusing the Indian government of killing thousands of Muslims with American support and declared its intent to liberate Kashmir from non-believers.[21] It would be an exaggeration to attribute Islamic terrorism in India mainly to India's foreign and strategic policies. It is widely recognized in India that the phenomenon has powerful indigenous sources. Yet there is little doubt that India's increasingly prominent international profile and its growing strategic relationship with the United States have increased its potential as a target for transnational terrorism. By enhancing India's global profile and by forging a closer India-U.S. relationship, the nuclear agreement will make India a bigger target for terrorists, which in turn will increase its interest in coordinating with the U.S. and other countries in combating transnational terrorism.

Pakistan-India Relations

One major argument against the India-U.S. nuclear agreement is that by helping augment India's nuclear fuel resources, it will free up material

---

[17] Rajesh M. Basrur, "Global Quest and Regional Reversal: India's Policy toward Its Neighbours," Unpublished paper, Singapore, 2008.

[18] Xenia Dormandy, "Is India, Or Will It Be, A Responsible Stakeholder?" *Washington Quarterly*, Vol. 30, No. 3 (Summer 2007), pp. 117–30.

[19] Rohan Gunaratna, *Inside Al Qaeda: Global Network of Terror* (New York: Columbia University Press, 2002), p. 218.

[20] Ibid., pp. 208–209.

[21] Indrani Bagchi and Vishwa Mohan, "Delhi in Al-Qaida's Crosshairs," *Times of India*, August 7, 2008.

currently required for its energy programme for the building of more nuclear warheads. This will exacerbate tensions with Pakistan and generate an arms race.[22] The government of Pakistan has echoed this criticism, claiming that regional strategic stability will be undermined.[23] This argument rests on two assumptions: that India is interested in increasing its warhead production and that it does not have the capacity to do so. Both are incorrect. Ashley Tellis has shown that India is currently producing fewer weapons than it has the capacity to, which is evident from the quantum of plutonium it has actually separated.[24] Moreover, it already has enough raw material resources to produce, at a conservative estimate, over 2,000 warheads, which is well beyond the number even the most hardline strategists have called for.[25] Ironically, according to one commentator, the increased quantum of highly enriched uranium (HEU) available to India as a result of the deal will *reduce* the likelihood of an arms race. India will be able to use the relatively small quantities of HEU it can produce through its limited enrichment capacity as fuel for its nuclear submarine programme. This, the argument goes, will enhance its assured second strike capability and thereby alleviate the need for more warheads.[26]

The real reason for the Pakistani objection is political. Since independence, Pakistan has vigorously pursued its claim to the disputed territory of Kashmir by attempting to draw support from the international community. A legal approach through the United Nations made no headway, while military action in 1947–48 and 1965 did not achieve the required objective

---

[22] Daryl G. Kimball, "Dangerous Deal with New Delhi," *Baltimore Sun*, March 9, 2006; Krepon, "Guide to the Perplexed;" Letter to Senators Lugar and Biden and Congressmen Hyde and Lantos signed by six non-proliferation experts, April 5, 2006, Nonproliferation Policy Education Center, Washington, D.C., www.npec-web.org/Frameset.asp?PageType=Single&PDFFile=letter&PDFFolder=Letters (accessed April 30, 2008).

[23] Jo Johnson and Edward Luce, "Pakistan Warns U.S. of Asian Arms Race," *Financial Times*, August 3, 2007.

[24] Ashley J. Tellis, *Atoms for War? U.S.-Indian Civilian Nuclear Cooperation and India's Nuclear Arsenal* (Washington, D.C.: Carnegie Endowment for International Peace, 2006), pp. 13–14.

[25] Ibid., pp. 31, 36.

[26] Scott Woods, "Analysis of the U.S.-India Nuclear Deal," *Defense & Security Analysis*, Vol. 22, No. 3 (September 2006), pp. 325–28.

of forcing an internationally arbitered bargain on India.[27] Since the 1990s, when both countries began to build nuclear weapons (and this includes the period before the 1998 tests), the war option has become problematic. But a strategy of low-intensity conflict has worked better. Pakistan has successfully backed terrorist groups in their campaign against the Indian government.[28] The Kargil conflict of 1999, in which Pakistani troops in civilian garb crossed into India-held territory and sparked off intense fighting, drew much international opprobrium for Pakistan, but succeeded in bringing the Kashmir issue to the forefront.[29] The India-U.S. nuclear deal represents the closing of the last avenue that Pakistan can utilize by way of political pressure on India to come to the negotiating table. The delinking of India and Pakistan in U.S. policy, already well under way, will be completed by the new India-U.S. strategic partnership that a successful deal portends. In addition, by assuring India a seat at the table of major powers, the agreement sets it apart and at a qualitatively more advantaged position vis-à-vis Pakistan. This set of outcomes will almost certainly defuse the India-Pakistan conflict, a process that has already begun, and help bring to an end the cold war on the subcontinent.

India-China Relations

The relationship between India and China stands in distinct contrast to that between India and Pakistan. The two went to war in 1962 over a long disputed border, which still remains unsettled. The threat of a Sino-Indian war has since arisen on more than one occasion, most seriously in 1986–1987 in the Sumdorong Chu valley in the Indian state of Arunachal Pradesh, an area which China does not recognize as part of India. China

---

[27] For a history of the India-Pakistan conflict, see Sumit Ganguly, *Conflict Unending: India-Pakistan Tensions since 1947* (New Delhi: Oxford University Press, 2002).

[28] Peter Chalk, "Pakistan's Role in the Kashmir Insurgency," *Jane's Intelligence Review*, September 1, 2001, reproduced on the web site of the RAND Corporation, www.rand.org/hot/op-eds/090101JIR.html (accessed February 14, 2003).

[29] Shaukat Qadir, "An Analysis of the Kargil Conflict 1999," *Journal of the Royal United Services Institution*, Vol. 147, No. 2 (April 2002), pp. 24–30; Ayesha Siddiqa-Agha, *Pakistan's Arms Procurement and Military Buildup, 1979–99* (Basingstoke and New York: Palgrave, 2001), pp. 178–83.

threatened to "teach India a lesson," and both sides mobilized several divisions.[30] Eventually, a political compromise was reached, although full withdrawal of forces was completed only in August 1995. In carrying out its 1998 nuclear tests, India cited the Chinese threat as a reason, which brought a sharp reaction from the Chinese. Nonetheless, India-China relations have developed on a sound and positive footing. Trade has grown phenomenally from US$1.1 billion in 1995 to US$24.9 billion in 2006.[31] A fresh confrontation on the border in July-August 2003 was localized and quickly resolved by negotiations.[32] China has long refrained from criticizing India on Kashmir and has recognized its once-disputed claim to Sikkim (incorporated as an Indian state in 1975), while India has reaffirmed its recognition of Chinese sovereignty over Tibet. Overcoming initial reluctance, China has allowed India to gain observer status in the Shanghai Cooperation Organisation (SCO) and India has similarly accommodated China as an observer in the South Asian Association for Regional Cooperation (SAARC). The two countries have competed intensely for oil resources, yet cooperated in a joint venture called Himalayan Limited to acquire a stake in Syrian oil development and together attempted to launch an oil importers' organization.[33]

Nonetheless, there remain significant sources of strategic tension between the two countries. Indians retain some doubt over China's relationship with Pakistan, which has a history of cooperation on nuclear and missile technologies.[34] India has also reacted unfavourably to China's successful

---

[30] V. Natarajan, "The Sumdorong Chu Incident," *Bharat Rakshak Monitor*, Vol. 3, No. 3 (November-December 2000), www.bharat-rakshak.com/MONITOR/ISSUE 3-3/natarajan.html. (accessed April 30, 2008).

[31] The 1995 figure is taken from India, Ministry of External Affairs, "India-China Trade Statistics, Table 1: India-China Trade (1995–2001)," www.meadev.nic.in/foreign/ind-china.htm (accessed April 30, 2008) The 2006 figure is taken from "India-China Trade Touches $24.9 Billion in 2006," *Hindu*, January 31, 2007.

[32] Amit Baruah, "Indian, Chinese Foreign Ministers to Meet Later This Year," *Hindu*, August 8, 2003.

[33] Gillian Hui Lynn Goh, "China and India: Towards Greater Cooperation and Exchange," *China: An International Journal*, Vol. 4, No. 2 (September 2006), pp. 263–84.

[34] John W. Garver, *Protracted Contest: Sino-Indian Rivalry in the Twentieth Century* (Seattle and London: University of Washington Press, 2001), pp. 324–31.

testing of its anti-satellite capability in January 2007.[35] Both fear the other may be pursuing a containment strategy. China's involvement in port construction projects in Pakistan, Sri Lanka and Myanmar is viewed with suspicion by some Indian strategists.[36] China has protested formally against on-going efforts to build a Coalition of Democracies (COD) among India, the United States, Japan and Australia.[37] Each has tried to allay the other's fears, but the prospect of rapid growth in the India-U.S. strategic partnership in the wake of a successful nuclear cooperation arrangement has highlighted the underlying tensions that still exist in India-China relations. Will the future relationship deteriorate? One possibility raised is that China may respond by becoming more vigorously involved in South Asian regional politics, which offers avenues for intervention owing to its multitudinous manifestations of turbulence. In consequence, the subcontinent may become a "new battle-ground for political competition."[38]

The scenario sketched above need not occur. India and China have economic priorities that make the prospect of *realpolitik* competition an unwelcome one. Unlike the U.S.-China relationship, there is no significant impetus for antagonism from the domestic arena. In contrast with the American right, India's Bharatiya Janata Party (BJP) has been comfortable with the Sino-Indian rapprochement. China's domestic politics is more controlled and does not show any signs of major factions expressing disquiet about India. Despite their rapid aggregate growth, both need stability above all as they have major structural and institutional problems ham-

---

[35] Rajat Pandit, "China Missile Worries India," *Times of India*, January 20, 2007.

[36] B. Raman, "Gwadar, Hambantota and Sitwe: China's Strategic Triangle," Paper No. 2158, South Asia Analysis Group, March 6, 2007, www.southasia analysis.org/papers22/paper2158.html (accessed April 30, 2008).

[37] Amit Kumar, "India Looks for the Power of Four," Observer Research Foundation, New Delhi, July 6, 2007, www.observerindia.com/cms/sites/orfon line/modules/analysis/AnalysisDetail.html?cmaid=8828&mmacmaid=8829 (accessed April 30, 2008).

[38] Ingolf Kiesow and Nicklas Norling, *The Rise of India: Problems and Opportunities*, Silk Road Paper (Uppsala: Central Asia-Caucasus Institute & Silk Road Studies Program, January 2007), p. 120, www.silkroadstudies.org/new/-docs/Silkroadpapers/2007/0701India.pdf (accessed April 30, 2008).

pering economic development.[39] Hence, while the element of hedging may continue, it is in the interest of neither to allow the deterioration of their relationship. India, with its memories of the colonial era still strong, is unlikely to be a party to a serious anti-Chinese alliance with the United States, as opponents of the nuclear agreement have pointed out.[40]

India-United States Relations

It is a truism that democracies do not fight, but that does not mean that they will always agree, even on important issues. After all, India and the United States were "estranged democracies" for half a century.[41] How strong are their common concerns today relative to their differences? As noted earlier, the political motivations behind the nuclear deal are primary. Both are wary of China and what its rise might mean for Asian and global politics. For this purpose, the United States, aware of the limits to its power, is keen to "help make India a world power in the twenty-first century," as Secretary of State Condoleezza Rice announced in March 2005.[42] For India, conscious that it has long lagged behind its potential, this presents an unprecedented opportunity to reach for precisely that objective. The nuclear rapprochement represents an effort to clear the last but by no means inconsiderable hurdle towards this end. Yet the deal has aroused heated domestic debate over its costs and benefits in both countries. Indian critics from the right as well as the left wing have stressed India's potential loss of autonomy as they claim India will become a "junior partner" of the United States.[43] The term evokes the colonial past, when the East India Company signed a number of "subsidiary alliances" with India's princely states and quickly gained control over them. Similarly, the newly created centrist coalition, the United National Progressive Alliance (UNPA), has warned that the agreement would have the effect of "mort-

---

[39] Pranab Bardhan, "Awakening Giants, Feet of Clay: A Comparative Assessment of the Rise of China and India," *Journal of South Asian Development*, Vol. 1, No. 1 (April 2006), pp. 1–17.
[40] Krepon, "A Guide to the Perplexed;" Perkovich, "Faulty Promises," p. 6.
[41] Dennis Kux, *India and the United States: Estranged Democracies, 1941–1991* (Washington, D.C.: National Defense University Press, 1993).
[42] Cited in Stephen Blank, "The Geostrategic Implications of the Indo-American Strategic Partnership," *India Review*, Vol. 6, No.1 (January-March 2007), p. 2.
[43] "India Made A Junior Partner of the U.S.," *Hindu*, August 4, 2005.

gaging India's national sovereignty."[44] American critics claim the precise opposite: that the U.S. will not gain much politically because India will act in its self-interest and be disinclined to defer to U.S. interests over China and Iran.[45] Both sets of detractors believe that there are deep-seated differences of interest between the two countries.

Those who support the deal assert that, on the contrary, India and the United States have fundamental interests in common, which is reflected in the signing of the deal in the first place. In the past, the U.S. tended to "hyphenate" India with Pakistan.[46] The profound import of the nuclear agreement, as C. Raja Mohan points out, is that it de-links India from Pakistan and gives India strategic parity with China.[47] It represents significant changes of attitude and policy on both sides: Indian willingness to allow the reduction of some of the country's dearly held nuclear autonomy, and quasi-formal U.S. acceptance of India's nuclear weapons status, which overturns a cardinal principle of non-proliferation policy. While they may, and often do, disagree on a number of issues, their long-term interests coincide in fundamental respects. These include: preventing Asia from falling under Chinese dominance; combating the threat of transnational terrorism; arresting the proliferation of weapons of mass destruction (WMD) to states as well as non-state actors; ensuring the safety of sea lanes; protecting the smooth flow of energy supplies; countering regional political instability; and promoting the diffusion of the liberal economic order.[48]

---

[44] Gargi Parsai, "UNPA to Put up United Opposition in Parliament against Nuclear Deal," *Hindu*, August 3, 2007.

[45] Krepon, "A Guide to the Perplexed;" Perkovich, "Faulty Promises," p. 6.

[46] Robert Blackwill, "The India Imperative," *National Interest* (Summer 2005), www.nationalinterest.org/Article.aspx?id=10828 (accessed April 30, 2008). The author, formerly American ambassador to New Delhi, is widely acknowledged as one of the chief architects of the agreement.

[47] C. Raja Mohan, "Ending Our Nuclear Winter," *Indian Express*, July 26, 2005.

[48] Blackwill, "The India Imperative;" Blank, "The Geostrategic Implications of the Indo-American Strategic Partnership," pp. 1–24; Carter, "America's New Strategic Partner?" Ashley J. Tellis, "What Should We Expect from India As A Strategic Partner?" in Henry Sokolski, ed., *Gauging U.S.-Indian Strategic Cooperation, Strategic Studies Institute* (Carlisle, PA: U.S. Army War College, March 2007).

Cooperation on regional stability is already visible in South Asia. As noted above, India and the United States have coordinated their approach to Nepal's transition from monarchy to democracy. Given India's expanding strategic reach, it could play a significant role in joint management of political problems in regions beyond the subcontinent. For instance, its excellent relations with both Arabs and Israelis place it in a unique position to play a more active and positive role in the Middle East.[49] Already, its profile in East and Southeast Asia is growing appreciably.[50] Further, there is a distinct possibility that the two countries may cooperate in the joint production of weapons systems, which will strengthen their capabilities and enable them to pursue their strategic objectives more vigorously.[51] Whether the two countries will work well together will depend on their policymakers' ability to surmount the many differences that will inevitably appear, not to mention the residue of decades of distrust and bureaucratic inertia. France and the United States have certainly been able to collaborate despite strong disagreement over American policy in Iraq. There is no reason why India and the United States cannot do so.

Asian Politics

The India-U.S. nuclear agreement portends the acceleration not only of India's rise to power but its more rapid involvement in Asia-wide politics. How will this play out? Two broad trends are observable in regional politics today. On one hand, there is a process of integration through increasing economic interaction; on the other, there is a changing balance of power politics that is generating uncertainty and a degree of tension among the major players. The rise of China and India and the revival of Japan are complicating the political scene for the United States, which remains the primary power but is experiencing a secular trajectory of relative decline. As the Goldman Sachs report cited earlier shows, by mid-century, China

---

[49] Shyam Bhatia, "India, Peacebroker," *Indian Express*, August 10, 2007.

[50] C. Raja Mohan, "East Asian Security: India's Rising Profile," *RSIS Commentaries*, S. Rajaratnam School of International Studies, Nanyang Technological University, Singapore, July 30, 2007.

[51] Anupam Srivastava, "The Strategic Context of India's Economic Engagement with China," *Indian Journal of Economics and Business* (Fall 2005), p. 9; cited in Blank, "The Geostrategic Implications of the Indo-American Strategic Partnership," p. 13.

will be the world's largest economy, followed by India and the United States in that order. Even if we discount the accuracy of this projection, Asian politics will be characterized by three roughly equal powers at the time. The changing power balance, coinciding with increasing economic integration, brings with it a mixed politics of cooperation on common interests and tension with respect to conflicting interests. It is further complicated by the significant power (and interests) of two other players, Japan and Russia, with the European Union a major participant on the economic side, but somewhat less involved on the strategic side. Among the big three-to-be, there is already evident a triangular politics of hedging, with China at the apex, in which the United States and India are cooperating with it and simultaneously attempting to balance it and vice versa.[52] For all of them, the future looks unclear. The Indo-U.S. nuclear agreement – as a precursor to a potential India-U.S. quasi-alliance – is thus critical to the hedging strategy of India and the United States in case China should become a "problem."

What is the likelihood of armed conflict? India and China have clearly come to an understanding that their border dispute is not important enough to stand in the way of strengthening economic relations. There is more concern about the possibility of a U.S.-China conflict over Taiwan which some analysts believe could bring confrontation and war.[53] Because all three are nuclear-armed powers, the likelihood of actual war is remote, but crises and low-level conflict of the type that have regularly occurred between nuclear powers in the past cannot be ruled out. Typically, balance of power politics involves both internal balancing (by accumulation of power) and external balancing (through alliances). The moves to build a coalition of democracies (COD) among the United States, Japan, India and Australia could be seen as an external balancing effort to contain China. Certainly, China perceives it as such and has formally complained about

---

[52] Evan Madeiros, "Strategic Hedging and the Future of Asia-Pacific Stability," *Washington Quarterly*, Vol. 29, No.1 (Winter 2005–06), pp. 145–67.

[53] See e.g. Richard C. Bush and Michael O'Hanlon, *A War like No Other: The Truth about China's Challenge to America* (New York: John Wiley & Sons, 2007); John F. Copper, *Playing with Fire: The Looming War with China over Taiwan* (Westport, CT: Praeger Security International, 2006); Aaron L. Friedberg, "The Future of U.S.-China Relations: Is Conflict Inevitable?" *International Security*, Vol. 30, No. 2 (Fall 2005), pp. 7–45.

what it may imply, particularly in the light of a massive joint naval exercise held in September 2007 by the four partners in the putative coalition along with Singapore.[54] India and Australia have been particularly quick to try and assuage Chinese apprehensions, but China's fears about a new U.S.-led containment strategy are bound to persist. This raises the prospect of a new cold war in Asia, with its attendant uncertainties and potential for tensions and crises.

Unlike the old Cold War, however, there is a high degree of cooperative interaction among all the players involved. Apart from trade, investment and transnational production, there is also security cooperation in key areas such as counter-terrorism and non-proliferation (for instance the six-party talks on North Korea, in which China, Japan and the United States have collaborated closely). The ASEAN Regional Forum (ARF) brings them all together on security issues. On some issues, there are cross-cutting interests. For instance, on trade regulation and climate change, India and China are ranged against the developed countries. The COD cannot therefore realistically produce a cold war-type alliance. Rather, it may be more usefully viewed as a pressure point to get China to maintain a prudently moderate stance in the region. Its longer-term significance can be viewed in the context of efforts to build an institutional structure to regulate Asian strategic politics. Hitherto, attempts to develop wide-ranging institutions – such as Asia-Pacific Economic Cooperation (APEC), the ARF and the notion of an East Asian community – have not failed, but have not been notably successful either. The COD could be the basis of a potential *concert* rather than an alliance akin to the nineteenth-century Concert of Europe, which was designed to stabilize Europe after the French Revolutionary and Napoleonic Wars. The Concert of Europe was based not on specific interests but on the great powers' desire to avoid war, maintain stability and protect the monarchic order. A Concert of Asia can be expected to focus on the first two and, over the long run, seek to encourage democratization, which would reinforce the more basic objectives.

India's role in this will be critical, partly because it will become a leading power, but partly also because as a state which has never been involved in

---

[54] Pranab Dhal Samanta, "Not Just Karat & Co, Comrades in China, Too, Aren't Happy with India's '3 New Friends'," *Indian Express*, August 9, 2007.

alliance systems, it is better positioned than any of the others to help build the bridges necessary for regional stability. The process will no doubt be a difficult and even erratic one, but because it has warm relations with all the major players in Asian politics, India will be well placed for the pursuit of such a task. The coming decades may see the unfolding of this process.

Conclusion

I have argued that the India-U.S. nuclear agreement will have significant security consequences in diverse and sometimes fundamental ways. It will somewhat strengthen the non-proliferation regime; speed up India's emergence as a major power; transform the India-Pakistan equation in favour of India; tend to accentuate the contradictory tendencies in India-China relations, but leave space for their further improvement; generate a stronger partnership but not an alliance with the United States; and facilitate the emergence of a Concert of Asia. What if the deal were somehow to be stymied by domestic pressures in either country or by external factors, such as Chinese reluctance to acquiesce in it? There will be some significant effects, and some less significant ones.

The non-proliferation regime will remain an uneasy one, somewhat hampered by Indian reluctance to participate enthusiastically in the PSI and other initiatives and perhaps by increased wrangling on arms control and disarmament issues, such as the effort to control fissile material production. India's status as a major power will certainly be lower than it would be with a successful agreement. Notwithstanding congruent interests, as a relatively dissatisfied power, India may turn its back on significant opportunities for multilateral and bilateral cooperation with the United States and other major powers. The India-Pakistan peace process will continue, but will be slowed down as Pakistan will feel more confident of its bargaining position. The possibility of its disruption by a major act of terrorism will be greater. India, China and the United States will continue their politics of hedging. Disillusionment with the United States may encourage Indian leaders to think about a warmer relationship with China and the hedging game may be slightly altered to one in which the United States will have to devote greater efforts to ensuring that it is not kept out of Asia by a potential India-China condominium (though the probability of that

actually happening would appear relatively low). Building an Asian concert will become much more difficult as no other country has the kind of potential to straddle all camps (and potential ones) as India does. Without a concert, balance of power politics and its attendant uncertainties will remain with us for a rather longer period of time. In short, the outcome of the India-U.S. nuclear deal will have consequences of considerable magnitude for Asian and global politics in the decades to come.

9. Energy Security Cooperation in Asia and the Role of the United States

Gaye Christoffersen*

Introduction

In January 2007, the East Asian Summit (EAS) adopted *The Cebu Declaration on East Asian Energy Security*. In November 2007, the EAS issued the *Singapore Declaration on Climate Change, Energy and Environment*. These Declarations face challenges on how to institutionalize the ideas and goals they embody into an organizational form, a regional multilateral regime. Many of the EAS member states lack sufficient state capacity to implement these declarations without assistance from the United States, which has sufficient state capacity but is not a member of the East Asian organizations, EAS and ASEAN+3 (APT).

All countries in East Asia face a particular challenge as they struggle with issues of how to institutionalize the ideas and goals of the numerous declarations and initiatives that have been issued in the past few years by various countries and regional organizations. A regional lead nation is required to give an initiative a viable organizational form, to translate a set of ideas into an Asian multilateral regime with norms, rules and principles, because this is beyond the capacity of most countries in the region. Japan has the capacity to lead East Asia in this direction and has been doing so for several years. China has begun to assume a leadership role in East Asian energy initiatives but lacks sufficient state capacity to implement energy and environmental programs domestically or to provide leadership in East Asian regimes. The U.S. has the capacity but lacked the political will, and often differed with Japan over strategy, purpose and degree of state intervention in energy markets. The U.S. had since 1979 implemented many successful bilateral energy projects with China but

* Gaye Christoffersen is Associate Professor of Political Science and Asian Studies at Soka University of America, Aliso Viejo, California, United States of America.

they often were one-off exercises that duplicated previous projects and lacked follow through and institutionalization.

This chapter will examine several East Asian energy initiatives and the subsequent expanding U.S. leadership role in Asia-Pacific energy and environmental initiatives. The U.S. appears to be creating alternatives to the Chinese, Korean, and Japanese-led East Asian initiatives. The U.S. is also attempting to engage China more systematically and to nest that bilateral relationship in Asia-Pacific multilateral energy/environmental regimes. When the Obama administration took office in January 2009, the U.S. government produced a series of initiatives on energy and climate change that indicated a break with the previous Bush administration. This chapter would argue, however, that the U.S. role in East Asian energy security and climate change began to undergo a paradigm shift in 2007 prior to the new administration taking office, as the U.S. appeared to counter Japan's and China's East Asian initiatives. The chapter concludes with an assessment of how best to integrate the plethora of East Asian and Asia-Pacific initiatives into a coherent regional energy architecture.

The Cebu Declaration – Institutionalizing Declarations

The Cebu Declaration is a good example of an East Asian energy initiative that required greater capacity than was available to implement it. The Second East Asian Summit (EAS) had been scheduled for late 2006 in the Philippines but because of political unrest, rumors of a military coup, a Muslim insurgency and a typhoon, it was rescheduled to January 2007. At the Second EAS, the "Cebu Declaration on East Asian Energy Security" was announced. The Declaration stated that member countries should reduce their fossil fuel dependence and increase their use of alternative energy. It called for greater private sector investment in energy infrastructure which meant foreign investment from Japan or South Korea.

The Cebu Declaration might have remained in its declaratory form and not been institutionalized, implemented or taken on an organizational form. It was Japan that proposed the implementing institution, the Economic Research Institute for ASEAN and East Asia (ERIA), but it was not

agreed to until the Third East Asian Summit.[1] The ERIA has a working group under it that Japan organized with a researcher from each country participating in the group's work. Scenarios were modeled for each country at the Institute of Energy Economics, Japan (IEEJ). The purpose of the project was to determine the potential for energy savings and CO2 emissions reduction in the EAS region.[2]

It was also Japan that proposed a Track II study group to support EAS, the Comprehensive Economic Partnership in East Asia (CEPEA) which was postponed until the Fourth EAS. The Fourth EAS was scheduled for April 10-12, 2009, in Thailand but was cancelled when protestors, challenging the Thai state's legitimacy, stormed the summit's venue, forcing the heads of government attending the EAS to be evacuated by helicopter. This summit's collapse was a reminder of the fragility of ASEAN states.

The Cebu Declaration primarily referred to regional energy infrastructure that is in Southeast Asia, namely, the ASEAN Power Grid and the Trans-ASEAN Gas Pipeline, projects that have been developed under the auspices of the ASEAN Plan of Action for Energy Cooperation (APAEC); however, there was no mention of Northeast Asian regional energy infrastructure. Northeast Asia has had greater difficulty in forming a regional energy regime and creating regional infrastructure despite more than a decade of dialog.

The goals of the Cebu Declaration are very similar to other energy initiatives in the Asia-Pacific, making it difficult to distinguish it from others. Because there are so many initiatives, the Asia Pacific Energy Research Centre (APERC) did a study to identify the region's energy initiatives, which numbered about 90+, trying to identify where there are gaps and overlapping activities between them, and impediments to achieving their goals.[3] This APERC study describes Cebu as not having set concrete me-

---

[1] More information on the ERIA can be found at: http://eria.org/ (accessed January 15, 2009).

[2] Shigeru Kimura and Edito Barcelona, "Impact Analysis of Energy Saving Goals and Action Plans in East Asian Summit Region," *Institute of Energy Economics Japan*, December 2008, http://eneken.ieej.or.jp/en/data/pdf/463.pdf (accessed January 15, 2009).

[3] Asia Pacific Energy Research Centre (APERC), *Understanding International Energy Initiatives in the APEC Region: Scope and Elements*, 2007, www.ieej.or.jp/

chanisms but rather providing a broad outline of intended measures, a declaration that had not yet been institutionalized.[4] The Cebu Declaration appeared vulnerable to being swamped in the 90+ regional energy initiatives already in existence.

A background paper written for the Second EAS cautioned against unnecessary duplication of energy initiatives. The paper, however, recognized that one potential benefit of EAS energy cooperation is that it could extend energy security initiatives from other regional fora, Asia-Pacific Economic Cooperation (APEC) and ASEAN+3, to India, which is a member of EAS but not the other organizations.[5] Indian energy demand has attracted more international attention since the International Energy Agency (IEA) identified Chinese and Indian rising oil demand and oil imports as a threat to global energy security. India, unlike China, does not belong to any of the regional energy projects except EAS.

The much larger issue was the need to integrate the 90+ initiatives into a coherent East Asian energy regime. With so many disparate and disconnected projects, there were many gaps and duplications. There needed to be some effort to "nest" all the projects into a coherent whole. The region also needed a lead country with sufficient capacity to implement these initiatives and a willingness to help build capacity in other countries, especially Southeast Asian nations and China. The U.S. government might also have taken on that role but it had no comment on the Cebu Declaration on East Asian Energy Security, and in fact there was very little coverage of the EAS in major U.S. newspapers at that time.

The political purpose of the Cebu Declaration appeared to be an EAS effort to demonstrate that it could propose concrete, action-oriented pro-

---

aperc/2007pdf/2007_Reports/APERC_2007_UIEI.pdf (accessed September 1, 2008).

[4] Ibid., p. 127.

[5] Robert Curtotti, et al., *A Background Paper on Energy Issues for the 2nd East Asia Summit*, REPSF Project No. 06/003, ASEAN-Australia Development Cooperation Programme, Regional Economic Policy Support Initiatives, www.aadcp.org/repsf/docs/06-003-FinalReport.pdf (accessed December 1, 2008).

grams, that it was more than a forum for ASEAN+3.[6] Given that Cebu parallels ASEAN+3 energy cooperation projects, it was symbolic of the Chinese-Japanese, APT-EAS rivalry in East Asian regional formation. New Zealand's Prime Minister noted that Cebu lacked concrete targets and a concrete table for results. The World Wildlife Fund argued that if Cebu were to have an impact on climate change, it would need to identify targets and develop stronger rules.[7] The Cebu Declaration was in danger of remaining in the declaratory stage, never being institutionalized.

In June 2007, Japan took the lead for the EAS by holding an Energy Efficiency and Conservation Conference in Tokyo, attended by government and business leaders and researchers. The meeting presented the East Asian countries' experience of energy conservation with the Japanese experience held up as the model to be emulated. To promote EAS conservation, Japan promised to dispatch 500 energy experts and receive 1,000 trainees over a five year period. The intent of this conference was to build state and societal capacity to implement energy conservation.[8]

The origins of East Asian energy cooperation, and Japan's aspirations for leadership in this issue area in East Asia, can be found in the January 2002 announcement by Prime Minister Junichiro Koizumi that Tokyo intended to form an East Asian Energy Community, using ASEAN+3 as the framework. An East Asian Energy Community was meant to enhance Japan's regional leadership role in a non-traditional security issue. It was a consumers' dialogue of net importers.[9] The Framework did not include Russia or the Democratic People's Republic of Korea.

---

[6] *The 10th ASEAN+3 and the 2nd East Asia Summit (Memorandum)*, Council on East Asian Community, http://www.ceac.jp/e/policy-summary/019-2.html (accessed January 15, 2009).

[7] World Wildlife Fund, "Stronger rules needed for East Asian clean energy transition," January 16, 2007, http://www.panda.org/about_wwf/where_we_work/asia_pacific/where/singapore/index.cfm?uNewsID=92020 (accessed September 1, 2008).

[8] Ministry of Economy Trade and Industry of Japan. "A Summary of the East Asia Summit's Energy Efficiency and Conservation Conference," June 19, 2007, http://www.meti.go.jp/press/20070619004/03_summary_e.pdf (accessed September 1, 2008).

[9] Gaye Christoffersen, "The Politics of Oil Security," presented at the Global and Regional Security Governance Workshop, Institute on Global Conflict and

The August 2007 series of ASEAN meetings in Manila included the East Asian Summit and ASEAN+3. The organizations' confirmed their intent to implement the Cebu Declaration, mentioning that an Energy Cooperation Task Force had held four meetings and identified priority areas: energy efficiency and conservation, biofuels for the transport sector, and energy market integration. During the ASEAN Regional Forum meeting, Russian Foreign Minister Sergey Lavrov offered Sakhalin-1 and Sakhalin-2 projects, and the East Siberia-Pacific Ocean (ESPO) export pipeline as contributing to regional energy security. The ASEAN Regional Forum was not the appropriate forum for Russia to propose energy projects but it was the only regional organization that Russia belonged to. Moscow sought membership in the EAS but had been given only observer status.

On the topic of Russian oil and gas resources, Japan's energy personality metamorphoses from being the regional leader encouraging regional energy cooperation and building state capacity in Southeast Asia, to a leading contender in the Northeast Asian geopolitical struggle with China over Russian oil resources. Much discussion about Northeast Asian energy infrastructure, jointly constructed and invested in, has not led to concrete implementation and institutionalization, partially due to Tokyo's abdication of its energy leadership role. Additionally, Russia's encouragement of Chinese-Japanese struggles over its oil and gas raises many doubts as to whether Russia could be successfully socialized into East Asian energy regional organizations, and doubts over whether Moscow could ever learn the "ASEAN Way."

The Fourth East Asian Summit was originally scheduled for December 2008 in Bangkok, but because of political unrest in that city that closed down the airport, it was rescheduled to March 2009 and again rescheduled to April 2009. The rescheduling of EAS meetings in Southeast Asian nations due to political instability exposes problems of state capacity in these host nations which is also reflected in a lack of state capacity to implement energy initiatives discussed at these meetings.

Cooperation and Institute for International, Comparative and Area Studies, University of California, San Diego, October 3, 2002.

East Asian Energy Cooperation: Top-down or Bottom-up?

A Northeast Asian energy cooperation institutional framework is still in the stage of forming rules and norms. Energy experts from China, Japan and South Korea meet periodically and continue to construct rules and principles for energy regime formation. Russian experts are only beginning to suggest rules. Not all of the rules and norms now being "floated" will be adopted as ideas have yet to be institutionalized.[10]

As a result of the Sino-Japanese struggle for the Russian ESPO pipeline, it was South Korea that took the lead because it was best positioned to initiate discussion on, and persistently pursue, an institutional framework for Northeast Asian energy cooperation, the *Intergovernmental Collaborative Mechanism on Energy Cooperation in Northeast Asia.* Despite South Korea's relatively smaller size, it has sufficient state capacity and expertise to take a leadership role in Northeast Asia. Eventually it would be called Energy Cooperation Northeast Asia (ECNEA). Korea has found an ally in Mongolia, another small country which also benefits from regional cooperation efforts.

The *Intergovernmental Collaborative Mechanism on Energy Cooperation in Northeast Asia* began in 2001 with a symposium. Korea would find allies in international organizations, namely, the Asian Development Bank (ADB), United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) and the IEA, to provide support for institutionalization. ADB has a strategic priority to mainstream its support for Regional Cooperation and Integration (RCI) programs with a special focus on creating regional public goods. ADB adopted the RCI strategy in July 2006, committing itself to initiating collective regional actions.[11] Korea would also draw on Track II meetings to discuss impediments.

In 2003, Russia, China and Japan needed to coordinate their domestic energy plans with each other but lacked a regional regime in which they

---

[10] Gaye Christoffersen, "The Dilemmas of China's Energy Governance: Recentralization and Regional Cooperation," *China Eurasia Forum Quarterly* (Special Issue on Energy & Security) Vol. 3, No. 3 (November 2005), pp. 55-79.

[11] Asian Development Bank, *Regional Cooperation and Integration,* http://www.adb.org/documents/policies/RCI-strategy/default.asp (accessed January 15, 2009).

might have done that. Moscow would continue to play China against Japan on the ESPO pipeline's direction, even though Russia's Energy Strategy 2020 had been approved in May 2003 and needed to be more concrete on the ESPO pipeline's direction. By September 2003, Japan still had not published its ten-year long-term energy policy, because Tokyo was awaiting decisions made in Moscow. China had announced formulation of an Energy Security Plan, but Chinese domestic planning was also contingent on Northeast Asian regional energy plans. Korean criticism of the major powers recognized that, although neither China nor Japan have been successful in increasing their energy security through their tactics, neither can shift from this traditional geopolitical Realist paradigm to the emerging paradigm of cooperation at the Track I level.[12] The region only had the Korean initiative with UNESCAP and IEA support at Track I level, with lots of dialogue at Track II level.

In 2005, Chinese energy experts from the Energy Research Institute and the State Development Research Center would articulate a logic, rules and principles, for regional cooperation. They argued that China, Japan and South Korea should jointly analyze and formulate an oil security strategy, emphasizing overlapping interests and avoiding vicious competition. Chinese experts claimed that energy security was a common security problem for Northeast Asia that could only be attained in a regional framework. The Chinese felt Northeast Asian energy cooperation must be top-down, i.e., led by governments rather than private investment. They also argued that energy cooperation should be comprehensively integrated with trade, investment, energy conservation, environmental protection, market stability and uninterrupted supply security, particularly Sea Lines of Communication (SLOC) security. This early effort at establishing rules and principles as the basis of a regime would require further institutionalization.

By the November 2005 Ulaanbaator meeting of the Korean initiative, hosted by UNESCAP, the first Senior Officials Committee (SOC) adopted the *Intergovernmental Collaborative Mechanism on Energy Cooperation in North-East Asia*, and created a Working Group on Energy Planning and

---

[12] Jaewoo Choo, "Energy Cooperation Problems in Northeast Asia: Unfolding the Reality," *East Asia*, Vol. 23, No. 3 (Fall 2006), pp. 91-106.

Cooperation to identify possible future cooperation activities. The work plan would be coordinated by the Korean Energy Economics Institute (KEEI) with partner research institutes in each country. Despite these incremental successes, the meeting reflected the major powers' lack of enthusiasm. China proposed very limited functions for the organization and suggested countries should simply strengthen bilateral energy cooperation. The KEEI participant proposed a much more extensive agenda for regional cooperation and called on the meeting to decide whether it would take a bottom-up (similar to the EU and IEA), or top-down (similar to ASEAN and APEC) approach to multilateral energy cooperation.[13]

A Korean analyst at a Track II meeting, Working Group on Energy Cooperation in Northeast Asia, could be much more candid in identifying the impediments to a Northeast Asian energy framework: major power competition, preference for bilateral arrangements, Tokyo's single-minded pursuit of Russian oil resources, and Moscow's encouragement of Sino-Japanese resource competition. The U.S. is also not helpful because in general it would not be supportive of a Northeast Asian cooperative framework which might decrease U.S. influence in the region. The Korean analyst felt the U.S. was more inclined to join the Northeast Asian struggle for Russian resources. The two smaller nations, Mongolia and Korea, were very supportive of a regional regime but dependent on larger neighbors for investment in regional energy infrastructure.[14]

A Northeast Asian energy regime with Russian membership would be a consumer-producer dialogue with only one producer and several con-

---

[13] Ji-Chul Ryu (Korea Energy Economics Institute), "Opportunity for energy cooperation in Northeast Asia," presented at the First Session of the Senior Officials Committee on Energy Cooperation in North-East Asia, Ulaanbaatar, Mongolia, November 16-17, 2005, available via http://www.unescap.org/esd/energy/dialogue/cooperation/soc1.asp (accessed September 1, 2008); Gaye Christoffersen, "Reflections on Northeast Asian Energy Cooperation: Reasons for Optimism," presentation at seminar on the Russian Far East at the Pacific Basin Institute, Pomona College, November 14, 2006.

[14] Kyung-Sool Kim (Research Fellow, CERNA, KEEI), discussion paper for panel on Geopolitics and Energy Cooperation in Northeast Asia: Perspectives from the UA and Northeast Asia, 2006 Working Group on Energy Cooperation in Northeast Asia organized by the Northeast Asia Economic Forum (NEAEF), February 2006, Honolulu.

sumers vying with each other. A consumer-producer dialogue works better on a global level, e.g., the International Energy Forum (IEF). The Secretariat is based in Saudi Arabia and co-coordinates the Joint Oil Data Initiative (JODI) with IEA, APEC, OPEC, OLADE, and Eurostat, an initiative meant to create greater transparency in the world oil market by providing oil data. A Northeast Asian dialogue would function better if it were nested in the larger global dialogue.

The issue of nesting regimes within larger ones was addressed at the IEF Second Asian Ministerial Energy Roundtable, held in Riyadh in May 2007 and co-hosted by Saudi Arabia and Japan. The meeting issued a Joint Statement calling for "greater cooperation and coordination among and between Asian energy exporters and importers within the bilateral, regional and global context."[15] The First Roundtable of Asian Ministers on Regional Cooperation had convened in New Delhi, January 2005, co-hosted by India and Kuwait. It brought together East Asian net importers and the primary West Asian exporting countries. In November 2005, a roundtable of East Asian net importers met with North Asian and Central Asian exporting countries co-hosted by India and Russia.

According to an analyst from KEEI, ASEAN and APEC have taken a top-down approach to regional energy cooperation in steps – political consensus, institutional framework created, cooperative entity established, joint feasibility studies, actual regional projects developed and implemented, eventual evolution to common regional energy market. This is a top-down approach because the regional political framework had existed for decades before a regional energy project was developed.[16]

The alternative approach is bottom-up. The first step is to implement an actual regional cooperative project on a commercial basis. Then create a multilateral cooperative framework for that specific project. This framework must be institutionalized. Several of these project-specific arrangements can evolve into a regional multilateral cooperative framework, leading to a regional common energy market. This bottom-up approach is

---

[15] Official website of the International Energy Forum: http://www.iefs.org.sa/default.aspx (accessed January 15, 2009).

[16] Ji-Chul Ryu (Korea Energy Economics Institute), "Opportunity for energy cooperation in Northeast Asia."

needed when there is no existing regional framework that might take on an energy function.[17]

In the absence of an established Northeast Asian Track I framework, these bottom-up approaches build a foundation for a future Northeast Asian multilateral energy regime even while the major powers – China, Russia and Japan – follow more traditional geopolitical strategies.

In Northeast Asia, the Track II level has filled the void through the Network of East Asian Think tanks (NEAT), a Track II network for supporting ASEAN+3 led by Beijing, that is creating the rules and principles that constitute a regional regime. NEAT's Second annual conference authorized the establishment of working groups. NEAT's third meeting produced the "Guiding Principles of Community Building in East Asia."

NEAT has a working group, the Working Group on Energy Security Cooperation, which met in August 2007 in Singapore. This working group's goals are to promote energy efficiency, conservation and energy security, including the maritime dimension, protection of the SLOCs that bring oil from the Middle East. The first meeting of the Working Group was May 2005 and the second meeting in June 2006, which produced recommendations for the August 2006 Fourth NEAT annual conference, *Memorandum no. 3 Policy Recommendations on Strengthening the Pillars of East Asian Community Building*. One section of the Memorandum addressed Energy Security Cooperation through energy conservation, efficiency, and participation in a regional maritime project, ReCAAP (Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships), a project initiated by Japan and based in Singapore, meant to guard the SLOCs especially through the Malacca Straits.[18] The January 2007 ASEAN+3 Cebu meeting referred to the *Memorandum No. 3 Policy Recommendations* as being part of ASEAN+3's inventory of ideas.[19]

---

[17] Ibid.

[18] Memorandum No. 3, Policy Recommendations on Strengthening the Pillars of East Asian Community Building by the Network of East Asian Think Tanks (NEAT), August 21-23, 2006, Le Meridian Hotel, Kuala Lumpur, www.ceac.jp/e/pdf/070209.pdf (accessed September 1, 2008).

[19] *Chairman's Statement of the Tenth ASEAN Plus Three Summit,* Cebu, Philippines, January 14, 2007, http://www.aseansec.org/19315.htm (accessed September 1, 2008).

The Korean initiative continues. The *Intergovernmental Collaborative Mechanism on Energy Cooperation in North-East Asia* held a Fourth Working Group Meeting on Energy Planning and Policy, September 12-13, 2007, in Irkutsk, Russia. Agenda items included natural gas trade, funding arrangements, preparation for a Northeast Asian government-business dialogue, the work plan for 2008, a draft of the Energy Outlook of Northeast Asia report, and preparations for the Third Senior Official Committee (SOC) meeting in December 2007. The Working Group acknowledged that member countries had not yet reached a consensus on regional cooperation.[20]

The Third SOC met December 13-14, 2007, endorsed the Energy Outlook report, approved the 2008 work plan, and noted that ECNEA activities should coordinate with other energy initiatives to avoid duplication. The SOC had attendance by government officials from South Korea (host), Mongolia and Russia with participation by energy experts from China and Japan, reflecting the regime's mixed nature of both Track I and Track II. The U.S. embassy in Seoul sent an observer.

A December 2007 UNESCAP critique of Energy Cooperation Northeast Asia (ECNEA) focused on the effectiveness of ECNEA's structure and the sustainability of the process. The UNESCAP assessment identified numerous challenges: low visibility, no benchmarks or long-term strategies, short-term plans are ad-hoc, China and Japan have not formally joined. The critique also addressed the issue of nesting and coordinating initiatives which it felt the ECNEA initiative had not done with other initiatives in Northeast Asia.[21]

At the end of 2007, Korea's ECNEA initiative, despite weaknesses, impediments and minimal participation by China and Japan, represented the

---

[20] Fourth Meeting of the Working Group - Energy Planning and Policy (WG-EPP) Irkutsk, Russian Federation, September 12-13, 2007, http://www.unescap.org/esd/energy/dialogue/cooperation/epp4/index.asp (accessed September 1, 2008).

[21] Pranesh Chandra Saha, Chief, Energy Resources Section, ESDD, UNESCAP. *Energy Cooperation in North-East Asia (ECNEA): Overview and Strategies for Energy Cooperation*, December 2007, http://unescap.org/esd/energy/dialogue/cooperation/documents/WG-EPP3/MrSaha-EnergyCooperation-NEA.ppt (accessed September 1, 2008).

embryo of a potential viable Northeast Asian multilateral arrangement. A working group has been established for creating a government-business dialog which would be important for encouraging private sector investment. The Fifth and Sixth Working Group Meetings would be held in 2008 with essentially only North and South Koreans, Mongolians, and Russians participating, joined by UNESCAP and a few Chinese in their capacity as resource persons. In 2008 South Korea and Russia agreed to a Trans-Korean gas pipeline by 2015 that would transit North Korea. North Korea was encouraged to participate in the project.

The Fourth meeting of the Senior Officials Committee met in February 2009 where participants discussed implementation of the work plan for 2009 and agreed to form a task force to work on the "Five-year Strategy for Energy Cooperation in Northeast Asia." Member countries represented were again South Korea, Russia and Mongolia. China and the U.S. (Nautilus Institute in Seoul) had energy experts attend and provide advice.[22]

Given China's preference to institutionalize the Six-Party Talks into a Northeast Asian security regime, Chinese effort appears channeled on an energy working group affiliated with the Six-Party Talks. Americans have also indicated their interest in a Northeast Asian regime based on the Six-Party Talks.[23]

The United States: Slouching Towards an Energy Multilateral Regime

The U.S. is not generally associated with promoting regional energy regimes. It supports the IEA through the OECD. The U.S. governmental preference is to develop *bilateral* energy cooperation initiatives and it has de-

---

[22] Fourth Session of the Senior Officials Committee on Energy Cooperation in North-East Asia, Busan, Republic of Korea, February 19-20, 2009, http://www.unescap.org/esd/energy/dialogue/cooperation/soc4/ (accessed March 15, 2009).

[23] Carol Kessler, Director, Center for Global Security, Pacific Northwest National Laboratories, "U.S. Energy Security and Energy Diplomacy," presented at "Energy and Security in Northeast Asia: Towards a Northeast Asian Energy Cooperation Council," November 16-17, 2007, Seoul, www.neasiaenergy.net/download/Seminar071116/s1-4.pdf (accessed September 1, 2008).

veloped bilateral energy cooperation initiatives with several Asian countries – Russia, India, China, and Japan.

Generally speaking, it is paradoxical that the U.S. government has greater state capacity than most countries in East Asia but, for philosophical reasons, prefers private market forces and non-governmental actors to take the lead. U.S. governmental engagement in the region is conducted through several organizations, all of which are supportive of energy businesses, energy markets, and environmental NGOs, indicating a preference for the bottom-up approach to energy cooperation.

However, the U.S. is becoming more supportive of Asia-Pacific initiatives and participates in APEC's Energy Working Group (EWG) which it considers preferable to East Asian regimes. These preferences appear to diverge from Japan's preferences. In January 2007, the U.S. and Japan met prior to the Second EAS, to achieve a bilateral consensus on preferred forms of energy cooperation, confirming that the two countries cooperate through the IEA, APEC, Asia Pacific Partnership on Clean Development and Climate (APP), and the International Energy Forum. They also agreed to engage emerging economies, especially China and India, in these multilateral fora (APEC, IEA and APP) to ensure their mutual energy security and address global climate change.[24]

The U.S. initiative on APP, launched in January 2006, is a voluntary, non-legally binding framework for international cooperation. Officially, APP is meant to complement rather than displace the Kyoto Protocol, a Japanese initiative. APP consists of eight public-private task forces chaired by member countries. Partner countries include Japan, Australia, India, China and South Korea. In October 2006, APP endorsed eight action plans which the task forces were charged with implementing.

In Southeast Asia, the U.S. was not mentioned in 2004 when ASEAN issued its ASEAN Plan of Action for Energy Cooperation (APAEC) 2004-2009. The APAEC list of cooperative partnerships with ASEAN Dialogue Partners included Japan, Australia and the European Union. Among the six APAEC cooperation programs, the newly established Regional Energy

[24] U.S. Department of Energy, "United States-Japan Cooperation on Energy Security," January 9, 2007, http://www.energy.gov/news/4572.htm (accessed January 15, 2009).

Policy and Planning program is where information sharing, capacity building in planning and data base management, and a region-focused energy policy is formulated. It is where ASEAN addresses energy issues with Dialogue Partners and international organizations. Throughout the entire APAEC document, the U.S. was conspicuously absent.[25]

In 2004, the Energy Technology Innovation Project at Harvard University criticized the traditional U.S. government approach, i.e., reliance on the energy marketplace, bottom-up instead of top-down, and a lack of centralized control in the federal government to the point of not knowing which government agencies were engaged in energy cooperation. These critics recommended the following: creating an interagency working group for more coherent energy cooperation, greater funding for civil-society energy collaboration projects and energy-technology innovation, and assistance to developing countries to reform their energy sectors and build capacity for reducing greenhouse gas emissions.[26]

That changed in May 2006 at the ASEAN-U.S. Dialogue, where increased cooperation on energy efficiency, affordable technologies for renewable and alternative energy were discussed. In July 2006, the ASEAN-U.S. Dialogue signed a five-year action plan to promote trade, energy cooperation, investment and political ties. By April 2008, the U.S. had appointed its first U.S. ambassador for ASEAN affairs, a signal that the U.S. would take ASEAN, and Asian multilateralism in general, more seriously. At the July 2008 ASEAN-U.S. dialogue, the Singapore Foreign Minister George Yeo indicated the importance of U.S. active involvement with ASEAN in resolving major issues in the region.

By 2007, as the issue of climate change became securitized, the U.S. government approach to energy cooperation became more proactive and more top-down. President George W. Bush's 2007 State of the Union speech indicated a change in U.S. thinking and policy on climate change. A report by the Center for Naval Analysis (CNA) indicated securitization.

---

[25] *ASEAN Plan of Action for Energy Cooperation (APAEC) 2004-2009,* www.aseansec.org/pdf/APAEC0409.pdf (accessed January 15, 2009).

[26] Kelly Sims Gallagher and John P. Holdren, *U.S. Government Policies Relating to International Cooperation on Energy*, Energy Technology Innovation Project, Harvard University, November 12, 2004.

The CNA report argued that global climate change presented a serious national security threat to the U.S. because it would foster instability in vulnerable areas of the world through natural and humanitarian disasters that exceeded the capacity of states in those regions to respond to and would ultimately lead to failed states. The report recommended the U.S. government commit to a stronger international role, and commit to global partnerships with developing countries to help them build capacity to manage climate impacts.[27]

When an issue is elevated to the level of national security, the U.S. government responds. Much of U.S. governmental energy cooperation is bilateral. However, presentations in July 2007 by the Assistant Secretary, Office of Policy and International Affairs, U.S. Dept of Energy, Karen Harbert, succinctly stated how and why the U.S. might participate in multilateral energy regimes. According to the Assistant Secretary, these fora are useful for the administration to "get its message out," a chance to evaluate whether each country is being a "responsible stakeholder" in global energy markets, arenas where differences are debated and a consensus achieved in the end.[28]

According to Assistant Secretary Harbert, the greater state capacity of the U.S. government to achieve energy goals is actually an impediment to multilateral cooperation. For example, the U.S. has 24 national laboratories working on getting clean energy technologies to market, but finds joint research difficult because even the EU lacks a similar arrangement. International cooperation is difficult when foreign counterparts lack this kind of institutional infrastructure, i.e., lack of state capacity.

The U.S. is critical of countries' energy policies that are the result of weaker state capacities to manage energy. These shortcomings included:

---

[27] Center for Naval Analysis (CNA), *National Security and the Threat of Climate Change*, April 2007. http://www.securityandclimate.cna.org (accessed January 15, 2009).

[28] Karen Harbert, Assistant Secretary, Policy and International Affairs, U.S. Department of Energy, "U.S. Engagement in International Energy Forums," *Center for Strategic and International Studies (CSIS)*, Washington, D.C., July 11, 2007, http://www.csis.org/component/option,com_csis_events/task,view/id,1333 (accessed January 15, 2009), transcript.

- Top-down government-to-government dialogues without industry participation.
- Non-OECD countries' energy subsidies to domestic populations, totaling US$250 billion, which could have been used to invest in energy development. Subsidies are viewed as a weak state unable to impose market prices on domestic populations.
- Large consuming countries such as China and India which had just begun to create strategic petroleum reserves.
- Limiting access for commercialization of energy resources as an issue of sovereignty. The U.S. views the problem as blocking access to companies that have the capital and expertise, and does not accept that it might be an issue of sovereignty.[29]

These criticisms were applicable to almost all East Asian government practices.

The Assistant Secretary also stated the five principles that were guiding U.S. government thinking on energy security in 2007:

- The world's current level of energy insecurity poses an unacceptable risk
- Fossil energy poses an urgent environmental challenge.
- Energy security is increased by free, open and competitive markets for energy trade and investment.
- Scientific innovation is essential to resolving energy challenges.
- The problem is international in nature and thus requires a coordinated response.[30]

This is not precisely the language of multilateralism but its intent leads to a multilateral energy regime.

The U.S. government appeared to apply these principles to the APP which it considered very effective because APP is a government and industry partnership with 180 projects in the pipeline that will be invested in by the private sector. APP's functions indicate an integration of top-down and bottom-up initiatives including:

---

[29] Ibid.
[30] Ibid.

- Facilitating collaboration among the numerous existing bilateral & regional initiatives in an effort to integrate and nest them into a coherent whole.
- Human and institutional capacity-building in developing countries.
- Engaging the private sector-banks, research institutes, NGOs.
- Facilitating the transfer of efficient, cost- effective, cleaner technologies to reduce pollution and promote energy security.
- Implementing work programs and assessing progress to ensure initiatives move beyond the declaratory stage.

To ensure progress, APP has a Policy and Implementation Committee, consisting of representatives from all member countries, and an Administrative Support Group. The U.S. is the chair of the Policy and Implementation Committee and the Administrative Support Group, and in fact, the Administrative Support Group is the U.S. government.[31]

U.S. governmental participation in the Asia Clean Energy Forum, June 26-28, 2007, captures the changing U.S. government position on energy cooperation, energy security, and climate change. The Forum was co-sponsored by USAID and ADB with U.S. State Department and APEC support. At the Asia Clean Energy Forum, U.S. representation included government, business, and NGO participants in contrast to other countries where most participants worked for government-run companies and institutes.[32]

The Forum presented the ASEAN energy initiative, the APP initiative, and ADB's initiative for energy efficiency. ADB announced its Clean Energy Financing Partnership Facility. APEC presented its training program for renewable energy. China, South Korea, India, the Philippines, California, and Hawaii presented on their energy efficiency programs. The Forum presented numerous approaches for clean energy finance. One panel focused on clean energy knowledge transfer supported by ADB, APEC,

---

[31] *Charter for the Asia-Pacific Partnership on Clean Development and Climate*, January 12, 2006, http://www.state.gov/g/oes/rls/or/2006/59162.htm (accessed September 1, 2008).

[32] *Asia Clean Energy Forum: Policy and Finance Solutions for Energy Security and Climate Change*, ADB Headquarters, Manila, the Philippines, June 26-28, 2007, http://www.adb.org/Documents/Events/2007/Asia-Clean-Energy-Forum/default.asp (accessed September 1, 2008).

USAID and the Asia Pacific Network on Climate Change, an online clearing house on climate change information, policy dialogue and capacity building, supported by the Japanese Ministry of Environment.

USAID introduced its new program, ECO-Asia Clean Development and Climate Change Program. ECO-Asia was launched in October 2006 for climate change mitigation in Asia, building Asian government capacity, leveraging private sector participation in clean energy technology, and promoting regional cooperation.[33] The USAID presentation stressed "from ideas to action."

The results of the Forum included: networking, learning best practices, and an initiative on managing substandard lighting products. This initiative would initially work with ASEAN. Most importantly, the Forum would begin coordinating some of the 90+ initiatives in the region into a coherent regional regime.

By the end of 2007, U.S. energy diplomacy in Northeast Asia included cooperation in the Five-Country Energy Ministerial, a regime initiated by Beijing to coordinate the strategic petroleum reserves of China, Japan, the U.S., India and South Korea.[34] The five countries account for approximately half of world oil demand. The Five-Country meeting's joint statement adopted seven principles that the five nations agreed to: transparency and stability in global energy markets, improving the investment climate, enhancing energy efficiency, diversifying the energy mix, securing energy infrastructure, reducing energy poverty, and addressing climate change.[35]

---

[33] USAID, Clean Development and Climate Program (CDCP), http://usaid.eco-asia.org/programs/cdcp/ (accessed September 1, 2008).

[34] "U.S. Secretary of Energy Participates in Five-Country Energy Ministerial in Japan," June 7, 2008, http://www.energy.gov/news/6317.htm (accessed September 1, 2008).

[35] Japan Agency for Natural Resources and Energy, *Joint Statement of Energy Ministers of the People's Republic of China, India, Japan, the Republic of Korea and the United States*, Aomori, Japan, June 7, 2008, http://www.enecho.meti.go.jp/English/080602.htm (accessed September 1, 2008).

The Singapore Declaration on Climate Change, Energy & Environment

The Third East Asia Summit was held in Singapore on November 21, 2007, with climate change, energy and environment prioritized on its agenda. The meeting concluded with 16 member nations signing the *Singapore Declaration on Climate Change, Energy and Environment*.[36] The Declaration acknowledged climate change as an international public good in East Asia and committed the member countries to stabilizing atmospheric greenhouse gas concentrations. It committed the region to supporting the December 2007 U.N. Climate Change Conference in Bali.

The Singapore Declaration seemed stronger than the Cebu Declaration had been, and seemed to overshadow the Cebu Declaration. The Singapore Declaration tasked the relevant ministers to follow-up on the Summit and the inaugural EAS Energy Ministers' Meeting held in Singapore, August 23, 2007. The EAS Energy Ministers' meeting indicated the EAS Energy Cooperation Task Force (ECTF) established in 2007 would be the primary venue for cooperation. The ECTF had identified three energy cooperation work streams: energy efficiency and conservation, energy market integration, and bio-fuels.[37]

The Singapore Declaration also seemed stronger because it was consciously linked to other regional efforts such as the APEC Leaders' Declaration on Climate Change, Energy Security and Clean Development, issued in Sydney, September 8, 2007; the ASEAN Declaration on Environmental Sustainability; the United Nations Framework Convention on Climate Change (UNFCCC), and the Kyoto Protocol.

The Singapore Declaration called for carrying out individual and collective action programs, recognizing differing capacities of member countries, and to take on "common but differentiated responsibilities and respective capabilities." Objectives of the declaration included: building ca-

---

[36] Singapore Declaration on Climate Change, Energy and Environment, November 21, 2007, http://www.aseansec.org/21116.htm (accessed January 15, 2009).

[37] Joint Ministerial Statement First EAS Energy Ministers Meeting, Singapore, August 23, 2007, http://www.enecho.meti.go.jp/policy/international-affairs/070827ks/070823easeng.pdf (accessed September 1, 2008).

pacity in the EAS's developing countries, reducing energy intensity, and formulating voluntary energy efficiency goals by 2009. The Declaration suggested commissioning national and joint studies utilizing regional research institutions such as the ASEAN Centre for Energy and agreed to the establishment of the Economic Research Institute for ASEAN and East Asia (ERIA, supported by ADB and still under construction).

Chinese Premier Wen Jiabao was supportive of the goals of the EAS Singapore Declaration. However, Chinese newspapers referred to the EAS as a forum for dialogue, placed emphasis on China-ASEAN relations, and reported on the Eleventh ASEAN+3 meeting held November 20, 2007. Wen Jiabao emphasized the longevity of ASEAN+3, its 50 dialogue mechanisms and 100 cooperation projects which would continue to deepen cooperation among ASEAN+3.[38] Wen also emphasized that East Asian countries had agreed that APT was the major channel for cooperation.[39]

The *Chairman's Statement of the 11th ASEAN Plus Three Summit* reiterated that "the APT is an integral part of the evolving regional architecture, mutually reinforcing and complementary to the East Asia Summit." The meeting adopted the APT Cooperation Work Plan (2007-2017) which includes a section on security cooperation, counter-terrorism, maritime cooperation, and other non-traditional security issues. One section was devoted to Energy, Environment, Climate Change and Sustainable Development Cooperation and seemed to replicate the Singapore Declaration. The annual APT meetings must submit concise progress reports on the implementation of the Work Plan.[40]

The ASEAN-China Statement agreed to formulate an ASEAN-China environmental protection cooperation strategy. The Statement also mentioned the ASEAN-China Maritime Transport Agreement and Chinese proposals for an ASEAN-China Defense Scholars Exchange Program and training courses on maritime accident investigation, as well as on Port State Con-

---

[38] "Premier Wen attends ASEAN plus three summit, makes 5-point proposal," *People's Daily*, November 20, 2007, http://english.peopledaily.com.cn/90001/90776/90883/6306212.html (accessed September 1, 2008).

[39] Ibid.

[40] Chairman's Statement of the 11th ASEAN Plus Three Summit, Singapore, November 20, 2007, http://www.aseansec.org/21096.htm (accessed September 1, 2008).

trol.[41] China-ASEAN maritime cooperation was a relatively new area for cooperation.

Following the November 2007 East Asia Summit meeting, Beijing announced that China would hold a meeting for Asian nations coping with climate change.[42] It was an effort to take a leadership position on an issue that is not China's strength. Recent Chinese commentary indicates a growing sophistication regarding the problems and prospects of creating an East Asian framework, the dilemma of whether to create an institutional framework first or to start with project implementation. These Chinese views indicate a growing belief that East Asian multilateral energy cooperation may provide greater security than bilateral cooperation for China as it facilitates diversification of energy supply.[43]

U.S. energy relations with China date back to the normalization of relations in the late 1970s, followed by numerous bilateral energy projects. In 1998, the U.S. Departments of Energy and Commerce and the Chinese National Development and Reform Commission (NDRC) created the U.S.-China Oil and Gas Industry Forum. Oil industry representatives are proactive in setting the agenda and in making presentations. The U.S.-China Energy Policy Dialogue, established in May 2004 between the U.S. Department of Energy and the NDRC, facilitates policy exchanges on energy security and energy technology choices.

In recent years, there has been a renewed U.S. focus on China, culminating with a bill put before the U.S. House of Representatives in August 2007, called the U.S.-China Energy Cooperation Act, part of a larger package, the U.S.-China Competitiveness Agenda of 2007. The U.S.-China Energy Cooperation Act was tasked with funding joint research on energy efficiency technologies and renewable energy sources, and joint energy education programs.

Immediately after the Japan meeting of the Five Country Energy Ministerial, the bilateral Fourth U.S.-China Strategic Economic Dialogue met

---

[41] Ibid.

[42] "China to hold Asia climate change meeting in 2008," *Reuters*, November 21, 2007.

[43] Zhang Jianping (NDRC), "Chinese Perceptions of Energy Security and Strategy for the Future of Northeast Asia," *ERINA Report* 77 (September 2007).

June 17-18, 2008, in Washington, D.C. The Dialogue produced a Joint Statement that committed the U.S. and China to adhere to energy security principles found in the *Joint Statement of the Five-Party Energy Ministers* and also the June 2008 *Joint Statement of Energy Ministers by the G8 Plus 3*.[44] The meeting also produced the *U.S.-China Ten Year Energy and Environment Cooperation Framework*.

The bilateral framework appears to be "nested" within these multilateral agreements previously agreed to, and is simply reiterating them at the bilateral level. The Ten Year Framework agreement was top-down, coordinating on the U.S. side five participating cabinet agencies – the Departments of the Treasury, State, Commerce, and Energy and the Environmental Protection Agency. On the Chinese side, there were seven participating agencies – the National Development and Reform Commission, State Forestry Administration, National Energy Administration, and the Ministries of Finance, Environmental Protection, Science and Technology, and Foreign Affairs.

With the incoming Obama administration in January 2009, the U.S. government initiated a more intense effort to build capacity in China with numerous bilateral energy and climate change projects. There was a flood of proposals and blueprints for U.S.-China energy and environmental cooperation. Some suggested that the bilateral U.S.-China energy/environment relationship should form the core of an Asia-Pacific energy/environment regime.[45] The Obama administration will take a much more proactive approach to Asian energy and environmental cooperation; however, the paradigm shift in the U.S. approach to Asian energy and environmental cooperation had already begun in 2007.

---

[44] U.S. Treasury Department, "U.S. and China Deepen Their Economic Relationship," June 19, 2008, http://www.america.gov/st/texttrans-english/2008/June/20080619150836xjsnommis0.2596334.html (accessed September 1, 2008).

[45] Some recent proposals for U.S.-China cooperation include: Kenneth Lieberthal and David Sandalow, *Overcoming Obstacles to U.S.-China Cooperation on Climate Change* (Washington, D.C.: The Brookings Institution, January 2009); Asia Society and Pew Center on Global Climate Change. *Common Challenge, Collaborative Response: A Roadmap for US-China Cooperation on Energy and Climate Change* (New York: Asia Society, January 2009); Sharon Burke and Christine Parthemore, *A Strategy for American Power: Energy, Climate and National Security* (Washington, D.C.: Center for a New American Security, June 2008).

Conclusion

Given American preferences and the pattern of U.S. involvement in international energy cooperation, how does this relate to possible involvement in Asian energy initiatives? Official U.S. statements on energy tend to state global rather than regional principles. The U.S. is much more action-oriented, leaving it impatient with energy initiatives that seem stalled in the declaration phase, facing numerous impediments to institutionalization.

The U.S. can be the source of energy technology transfer and energy economic expertise, and should be a technical advisor to the East Asian Summit but not a full member. Momentum should be left under the control of smaller countries – ASEAN and South Korea – which have the most to gain from a regional multilateral energy community.

There are Americans who find a familiar pattern in the geopolitical balancing that China, Japan and Russia pursue in Northeast Asia, and might believe the U.S. should consider joining the Sino-Japanese scramble for Russian resources. The U.S. is less comfortable with Asian energy multilateralism. Therefore, it is the responsibility of ASEAN and South Korea to ensure that if U.S. participation should eventually take place, that the U.S. not slip into the great power rivalry but rather help strengthen the frameworks that the smaller countries have established.

Some tentative conclusions follow from the above analysis of East Asian and Asia-Pacific energy and environmental cooperation:

Role of Small Countries: Smaller countries are especially adept at designing regional regimes. South Korea's role in forming the Intergovernmental Collaborative Mechanism on Energy Cooperation in Northeast Asia offers several lessons in regime design. Furthermore, it is in the interests of smaller countries to form regional energy frameworks. They cannot look to major powers for leadership. ASEAN and South Korea have a shared interest in promoting energy cooperation. Eventually the major powers, including the U.S., will acquiesce because they do not want to be left out.

Strategies for Northeast and Southeast Asia: In Northeast Asia, the U.S. is faced with a choice of joining the geopolitical maneuverings of the major powers, or being more supportive of South Korea's efforts to form a Northeast Asian energy regime. Although the former strategy is a familiar

one to American thinking, the latter strategy would enhance U.S.-South Korea relations and help them develop more of a shared vision on what the East Asian order should look like. With regards to Southeast Asia, a framework for cooperation already exists. The U.S. should participate in the Regional Energy Policy and Planning program of the ASEAN Plan of Action for Energy Cooperation (APAEC) 2004-2009 as a Dialogue Partner.

East Asian Summit: It is still not clear what the modus operandi should be in the U.S. relationship with the EAS. Because of this, the U.S. would be expected to be more supportive of APEC than the EAS or APT. Nevertheless, the U.S. could and should be supportive of the EAS' energy conservation goals to the extent that these goals coordinate and nest within the overall purposes of the numerous Asia-Pacific energy initiatives the U.S. does participate in.

Track I and II Approaches: Regional Track II energy cooperation projects are essential for the successful functioning of Track I regional energy projects. Track II activities sustain and support Track I, providing ongoing dialogue within an epistemic community of energy experts.

Regional Regimes: Regional energy regimes based on geography have limitations. First, Northeast Asian countries want a producer-consumer dialogue but the region has only one producing country, Russia. Second, all of East Asian countries' energy security is affected by Indian oil demand, but India belongs to only the EAS. Third, the U.S. could play a major role in East Asian energy cooperation as a source of energy conservation technology but has yet to define a role for itself in East Asian organizations. Fourth, there continues to be an enormous number of energy cooperation initiatives in the Asia-Pacific that need to be better integrated. Fifth, East Asian energy security is closely linked to maritime security. The U.S. has long been the guarantor of the SLOCs from the Middle East to East Asia, but recently there has been an American effort to create Global Maritime Partnerships with other nations to help maintain SLOC security. U.S. maritime cooperation with China and Japan could build on habits of cooperation established in energy regimes.

In concluding, despite the differing preferences for top-down and bottom-up approaches between the U.S., Japan and China, there is potential for trilateral energy cooperation that could form the core of a framework for

East Asia and the Asia-Pacific. A U.S.-Japan-China trilateral arrangement would need to integrate with Korean and ASEAN initiatives. A Japanese energy expert suggested at the June 2007 APEC Seminar on Energy Supply & Demand Outlook that it is time to integrate top-down and bottom-up approaches.[46] It is unclear whether Japan can build a consensus with the U.S., China, South Korea and ASEAN on how to integrate top-down and bottom-up regional energy initiatives into a coherent regional architecture. The region may prefer to simply continue muddling through with the numerous energy initiatives. However, with greater U.S. leadership, and better coordination with Japan and China, APEC could provide the logical framework to begin that integration that would lead to a regional energy architecture.

[46] Kensuke Kanekiyo, *Energy Trend of Asia & Japan: Updated: June 2007*, APEC Seminar on Energy Supply & Demand Outlook, June 11, 2007, Tokyo, http://eneken.ieej.or.jp/en/data/pdf/395.pdf (accessed January 15, 2009).

Part III:
The Future of Energy and Security Cooperation in Asia

10. A Multilateral Approach to Energy Security: The Energy Charter and Asia

Pascal Laffont*

Introduction

It is now acknowledged that only a genuine multilateral approach can bring the appropriate response to global energy security. However, because energy is an essential component of a country's sovereignty, it has proved difficult to achieve breakthroughs on energy security at the multilateral level. Addressing the challenges of energy security requires unprecedented international cooperation in several areas, including market transparency, the mobilization of massive cross-border investments, enhancing energy efficiency, diversifying energy supplies and developing and deploying new technologies. This chapter aims to assess the relevance of the Energy Charter Treaty (ECT) to address these challenges in the Asian region.

- The ECT is the only existing multilateral legal framework for global energy trade. The legal provisions of the ECT are part of the so-called "Global Energy Security Principles," which were reaffirmed by the G8 members during their 2007 meeting in Germany as:
- increasing transparency, predictability and stability of global energy markets;
- improving investment climate in the energy sector;
- enhancing energy efficiency; and
- improving international energy cooperation.

This was also recognized by the Heads of States of the ASEM Group in their Sixth Meeting in Helsinki on 11 September 2006. The need for a multilateral approach means that the ECT's relatively young constituency is widening to include countries outside of the original "founding fathers."

---

* Pascal Laffont is Head of the Non-Members Unit, Cabinet of the Secretary-General, The Energy Charter Secretariat, Brussels.

The latest examples in Asia of newcomers to the ECT family are Afghanistan, Indonesia, and Pakistan.

In addition, Australia, Russia, Japan and Mongolia, along with all the states of Central Asia, are also ECT members and active participants in the Charter process. China, Korea and the Association of Southeast Asian Nations (ASEAN) have observer status. In this context, it is already possible to see the outline of a common multilateral framework for energy cooperation in Asia that is necessary for the development of regional investment and cross-border energy flows in this region.

The Energy Charter Treaty and Energy Cooperation in Asia

There have been major developments of the past years, which have brought the debate over Asian energy cooperation into much sharper focus. For instance,

- the development of the Russian programme for a unified system of gas extraction, transportation and gasification in Eastern Siberia;
- the two projects of the Trans ASEAN Gas Pipeline and ASEAN Power Grid; and
- the cross-border projects in West and South Asia from Myanmar and Bangladesh, Iran or Turkmenistan.

For this potential to be realized, it will be essential to promote a sound climate for long-term investment and to put in place adequate mechanisms for the sharing and mitigation of risk. A part of this challenge can be met by governments acting individually, for example, by ensuring that favourable conditions for private industry are embedded and enforced in national legislation. A further part can be met by governments acting on a bilateral basis, particularly in relation to the operation and synchronization of specific cross-border investment projects.

However, if we are to speak of a genuine regional dimension, then it is also vital that governments act collectively in order to agree – as much as possible – on a set of "rules of the game" governing investments and cross-border energy flows.

This is offered by the ECT. The ECT is a distinctive attempt to formulate a binding instrument of international law for the entire energy investment

cycle, including not only investment in production and generation but also the terms under which energy is traded or transported across national borders. It is founded on a mutual interest in energy cooperation among energy consumers, producers and transit countries, and it is this balance of interest that might make the ECT a relevant instrument for the Asian region.

Looking at the ECT in more detail, a first point to note is the implicit recognition that the main bulk of investments in the energy sector will be made not by governments, but by private industry, based on a commercial assessment of the risks and opportunities involved. The ECT does not seek to prescribe any particular structure of energy markets on its participating states. Each ECT member state is free to decide how, and to what extent, its national and sovereign energy resources will be developed, and also the extent to which its energy sector will be opened to foreign investments. However, once a foreign investment is made in the energy sector in line with a country's national legislation, the ECT is designed to provide a reliable and stable interface between this investment and the host government.

This need for stability in the relationship between investors and host governments is particularly acute in the energy sector, where projects tend to be fixed, highly capital-intensive and with payback times stretching over many years, sometimes over decades. For these reasons, investors in the energy sector can be exposed over time to non-commercial risks such as discriminatory treatment, direct or indirect expropriation, or the breach of individual investment contracts. The binding rules contained in the ECT can play a significant and positive role in mitigating these risks. As a result, they can foster the confidence that is necessary for investment decisions, and also reduce the cost of investment capital on competitive international markets.

A second important feature of the ECT is its specific and unique attention to cross-border energy flows, and particularly to energy flows in transit. This is a major strategic issue in Asia, as energy resources – hydrocarbons in particular – are transported across increasingly large distances and across different national jurisdictions from producer to consumer. By its nature, energy transit is an activity that involves a chain of countries, and

this chain is no stronger than its weakest link. A reliable transit regime in a large geographical area such as Eurasia therefore has to be based on common minimum standards for access and transparency to which all countries subscribe as part of a multilateral process.

Through its Article 7, the ECT offers a set of multilateral legal obligations dealing specifically with energy transit flows. Under this article, member states commit themselves to taking all necessary measures to facilitate the transit of energy as well as to cooperate in order to mitigate the effects of interruptions in energy supply. Measures to facilitate transit must be taken on a non-discriminatory basis, and without imposing any unreasonable delays, restrictions or charges.

Transit countries are also under an obligation not to interrupt or reduce existing transit flows, even if they have a dispute with another country concerning this transit.

The ECT member states are negotiating an additional instrument to supplement the existing transit provisions of the ECT. A large degree of consensus exists on the bulk of the draft text. In its current form, the draft text would clarify – for the first time under international law – key issues such as the definition of "available capacity for transit," and oblige pipeline operators to hold negotiations, in good faith and based on transparent procedures, over access to such capacity. It would also stipulate that transit tariffs be cost-reflective, objective and non-discriminatory, and prohibit the illegal taking of energy resources in transit.

The value of rules such as the ECT's is linked to the way in which these rules are implemented in practice, and this is why member states wanted a set of mechanisms for the settlement of disputes, both in relation to disputes among member states and also between individual investors and these states.

A recent example of a cross-border project in the ECT constituency is the South Caucasus Gas pipeline, which is being constructed in parallel with the Baku-Tblisi-Ceyhan oil pipeline up to a connection with the existing Turkish gas transmission network in Erzurum. This gas pipeline will serve as an export route from the Shah Deniz field in Azerbaijan, and is by any standards a major cross-border project, almost 1,000 kilometres in length and involving a total capital expenditure of over US$1 billion.

All the countries directly involved in the project – Azerbaijan, Georgia and Turkey – are ECT member states, and the agreements that provide the legal structure for the pipeline draw substantially upon the ECT's provisions and principles. By way of example, the inter-governmental agreement between Azerbaijan and Georgia relating to the transit of natural gas through the South Caucasus pipeline is explicit in confirming – in line with the ECT's Article 7 – that the parties shall not interrupt or impede the freedom of transit, receipt or delivery of natural gas across their territories. To ensure that these obligations are fulfilled, the provisions for the resolution of disputes refer directly to the procedure for an arbitral tribunal established in Article 27 of the ECT. In this way, the ECT provides a "safety net" that enhances the legal security of specific cross-border projects.

Another example where members decided to use the ECT is the recent commitment that was signed by the Central Asian states, Afghanistan and Pakistan over cooperation in cross-border power trade. Based on their common membership to the ECT, they signed the Bishkek Declaration on 26 April 2007. This provides a basis for a more reaching document that is intended to offer a legal framework to facilitate power trade among the seven countries.

Indeed, any group of countries which intend to develop an inter-state network of energy transmission (gas, power or oil), signs first an interstate agreement among themselves which, often, replicate the ECT.[1]

The ECT also protects individual foreign investors in the energy sector by granting them the right to take the host country to international arbitration in the event of an alleged breach of an ECT obligation. These obligations include the requirement to provide non-discriminatory treatment, protection against the most important non-commercial risks and also protection of individual investment contracts.

---

[1] See The ECOWAS "Energy Protocol" of 2003 among Benin, Burkina Faso, Cap-Vert, Côte d'Ivoire, Gambia, Ghana, Guinée, Guinée Bissau, Liberia, Mali, Niger, Nigeria, Sénégal, Sierra Leone, Togo. This agreement laid the legal foundations for instance, for the West African Pipeline between Nigeria and Ghana, through Togo. Refer to the ECOWAS website for more details: www.ecowas.int. See also the recent initiatives for a similar instrument among Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka. Refer to the SAARC website for more details: www.saarc-sec.org.

The provisions on dispute settlement are therefore crucial in ensuring compliance with the ECT but their significance extends well beyond the cases that might come to the attention of the public from time to time. Perhaps more important is the fact that the existence of these mechanisms – and the knowledge that they can be used effectively – provides persuasive encouragement for member states to observe their obligations in the first place or to reach amicable settlements when a potential problem arises.

Formal juridical mechanisms are not the only way in which the Energy Charter process supports compliance with the ECT's obligations. There is also a well-established dialogue with participating governments, designed to raise awareness about specific provisions and to monitor progress with the implementation of ECT commitments. Examples of the member states' work in this area include in-depth reviews of the investment climate, which provide analysis and recommendations for individual member states on improving conditions for investment in the energy sector. These are discussed in the ECT's Investment Group and the recommendations endorsed by the ECT's governing body: the Energy Charter Conference.

Another important aspect of the ECT member states is a cooperative effort to reduce the environmental impact of energy use through programmes and policies on energy efficiency. The ECT's role in this area is to provide a policy forum in which all members can share their experience and advice.

Finally, alongside the enforceable disciplines included in the ECT, member states are also involved in developing non-binding instruments that can facilitate cooperation among themselves, for instance, the cross-border model agreements for energy transit. These consist of a model intergovernmental agreement between participating states, and a host government agreement between an individual state and project investors, which provide examples of best international practices that can be used when negotiating specific cross-border pipeline projects.

These have already proved useful. They helped to provide a basis for discussions between Kazakhstan and Azerbaijan in 2004 on the trans-Caspian Aktau-Baku transport system, which would provide an additional export

route for Kazakh energy resources through the Baku-Tblisi-Ceyhan pipeline.

Conclusion

There might be a need in Asia for a regional framework that could encourage investment and cross-border energy flows, and which can also underpin the broader social and economic development and contribute to long-term political stability. In designing such a framework, a multilateral approach is essential, not least because such an approach facilitates cooperation among states, rather than competition between them.

The foundations for regional cooperation in Asia are in place, based on the availability of resources, on demand for these resources, and upon a growing appreciation of the benefits of transparent, rule-based and sustainable energy markets. To this, some partners in Asia are already associated with a relevant multilateral framework through the ECT.

11. Nuclear Renaissance: Expectations, Realities and Security Implications

Tatsujiro Suzuki*

Introduction

As a result of increased energy security and climate change concerns, there is an increasing expectation that nuclear power capacity worldwide will be doubled or tripled in the coming decades. This so-called "nuclear renaissance," and its expectation, has already had significant impacts on nuclear fuel markets and may encourage diffusion of sensitive nuclear fuel cycle technologies. On the other hand, there are many issues to be overcome if nuclear renaissance is to be realized. Therefore it is important to assess the realities of such expectations and those international implications. This chapter will look at the expectations of "nuclear renaissance" and its realities and assess the international implications, with particular emphasis on the Asian perspective.

This chapter will review recent trends in nuclear power development, especially in the Asian region, and identify key issues that need to be overcome if "nuclear renaissance" is to be realized.

Nuclear Renaissance: High Expectations

At the end of 2007, there were 439 units of nuclear reactors (total capacity of 371.7 GW) operating in the world, supplying roughly 16 per cent of the world total electricity generation. Its capacity has not grown much in the last 20 years (Figure 1 in Appendix at the end of this chapter).[1] But now, there are growing expectations that nuclear power capacity will grow sig-

---

* Tatsujiro Suzuki is Senior Research Scientist at the Central Research Institute of Electric Power Industry, Japan. He is also Visiting Professor at the Graduate School of Public Policy, University of Tokyo, Japan.

[1] Mycle Schneider (with contributions by Antony Froggatt), *World Nuclear Industry Status Report 2007*, Commissioned by the Greens-EFA Group in the European Parliament, Paris, January 2008, http://www.greens-efa.org/cms/topics/dokbin/206/206749.pdf (accessed February 20, 2008).

nificantly again, responding to increasing energy demand in Asia as well as to growing pressure to reduce CO_2 emissions.

According to recent estimates made by the International Atomic Energy Agency (IAEA) and the International Energy Agency (IEA) of the Organization for Economic Cooperation and Development (OECD), global nuclear capacity in 2030 could grow to 519 GW (IEA) ~ 679 GW (IAEA) at high case, and 414 GW (IAEA) ~ 416 GW (IEA) in a low case scenario.[2,3] This is a significant growth, if realized, considering the low growth rate in the past 20 years, but it is not unachievable, compared to the high growth rate experienced during the 1970s.

But, even if this high growth expectation is realized, its contribution to energy security and reduction of GHGs may not be sufficient. Both IEA and IAEA estimated that the expected share of nuclear power in global power production in 2030 will remain the same level as it is now. IAEA estimates that the share of nuclear capacity in global power capacity will be around 9.0 per cent compared with the current 8.7 per cent. IEA estimates that the share of nuclear power generation will be around 14 per cent compared with the current 15 per cent. If nuclear capacity grows at the lower estimated rate, its share will decline from the current 15 per cent to 10 per cent worldwide (Table 1). Therefore, in order to increase the contribution of nuclear power to energy security and the reduction of CO_2, nuclear power capacity should grow further than the high expectation discussed above.

---

[2] International Energy Agency (IEA), *World Energy Outlook 2006*, (Paris: IEA, 2006), available via www.worldenergyoutlook.org/2006.asp (accessed April 30, 2008).

[3] International Atomic Energy Agency, "Energy, Electricity and Nuclear Power Estimates for the Period to 2030," Reference Data Series, No. 1, July 2006 edition, Vienna, July 2006.

Table 1. International Energy Agency (IEA) Nuclear Capacity Projections for 2030.

Region	Nuclear Capacity [GW]			Share of nuclear in electricity generation		
	2005	2030 Reference Scenario	2030 Alternative Policy	2005	2030 Reference Scenario	2030 Alternative Policy
OECD	**308**	**296**	**362**	**22%**	**16%**	**22%**
OECD North America	112	128	144	18%	15%	18%
OECD Europe	131	74	110	28%	12%	20%
OECD Pacific	65	94	108	25%	32%	41%
Transition economies	**40**	**54**	**64**	**17%**	**18%**	**23%**
Developing countries	**19**	**66**	**93**	**2%**	**3%**	**5%**
China	6	31	50	2%	3%	6%
India	3	19	25	2%	6%	9%
Other Asia	5	10	10	4%	3%	4%
Latin America	3	4	6	2%	2%	3%
Middle East and Africa	2	3	3	1%	1%	1%
World	**368**	**416**	**519**	**15%**	**10%**	**14%**

Source: International Panel on Fissile Material (IPFM), *Global Fissile Material Report 2007* (Princeton, NJ: International Panel on Fissile Material, 2007), p. 84, www.fissilematerials.org/ipfm/site_down/gfmr07.pdf (accessed April 30, 2008). The data is originally from International Energy Agency (IEA), *World Energy Outlook 2006*, p. 362.

In fact, according to a report published by the Massachusetts Institute of Technology in 2003, global nuclear capacity needs to reach 1,000 GW by 2050,[4] a triple growth from the current level (Table 2). Even under this

[4] MIT Interdisciplinary Study, *The Future of Nuclear Power* (2003), web.mit.edu/nuclearpower/ (accessed January 15, 2008).

high growth scenario, the share of nuclear power in global power production is estimated to increase only slightly to 19 per cent.

Table 2. Global Growth Scenario

REGION	PROJECTED 2050 GWe CAPACITY	NUCLEAR ELECTRICITY MARKET SHARE 2000	2050
Total World	1,000	17%	19%
Developed world	625	23%	29%
U.S.	300		
Europe and Canada	210		
Developed East Asia	115		
FSU	50	16%	23%
Developing world	325	2%	11%
China, India, Pakistan	200		
Indonesia, Brazil, Mexico	75		
Other developing countries	50		

Projected capacity comes from the global electricity demand scenario in Appendix 2, which entails growth in global electricity consumption from 13.6 to 38.7 trillion kWe-hrs from 2000 to 2050 (2.1% annual growth). The market share in 2050 is predicated on 85% capacity factor for nuclear power reactors. Note that China, India, and Pakistan are nuclear weapons capable states. Other developing countries includes as leading contributors Iran, South Africa, Egypt, Thailand, Philippines, and Vietnam.

Source: MIT Interdisciplinary Study, *The Future of Nuclear Power* (2003), p. 26.

Now, let us look at the situations in three different regions or categories in order to assess the international implications.

Nuclear Renaissance–Reality I: Need for Replacement Orders in Advanced Countries

First, let us look at the markets in the U.S. and in Europe. As many of the existing reactors will come to the end of their lives in the coming decades, replacement orders will be needed so as to not increase dependency on fossil fuels and carbon emissions. According to the recent estimate by Schneider and Froggatt, 262 units (208 GW) may have to be replaced between 2008 and 2025 (Figure 2 in Appendix).[5] This will lead to a high expectation of "new reactor orders" in the advanced countries, such as in the U.S. and Europe. Without such replacement orders, the share of nuclear

[5] Schneider (with Froggat), *World Nuclear Industry Status Report 2007*.

power generation will decline, which is now considered not desirable for both energy security and reducing greenhouse gases.

Under the liberalized market, however, the financial risk of ordering nuclear reactors needs to be overcome for private utility companies. The U.S. introduced a series of new policy measures under the Energy Policy Act of 2005 to reduce financial risks associated with ordering new reactor orders in the United States.[6] As a result of these measures, now more than 30 reactors are planning to apply for licensing for new reactor construction. The UK government recently released a White Paper *Energy 2007*[7] in which the government confirms the importance of keeping the nuclear energy option for the country. The White Paper also suggested several policy measures to facilitate new orders, but no direct financial assistance is suggested.

Nuclear Renaissance–Reality II: Meeting High Energy Demand in Asia

China, India, Japan and South Korea have all committed to supporting major nuclear power expansion plans over the next two to three decades. While the nuclear share of electricity could decline from 19 per cent in 2001 to 12 per cent in 2025 globally, its share in OECD/Pacific countries (i.e. Japan and South Korea) is expected to grow from the current 25 per cent to 32-41 per cent, according to the IEA estimate. The share in developing countries will likely increase nuclear electricity from 7 to 17 per cent, according to the same estimate.[8] China, India, Japan and South Korea would add around 45,000 MW of nuclear electricity generation capacity by 2025. Since 2000, as much as 20,000 MW nuclear capacity came online and mostly in Asia. So it is not surprising that those countries will plan to build such capacity in the next two decades or so. Let us review the current plan and conditions of four major countries in the region.

---

[6] Wall Street Utility Group, "The Energy Policy Act of 2005: The Implications for Nuclear Energy," September 2005. Published on the Nuclear Energy Institute's website, www.nei.org (accessed April 30, 2008).

[7] UK Department of Trade and Industry, Meeting the Energy Challenge, White Paper on Energy 2007, www.dti.gov.uk/energy/whitepaper/page39534.html (accessed April 30, 2008).

[8] International Energy Agency (IEA), *World Energy Outlook 2006*.

Japan: Japan currently has 55 units of nuclear power plants with a total capacity of about 50 GW, supplying about 30 per cent of total power production. The Japanese government recently released the report, "Nuclear Power Nation Plan" in which they announced the goal of maintaining its share in total power production at 30~40 per cent or beyond by 2030 and beyond.[9] By 2030, 13 more nuclear plants are planned to be built, but some of the existing plants may be closed and thus more may need to be built to maintain the current share. The government introduced various measures to reduce the financial risk of nuclear plants for private utilities.

South Korea: South Korea now has 20 units of nuclear power plants, with a total capacity of 17.7 GW, supplying roughly 40 per cent of total power generation. According to the government plan, eight units are planned to be deployed by 2016. Nuclear generation capacity is expected to grow to 26.6 GW and to supply 47 per cent of total electricity generation as of 2015.

China: China currently has 11 units with total capacity of 9 GW, and 8 units (7.9 GW) are under construction. The Chinese government plans to increase its total capacity to 40 GW by 2020.

India: India currently has 16 units with total capacity of 3.3 GW, and 8 units (~4 GW) are under construction. The government plans to increase its capacity to 20 GW by 2020. With limited uranium resources, India needs to import uranium to build more nuclear plants. In 2007, India reached a historic agreement with the U.S., allowing India to import nuclear fuel as well as nuclear plant technology from abroad. At present, however, it is not certain that the agreement will become effective because of the controversial nature of the agreement.

Nuclear Renaissance–Reality III: Growing Number of New Countries with Small Nuclear Capacity

In addition to those who already have nuclear plants, there will be a growing number of countries which will introduce nuclear plants for the first time. For example, some ASEAN countries such as Vietnam and Indonesia

---

[9] The Nuclear Power Nation Plan was discussed in: Ministry of Economy, Trade and Industry of Japan, *New National Energy Strategy* (May 2006), www.enecho.meti.go.jp/english/report/newnationalenergystrategy2006.pdf (accessed January 15, 2008).

have expressed interest in introducing nuclear power. Australia recently also published a government report suggesting building 25 reactors by 2050. In the Middle East, triggered by the Iranian nuclear power program, many countries have also expressed their interests in introducing nuclear power. Let us review the plans of those "new countries" that plan to introduce nuclear power.

Indonesia: In January 2006, under the Presidential directive, the Indonesian government clarified that nuclear power is an important option for future energy needs and clarified the plan to introduce four nuclear plants by 2025.

Vietnam: According to the feasibility study conducted by the government, 2–4 GW of nuclear power should be introduced between 2017 and 2020.

Thailand: In April 2007, the National Energy Committee of the Vietnamese government approved the Electric Power Development Plan which includes the construction of 4 GW nuclear power plants between 2011 and 2021.

Turkey: In April 2006, the Turkish government released its plan to construct a 100-MW demonstration nuclear plant and to add 3 units (~5 GW) by 2012. In May 2007, the Turkish Congress approved the related laws for construction of nuclear power plants.

Egypt: In November 2006, Egypt's Supreme Energy Council (headed by the Prime Minister) decided to restart its nuclear technology development for peaceful purposes and to introduce nuclear plants within 10 years.

Other noted countries which have expressed their interests in introducing nuclear power are Jordan, Libya, Morocco, Saudi Arabia, Tunisia and Yemen.

Those that will try to introduce nuclear power would need to build industrial and regulatory infrastructure, such as human resources, safety culture etc., to support the growing nuclear power programmes. For such countries, modular-type small reactors, such as the one under demonstration in South Africa, may be more fitting to their needs.

Issues to Overcome

In order to realize the global resurgence of nuclear power, there are two important issues to overcome.

Safety and Public Confidence (Improved Decision-making Process)

Safety concerns remain one of the highest barriers for local communities to accept the siting of nuclear power facilities, including waste storage or disposal facilities. For the long-term sustainable growth of nuclear power, it is essential to establish public confidence in nuclear safety. So-called "risk-based" safety regulation is one possible solution for an effective and transparent safety regulatory regime. Since the 1980s, the U.S. Nuclear Regulatory Commission (NRC) has been working to establish such regulations, with well-established safety regulation by the private industry. "Risk-based regulation" means that safety regulation puts emphasis on the areas with higher probability of accidents (higher "risk"), and reduces regulatory requirements in less important areas. In order to implement such regulations, the industry must prove which areas should be focussed on, and thus the transparency of plant safety can be increased. Such regulation also provides incentives to facilities to improve their performance. As a result, the U.S. nuclear power performance has improved significantly since the 1990s.

But that is not good enough to gain public confidence. For example, public confidence could easily be eroded by non-technical incidents such as data falsification incidents that happened in Japan and in the U.K. Once confidence is lost, it takes a long time to recover, and that will affect local decisions to accept new nuclear facilities – or even the continued performance of existing facilities. Especially after the recent major earthquake which occurred in July 2007 in Niigata, Japan, seismic safety concerns need to be carefully addressed, as many Asian nations also face major earthquake risks. Japan's lessons from the Kashiwazaki-Kariwa nuclear power plants need to be shared within the nuclear industry worldwide, in order to improve safety measures against severe earthquakes. Eventually, better social decision-making process may be needed to gain long-term public confidence in nuclear policy.

Spent Nuclear Fuel and Radioactive Waste Management

Unless spent fuel and radioactive waste management issues are fully addressed, the financial and political risks of nuclear power will never be resolved. There are two primary policy choices with regard to spent fuel management: one is the "once-through" option which directly disposes of spent fuel to a repository, and the other is the "recycling" option, which recovers uranium and plutonium from spent fuel, to be then recycled into reactors while the remainder of the spent fuel is disposed of as waste.

While, in principle, these two options are mutually exclusive, in reality both options are now merging. This is because "interim spent fuel storage" is an essential step to both options. Eventually, many nations may pursue a "mixed strategy," i.e. the combination of "once-through" and "recycling" after long term "interim storage." In short, regardless of future policy choices, it is essential for all countries to secure interim storage capacity of spent fuel and waste. If spent fuel storage capacity is not secured, utilities may have to take the reprocessing option which will lead to a possible large stockpile of plutonium. This is exactly the case for Japan, which is now about to start a large commercial reprocessing plant (800 tons HM/y) in Rokkasho village, which may increase the current plutonium stockpile of 43 tons to more than 70 tons in 2012.[10] This has already caused serious international concern, especially among its Asian neighbours. In addition, the total cost (construction / operation and maintenance / decom missioning) of the Rokkasho reprocessing plant over its lifetime (40 years) is estimated to be more than US$135 billion which is now charged to electricity customers. In order to avoid such accumulation of plutonium and expensive operation, securing storage capacity for spent fuel is essential.

As for the final disposal of nuclear waste, in addition to various technical options currently being considered, improved decision making processes might be necessary to gain public confidence as described above.

---

[10] Tadahiro Katsuta and Tatsujiro Suzuki, *Japan's Spent Fuel and Plutonium Management Challenges*, International Panel on Fissile Material Research Report, No. 2, September 2006, www.fissilematerials.org/ipfm/site_down/ipfmresearchreport02.pdf (accessed April 30, 2008).

International Implications: A Multilateral Approach in Managing Nuclear Fuel Cycle?

Finally, in order to have sustainable nuclear power growth, it is essential that such expansion does not lead to increased proliferation risk of nuclear weapons. The biggest proliferation risk comes from nuclear fuel cycle facilities, such as enrichment and reprocessing, which can produce weapons-usable material (WUM, i.e. highly enriched uranium (HEU) and plutonium). The expansion of nuclear power can naturally lead to proliferation of sensitive facilities and technologies.

For HEU, the current worldwide stock is about 2,000 tons, most of which is for military use and is found in the U.S. and Russia (Figure 3 in Appendix). One of the major concerns is the degree of uncertainty in the estimated quantity of HEU in Russia, which is about 30–50 per cent of the estimate (~300–500 tons of HEU) as the majority of HEU is military owned without any safeguards. Therefore, it is critically important to secure the HEU stockpile and move the process of down-blending HEU to LEU as quickly as possible. Meanwhile, the global civilian HEU stockpile is under IAEA safeguards and thus its quantity is accurately known. But its quantity is still large enough (~10 tons) to be worrisome. Typically the protection of civilian HEU is not as tight as for military-owned HEU. Thus, it is also very important to strengthen the protection of civilian HEU and to convert HEU fuel (mostly for research reactors) to LEU fuel as fast as possible.

The expected higher growth of nuclear power has resulted in higher expected demand for enrichment services, thus leading to tighter supply/demand market conditions. This may also lead to the expansion and proliferation of enrichment facilities in the world. Technically speaking, once an enrichment facility is built, even if it is a small scale one, it can be easily used to produce HEU in a relatively short time. However, it is rather difficult to misuse the facility if it is under IAEA safeguards.

For plutonium, the civilian stockpile (~250 tons) is as large as the military stockpile (Figure 4). Since it is not technically possible to down-blend plutonium to be directly unusable for military purposes, disposition of plutonium would be technically more difficult. The agreement between Russia and the U.S. is to dispose 34 tons each of their surplus plutonium, by con-

verting to MOX (Mixed Oxide) fuel and "burned" in existing reactors. So far, however, the process has not been moving as planned. Civilian plutonium, although all of which is under IAEA safeguards, is also a matter of concern as its stockpile is steadily increasing. This is the result of continued reprocessing activities primarily in Russia, France and the UK.

Japan is now about to start its first commercial scale reprocessing plant in Rokkasho village as noted above. Meanwhile, MOX fuel use in existing reactors has not been growing fast enough to catch up with the reprocessing pace. It is primarily because of the poor economics of plutonium recycling. Then why does the reprocessing continue? The biggest driving factor is the pressure from accumulating spent nuclear fuel. If storage capacity is not sufficient, nuclear reactors may have to be shutdown. Technically speaking, dry cask interim storage is the safest, cheapest and most flexible option to store spent fuel. However, due to political constraints, it is becoming more and more difficult to find sites for interim storage. Therefore, it is crucially important for the international community to secure interim storage capacity for accumulating spent fuel in order to avoid unnecessary reprocessing. Otherwise, demand for civilian reprocessing might also grow in the coming decades.

In this context, there have been various proposals to have tighter controls over nuclear fuel cycle activities since Mr. Mohamed Elbaradei, Director General of the International Atomic Energy Agency (IAEA), proposed "multilateral approaches" to nuclear fuel cycle facilities. Those proposals include the following key components: (1) tighter control over WUM; (2) improving nuclear fuel supply assurance; (3) multilateral control over new fuel cycle facilities; and (4) proposals suggesting returning spent nuclear fuel to supplier countries. The following section provides a quick overview of various proposals recently made by advanced nuclear countries.

U.S. Global Nuclear Energy Partnership (GNEP)

In February 2006, the United States government announced the new Global Nuclear Energy Partnership (GNEP) in which new "partners" (advanced nuclear countries) will provide nuclear fuel supply guarantees to those countries which give up having such nuclear fuel cycle facilities on their own. The GNEP also proposes to accept spent fuel and waste from those recipient countries and to develop advanced fuel recycling tech-

nologies. As of the end of 2007, seventeen countries have signed the GNEP,[11] but its future is still uncertain. For example, the proposal to build demonstration plants of advanced fuel cycle technologies (including advanced burner reactor, ABR) has been opposed by both non-proliferation experts and energy R&D experts as their programmes seem to be too soon and premature. There has also been opposition from developing countries which suggest that the GNEP will divide NPT member countries into "haves" and "have nots" in terms of nuclear fuel cycle technologies/facilities. Such inequality is not acceptable under the NPT regime, as Article IV guarantees the right of access to civilian nuclear technologies.

Russian International Nuclear Fuel Cycle Center (INFCC)

Russia also proposed the International Nuclear Fuel Cycle Center (INFCC) which provides "complete fuel cycle service" including reactor, and nuclear fuel supply guarantee, and is now renamed as "Global Nuclear Power Infrastructure (GNPI)." This is based on the idea of "fuel leasing" as nuclear fuel will be owned by Russia and its spent fuel will be returned to Russia. Russia has announced the building of a new enrichment facility dedicated to this proposal and agreed that the facility will be under IAEA safeguards. Russia has already discussed such arrangements with Iran. The credibility of Russia as a reliable energy supplier has now been questioned as the Russian gas provider Gazprom often has supply-contract disputes with recipient countries such as Ukraine.

There are other proposals made by six enrichment suppliers, the UK, Japan, Germany, etc. The common factor in all these proposals is to use "fuel supply assurance" as a key incentive to give up nuclear fuel facilities. It seems that tighter control on sensitive facilities/technologies would be unavoidable.

Possible Conditions for a Multilateral Approach

Similar proposals made in the 1970s and 1990s have never been realized. Therefore, what are the possible conditions for a multilateral approach to

[11] The United States, Russia, France, China and Japan are original members. Australia, Bulgaria, Ghana, Hungary, Jordan, Kazakhstan, Lithuania, Poland, Romania, Slovenia, Ukraine and Italy have joined as of November 7, 2007.

be realized? I argue that there are three conditions which must be met, namely: (1) Universality, (2) Complete Transparency, and (3) Economic viability. These three are necessary conditions though they may not be sufficient for a multilateral approach to be successful.

Universality: Any new proposal could lead to discrimination among countries which would like to pursue nuclear energy production. If the proposal divides countries into "haves" and "have nots" regarding nuclear fuel cycle technologies/facilities, there will be strong opposition from countries which do not have nuclear fuel cycle technologies. Currently, only Japan, as a non-nuclear weapon state, has been allowed to have both enrichment and reprocessing facilities for civilian purposes. Naturally, other advanced nuclear countries like South Korea feel "discriminated" since they have been "denied" such sensitive facilities of their own.

Or, on the contrary, such a proposal may encourage nations to develop their own fuel cycle technologies/facilities. In fact, after the GNEP proposal, at least six countries (Argentina, Iran, Australia, Canada, Kazakhstan and Ukraine) have expressed their interest in pursuing enrichment technologies.

The question of so-called "double-standards" in denying the right to access nuclear fuel cycle is also evident in the recently agreed U.S.–India Agreement on Peaceful Use of Nuclear Energy.[12] The agreement, not effective yet as of March 2008, allows India to reprocess spent fuel and the U.S. to transfer the sensitive technologies to India which is a non-NPT member. Under the international agreement among the Nuclear Suppliers Group (NSG), member countries are now allowed to transfer such technologies to non-NPT members. The U.S. changed its domestic law[13] to allow such a transfer and cooperation with India. Such "double-standards" would send a signal to the international community that any nuclear non-proliferation norm can be fragile, depending on the strategic interests of certain coun-

---

[12] The U.S-India Nuclear Cooperation Agreement, July 17, 2007, www.state.gov/r/pa/prs/ps/2007/aug/90050.htm (accessed April 30, 2008).

[13] Henry J. Hyde, *United States–India Peaceful Atomic Energy Cooperation Act of 2006, H. R. 5682*, http://www.glin.gov/view.action?glinID=191952 (accessed February 15, 2008).

tries. Therefore, it is essential that a multilateral approach should be based on the rule of "universality."

Complete Transparency: If any country or a group of countries would like to develop nuclear fuel cycle facilities, it is essential that those facilities be under international safeguards. Besides, it is desirable that any new facilities should show the highest level of transparency. Transparency can be achieved through many measures which can increase international confidence associated with those nuclear fuel cycle facilities. Complete transparency can also contribute to improved safety and security measures applied to those facilities.

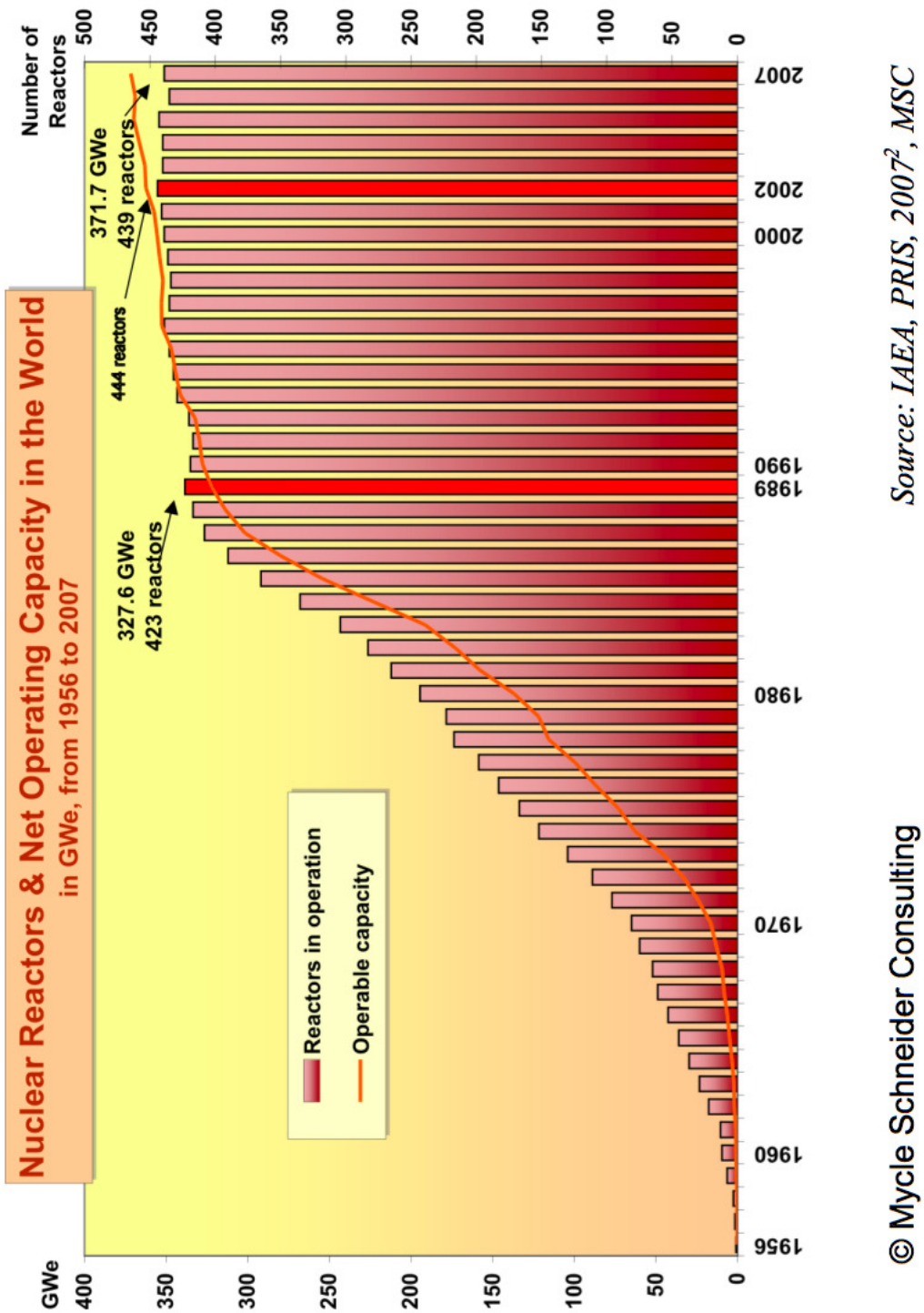
Economic Viability: Countries that would like to pursue nuclear fuel cycle facilities should assess their economic viability first. The IAEA and/or IEA could help determine the economic viability in order to assess needs and the rationale of the proposed facility or programme. Without economic viability, such facilities could generate international concern about motivations.

Conclusion

It seems that the global interest in nuclear power will increase, due to higher energy prices and pressure from climate change problems. Especially in Asia, such pressures are high so that expectations of the growth in nuclear power may lead to rapid expansion of nuclear power production in the region. But in order to realize such high expectations, there are four major issues to be overcome. They are: financial risk and competitiveness of nuclear power, safety and public confidence, spent fuel and radioactive waste management, and finally, nuclear non-proliferation. It seems unavoidable that nuclear fuel cycle facilities will have to be under some "multilateral arrangement" in order to minimize proliferation risks associated with those facilities. It would be a good time for all countries in the Asian region to discuss the necessary conditions for such a multilateral arrangement to succeed in the region.

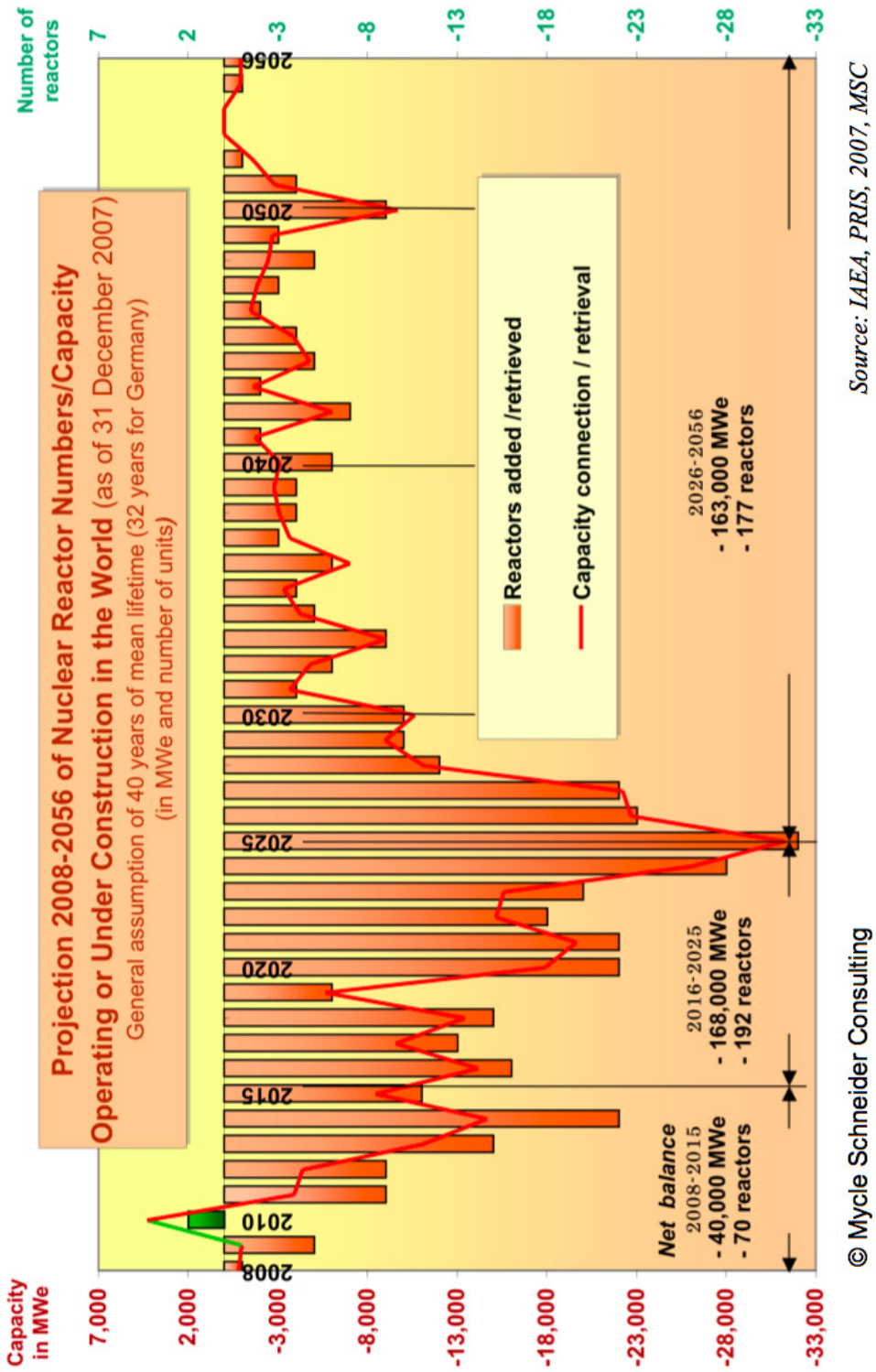
Appendix

Figure 1. Nuclear & Net Operating Capacity in the World



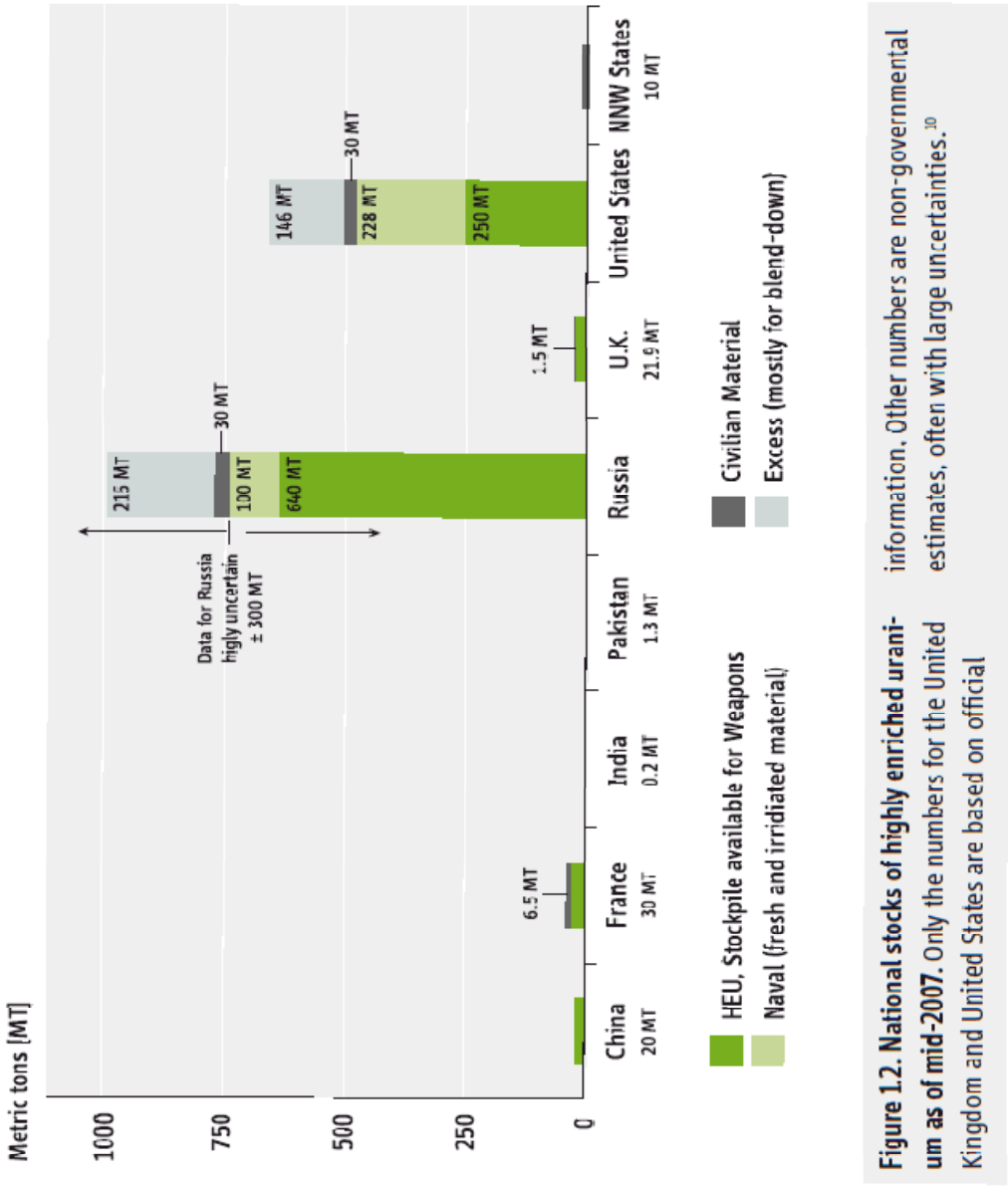
Source: Schneider (with Froggat), *The World Nuclear Industry Status Report 2007*.

Figure 2. Projection 2008-2056 of Nuclear Reactor Numbers/Capacity Operating or Under Construction in the World (as of December 31, 2007)



Source: Schneider (with Froggat), *The World Nuclear Industry Status Report 2007*.

Figure 3. Nuclear Stocks of Highly Enriched Uranium as of mid-2007.



Source: International Panel on Fissile Material (IPFM), *Global Fissile Material Report 2007*, p. 10.

Figure 4. National Stocks of Separated Plutonium

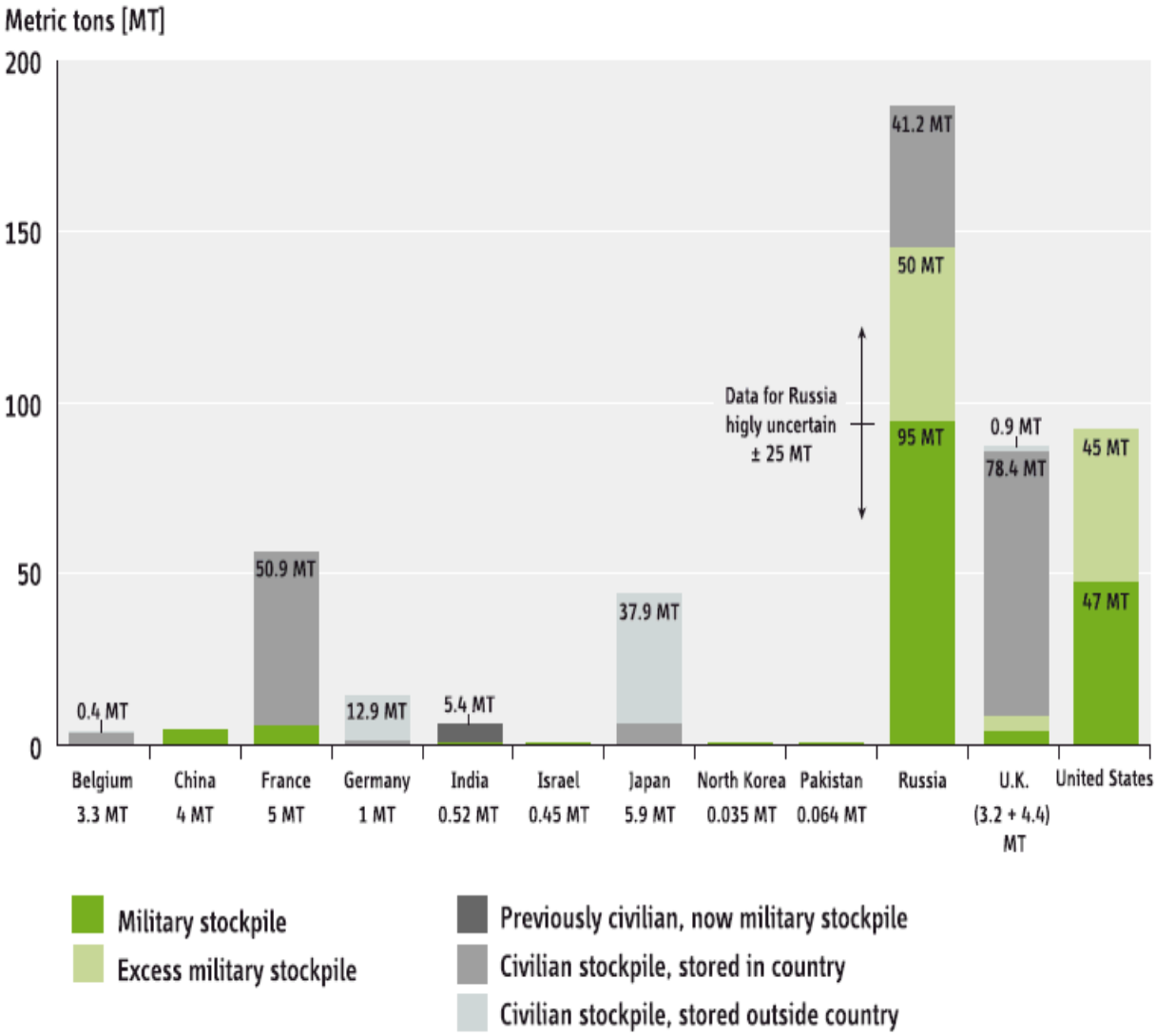


Figure 1.4. National stocks of separated plutonium.[32] Civilian stocks are for December 2005 and based on the latest INFCIRC/549 declarations (when available and with the exception of Germany, see also Appendix 1B to this chapter). Civilian stocks are listed by ownership, not by current location. Weapon stocks are based on non-governmental estimates except for the United Kingdom and the United States, whose governments have made declarations. India's plutonium separated from unsafeguarded spent PHWR fuel is assigned to its military stockpile.

Source: International Panel on Fissile Material (IPFM), *Global Fissile Material Report 2007*, p. 14.

12. Energy and Climate Change: Towards Sustainable Development

Youngho Chang and Soo Jiesheng Tan*

Introduction

Energy and climate change are closely linked. Along the link are the various impacts on an economy – positive and negative. The most significant negative impact comes from a build-up of heat-trapping gases due to the greater use of fossil fuels in an economy. Although an increase in energy use in an economy would increase output and the standard of living, it also produces more emissions such as carbon dioxide. The resulting build-up of greenhouse gases in the atmosphere is considered to cause an increase in the global mean surface temperature, which causes damage to the economy. To fend off such an increase in the global mean surface temperature requires a reduction in carbon dioxide emissions to a certain threshold level. The quest for reducing carbon dioxide emissions translates into a restriction on energy use unless the reduction is met by improvements in the efficiency of energy use and/or switching to non-carbon-emitting energy sources. Such a quest brings forth a decrease in output although it induces a decrease in carbon dioxide emissions and possibly a decrease in possible damage due to a build-up of heat-trapping gases in the atmosphere. In sum, the offsetting effects between the positive and negative aspects of global warming may not be equal and what would result is a decrease in output and downside pressure on the standard of living.

The concept of Sustainable Development (SD) was introduced at the United Nations Human Environment Conference in 1972. Since then,

---

* Youngho Chang is Assistant Professor at the Division of Economics and S. Rajaratnam School of International Studies, Nanyang Technological University, Singapore. He is also Adjunct Senior Fellow, Energy Studies Institute, National University of Singapore. Soo Jiesheng Tan is working towards a Masters degree at the Nicholas School of the Environment and Earth Sciences, Duke University, United States of America.

promises had been made by politicians to develop their economies in a sustainable manner during conferences such as the Earth Summits in 1992 and 2002. But the results of those efforts have been at best confusing. The Environmental Sustainability Index shows that 73 nations are unsustainable while the World Bank's ranking of sustainability shows that only 32 nations are unsustainable.[1] The confusion is compounded when nations such as Russia and Ecuador are sustainable on the Environmental Sustainability Index but are considered unsustainable by the World Bank, and vice versa for other nations. The root of this kind of confusion is a lack of agreement on the path to take towards achieving SD.

The study of SD is mainly divided into the two broadly defined concepts of sustainability: weak sustainability (WS) and strong sustainability (SS). Weak and strong sustainability approaches are fundamentally different by the substitutability of capitals: the former assumes that man-made capital is substitutable for natural resources while the latter assumes otherwise. As such, proponents of either model do not agree with one another on how to achieve sustainable developments. The WS approach is dominated by the Solow-Hartwick sustainability model and developments in this area are mainly to improve upon the original model. The SS approach, on the other hand, is not dominated by any model and there are numerous models that adopt the SS approach. Seemingly contrasting assumptions between WS and SS resulted in few attempts to reconcile the models of weak and strong sustainability. One of these few attempts is the studies by Common and Perrings.[2] Their verdict is that WS is both insufficient and unnecessary for SD. However, there has been very little research following Common and Perrings' work as literature on SD has developed separately and exclusively from the path of weak or strong sustainability.

This study utilizes both approaches from weak and strong sustainability and suggests a way to achieve them and a more agreeable path towards SD. Specifically, this study explores how resource use, including energy,

---

[1] This study assumes that a score of less than 50 on the Environmental Sustainability Index implies unsustainability. World Bank, *Where is the Wealth of Nations*. (Washington, D.C.: World Bank, 2006); *2005 Environmental Sustainability Index* (New Haven: Yale Center for Environmental Law and Policy, 2005).

[2] Mick Common and Charles Perrings, "Towards an Ecological Economics of Sustainability," *Ecological Economics,* Vol. 6, No. 1 (1992), pp. 7–34.

could work towards promoting sustainable development. The next section reviews briefly how energy use and climate change are interlinked under a sustainability framework and examines how specific effects of energy use on climate change are dealt with by the sustainability framework. A concept of weak sustainability is introduced in Section Three. Following the definition of weak sustainability, a few suggestions for making an economy at least weakly sustainable are presented. A numerical example and case study that verifies the suggestions are presented in Section Four and a further expansion of WS into SS is discussed in Section Five while Section Six concludes this study.

Energy, Climate Change and Weak Sustainability

Energy is an integral part of an economy. Left alone, it has become an essential factor of production. If an economy improves on a unit of energy needed to produce one unit of output, it could attain more output with the same level of energy input or the same level of output with less energy input. These could guarantee a sustainable growth path. If renewable energy replaces fossil fuels, the same level of output could be attained even with fewer emissions of greenhouse gases. However, the consequences of containing global warming through improving energy efficiency and/or switching to non-carbon emitting resources would suggest that even these seemingly sustainable paths could lead to an unsustainable growth path unless some conditions for securing the sustainable growth path are met.

Technological solutions or switching to non-carbon-emitting energy resources can help secure sustainability. However, developing alternative energy resources with little or no carbon emissions could have a darker side as well. It depends on how the increases in energy needs are met. For instance, strategies that contain the negative impacts or problems by using more renewable energy sources – such as increasing the supply of bio-fuels – could put some strain on the economy. The amount of feedstock required to produce one unit of usable energy from biomass is far larger than that of fossil fuels. This puts a constraint on the maximum available amount supplied by bio-fuels. More importantly, it would put downward pressure on the supply of crops as food because a vast tract of land is used to provide fuel and smaller areas are allocated to grow crops and food. This path, caused by options geared to solve climate change such as pro-

moting non-carbon emitting energy resources, may be unsustainable. Carbon dioxide emitted from energy, mainly fossil fuels, is considered a major culprit of global warming vis-à-vis climate change, and ensuing movements to reduce carbon emissions, a by-product of energy use, has a wide range of effects: direct and indirect, tangible and intangible, positive and negative, and short-term and long-term.

To make an operational link among energy use, economy and climate change would be a way towards securing a sustainable development path. In such a link, energy use would not put any negative burden on an economy that comes from climate change as a result (i.e. by-product) of energy use. At the same time, fulfilling energy demand would not constrain economic activity with respect to the available amounts of input other than energy or the costs of providing the input for production. Hence, the workable link would constitute a sustainability framework.

"Sustainability" (use interchangeably with "Sustainable Development") has received intense attention in the economics as well as the ecological and political realms in recent decades. The Brundtland Report[3] by the World Commission on Environment and Development (WCED) in 1987 has propelled "sustainable development" into the political agendas of nations around the world.[4] It has defined the concept of Sustainable Development as "development that meets the needs and aspirations of the present without compromising the ability to meet those of the future."[5]

While this definition reaches a consensus among most politicians and public, it is inadequate for policy measures due to the vagueness of the terms.[6] For example, "needs and aspirations" are too broadly defined and more exact definitions are needed in order to have meaningful discussions. Owning to this vagueness, many disciplines offered their own interpreta-

---

[3] The Brundtland Report is also known as the "Our Common Future" Report. World Commission on Environment and Development, *Our Common Future* (Oxford: Oxford University Press, 1987).

[4] Roger Perman, Michael S. Common, James Mcgilvray and Ma Yue, *Natural Resource and Environmental Economics*, 3rd ed. (New York: Addison Wesley, 2003).

[5] World Commission on Environment and Development, *Our Common Future*.

[6] Wilfred Beckerman, "Sustainable Development: Is it a Useful Concept?" *Environmental Values*, Vol. 3, No. 3 (1994), pp. 191–209.

tion of the Brundtland Report. The following interpretation has been accepted to be the de facto definition of SD in economics: non-declining utility of a representative member of society for millennia into the future."[7] This definition, although seemingly similar to that in the Brundtland Report, actually irons out a lot of uncertainties. The term "needs and aspirations" is replaced with the more workable economic concept of "utility" and the term "future" replaced with "thousands of years." Economists and ecologists have suggested two main approaches to achieve SD.

To achieve SD, economists still need to determine the inputs in the utility function and then work out a rule to ensure at least non-declining utility for a long finite period. Regarding the utility function, consumption has generally been used as the sole determinant in the utility function in microeconomics, though other variables such as "pollution" and "stock of renewable resources" can be included as well.[8] According to neoclassical theory, the only way to ensure non-declining consumption is to have a constant capital stock.[9] By using these two premises, the concepts of weak sustainability and strong sustainability are introduced next.

There have been models before the Brundtland Report that are able to achieve intergenerational equity.[10] Intergenerational equity can be para-

---

[7] John Pezzey, "Sustainability: An Interdisciplinary Guide," *Environmental Values*, Vol. 1, No. 4 (1992), pp. 321–62; Roger Perman, et al., *Natural Resource and Environmental Economics*. Eric Neumayer, *Weak Versus Strong Sustainability: Exploring the Limits of Two Opposing Paradigms*, 2nd ed. (Cheltenham: Edward Elgar Publishing, 2003).

[8] The inclusion of "pollution" serves to decrease utility. John Hartwick, "Natural Resources, National Accounting and Economic Depreciation," *Journal of Public Economics*, Vol. 43, No. 3 (1990), pp. 291–304; Neumayer, *Weak Versus Strong Sustainability: Exploring the Limits of Two Opposing Paradigms*.

[9] Robert Solow, "Intergenerational Equity and Exhaustible Resources," *Review of Economics Studies*, Vol. 41 (1974), pp. 29–46.

[10] Ibid.; Robert Solow, "On the Intergenerational Allocation of Natural Resources," *Scandinavian Journal of Economics*, Vol. 88, Issue 1 (1986), pp. 141–9; John Hartwick, "Investment of Rents from Exhaustible Resources and Intergenerational Equity," *American Economic Review*, Vol. 67, No. 5 (1977), pp. 972–4; John Hartwick, "Substitution Among Exhaustible Resources and Intergenerational Equity," *Review of Economic Studies*, Vol. 45, No. 2 (1978), pp. 347–54; John Hartwick, "Investment of Returns from Depleting Stocks of Renewable Resources and Intergenerational Equity," *Economics Letters*, Vol. 1, No. 1 (1978), pp. 85–8.

phrased as SD because both Hartwick and Solow captured the two premises in their model by using consumption as a measure of utility and came up with a rule that ensures a constant capital stock. This model is known as "Solow-Hartwick sustainability"[11] and this approach is known in the literature as "weak sustainability."[12] The main assumption in weak sustainability (WS) is that natural capital and man-made capital are substitutes for one another and each can readily replace the other. Another name for WS is economic sustainability.

A measure of "weak sustainability" presents how energy and climate change interact towards sustainable development. An operational rule of the measure, which is also called Hartwick's Rule, dictates that all Hotelling rents – the value of the amount of the resource that is "used up" to produce goods and services in the economy today – must be reinvested in the reproducible capital. Thus aggregate consumption or constant consumption over time is sustained and the state is considered weakly sustainable.

Conversely, most ecologists and a few economists – such as Daly, Boulding and Georgescu-Roegen – believe that natural capital and man-made capital are mainly complements or only marginally substitutable. Hence in their view, Solow-Hartwick sustainability cannot lead to SD as the former violates their assumption of poor substitutability between natural and physical capital. This line of thought is known as strong sustainability (SS). As one can imagine, SS is known as ecological sustainability.

It is important to state now that WS and SS are not different concepts.[13] From their respective definitions, we can infer that WS is a necessary but not sufficient condition for SS. This is because WS concerns itself with keeping the aggregate stock of all capital constant, while SS is more con-

---

[11] Common and Perrings, "Towards an Ecological Economics of Sustainability."

[12] Herman Daly, "Operationalizing Sustainable Development by Investing in Natural Capital," in Ann Jansson, Monica Hammer, Carl Folke and Robert Costanza, *Investing in Natural Capital: The Ecological Economics Approach to Sustainability* (Washington, D.C.: Island Press, 1994).

[13] Werner Hediger, "Reconciling 'Weak' and 'Strong' Sustainability," *International Journal of Social Economics*, Vol. 26, Nos. 7/8/9 (1999), pp. 1120–44; Perman, et al., *Natural Resource and Environmental Economics.*

cerned with keeping stock of each type of capital constant.[14] The assumption that sets WS and SS apart is that WS believes in a high substitution possibility between natural and physical capital, while SS believes in a low substitution possibility. To elaborate, "capital" refers to any stock that has economic productive means. "Natural capital" refers to ecological services provided by forests, fisheries and minerals such as oil and coal. "Man-made capital" consists of "physical capital" and "human capital." "Physical capital" refers to machines, tools and buildings. "Human capital" is our knowledge or skills that are used for productive means. A further categorization of "natural capital" is "renewable resources" and "non-renewable resources." This segregation is necessary because if all resources are "renewable," then SD can be easily achieved since we will always have enough inputs for production.

The WS model faces the difficulties of justifying the assumption of a high substitution possibility between natural and man-made capital, while output is dealt with using neoclassical equimarginal principle while areas such as renewable natural resources should be dealt by SS models such as "safe minimum standards (SMS)" as externalities render market failure.[15] To achieve SD, the stock of non-renewable resources and man-made capital must jointly be held constant, while the stock of renewable natural resources that provide renewable ecological good and services must be held at least at the SMS level.

Following the 1987 Brundtland Report, a host of indicators for SD appeared. Some of these indicators are based on SS assumptions, such as the

---

[14] Daly, "Operationalizing Sustainable Development by Investing in Natural Capital." Robert U. Ayres, Jeroen van den Bergh and John M. Gowdy argued that both WS and SS are unrealistic as both concepts imply a centralized decision-making process. See: Robert U. Ayres, Jeroen van den Bergh, and John M. Gowdy, "Viewpoint: Weak versus Strong Sustainability," *Tinbergen Institute Discussion Papers*, 98–103/3 (1998).

[15] The Equimarginal Principle refers to the situation when marginal benefit equals marginal cost. Michael A. Toman, "The Difficulty in Defining Sustainability," *Resources*, Vol. 106, Nos. 3–6 (1992). U.S. Census Bureau, International Programs Center (IPC), www.census.gov/ipc/www (accessed March 31, 2006).

"Environmental Sustainability Index" (ESI),[16] genuine progress indicators, and some are based on WS framework, such as "Genuine Savings" (GS).[17] In the latest rankings, both GS and ESI have different environmental "winners" and "losers." For example, South Korea is ranked 122nd on the ESI, but has a GS rate of 23.6 per cent, higher than even Finland, the ESI leader. Many such examples can be found when comparing these two sets of SD indicators. These contrasts thus form the basis of the research objective.

This study examines how an economy can reach a more desirable sustainable state of development. The desired sustainable state is not defined to be the state of SS mainly due to two reasons. First, any attempts to reach SS from WS force us to give up the assumptions in WS. This is untenable as WS and SS contradict each other in their respective definition of substitution possibilities between natural and man-made capital. Second, SS is a restrictive condition that may impede economic development if it is followed strictly.[18] Therefore, economic growth may be sacrificed in the process if we are able to achieve SS. In light of these reasons, the chosen sustainable state is the hybrid sustainable state. This state is chosen because it represents concepts found in both WS and SS, thus we can readily apply the model with neoclassical assumptions and yet tackle issues that are not addressed using economic means.[19] Further, the conditions are not

---

[16] Yale Center for Environmental Law and Policy, *2005 Environmental Sustainability Index*.

[17] World Bank, *Where is the Wealth of Nations*. Using the GS indicator, Pearce and Atkinson showed whether a country is on the path of sustainable development. J. Martinez-Alier criticized the effects of trade on sustainability that were omitted from Pearce and Atkinson's study. Gutes discussed the suitability of GS as a rule of thumb for SD. Refer to: David W. Pearce and Giles D. Atkinson, "Capital Theory and the Measurement of Sustainable Development: An Indicator of "Weak" Sustainability," *Ecological Economics*, Vol. 8, No. 2 (1993), pp. 103–8; J. Martinez-Alier, "The Environment as a Luxury Good or 'Too Poor to be Green'?" *Ecological Economics*, Vol. 13, No. 1 (1995), pp. 1–10; Maite Cabeza Gutes, "The Concept of Weak Sustainability," *Ecological Economics*, Vol. 17, No. 2 (1996), pp. 147–56.

[18] Nick Hanley, Jason F. Shogren and Ben White, *Environmental Economics in Theory and Practice* (New York: Oxford University Press, 1997).

[19] The assumptions are that technological progress is exogenous, and there is high substitutability between man-made capital and non-renewable resources.

as restrictive as those in SS models and so there is a less likelihood of impeding economic progress amidst the pursuit of SD. In the next section, we revisit the Solow-Hartwick sustainability model by removing the assumptions of constant population and technology and use the result as a basis for the Hybrid Sustainability Model (HSM).

Weak Sustainability

We suppose that an economy has the production function exhibiting a constant return to scale Cobb-Douglas technology as follows:

$$Y = K^{\alpha} R^{\beta} L^{1-\alpha-\beta} \tag{1}$$

where Y is output, K is renewable capital, L is labour, R is non-renewable natural resource and α and β are parameters that represent renewable capital and non-renewable natural resource share of the production respectively. Man-made capital is assumed to be more productive than non-renewable resources, such that $\alpha > \beta$.[20] In this model, population or labour and technology are assumed to be constant. Inputs are assumed to have unitary elasticities of substitution, though inputs with elasticities of substitution more than one suffice.[21] All factor inputs are well-behaved, such that $\frac{\partial Y}{\partial X} \equiv Y_X > 0$, $\frac{\partial^2 Y}{\partial X^2} \equiv Y_{XX} < 0$ and $X \in (K, R, L)$ where $\frac{\partial Y}{\partial X}$ represents a partial derivative of X with respect to Y and $\frac{\partial^2 Y}{\partial X^2}$ represents the second order derivative. We assume that the variables in this economy exhibits quasi-arithmetic growth throughout the time period examined such that,

$$Z(t) = Z(0)(1 + \mu t)^{g_Z} \tag{2}$$

where $Z = (Y, C, L, K, R)$. $Z(t)$ refers to the amount or stock of the variable at time t and C is the total consumption in the economy. $\mu > 0$ is a parameter that is identical for all variables. g_Z indicates whether the variable is increasing or decreasing, where a positive g_Z shows that the population is

---

See Robert Solow, "Technical Change and the Aggregate Production Function," *Review of Economics and Statistics*, Vol. 39, No. 4 (1957), pp. 312–20; Geir Asheim, Wolfgang Buchholz and Cees Withagen, "The Hartwick Rule: Myths and Facts," *Environmental and Resource Economics*, Vol. 25, No. 2 (2003), pp. 129–50.

[20] Robert Solow provided a detailed proof for this assumption. See Solow, "Intergenerational Equity and Exhaustible Resources."

[21] Avinash Dixit, Peter Hammond and Michael Hoel, "On Hartwick's Rule for Regular Maximin Paths of Capital Accumulation and Resource Depletion," *Review of Economic Studies*, Vol. 47, No. 3 (1980), pp. 551–6.

growing and vice versa for a negative g_Z. Another interpretation is that g_Z is the maximum potential growth rate population z can obtained at that period and μ indicates the limits of the economy.

Equation (2) is described as quasi-arithmetic. If $g_Z = 1$, then the function behaves like a linear function. Lastly, the rate of change for any variable is obtained when we take the natural log from both sides of equation (2) and differentiate both sides with respect to time:

$$\frac{\dot{Z}(t)}{Z(t)} = \frac{g_Z \mu}{(1+ut)} \tag{3}$$

When we solve for the per capita growth rate (g_y) with some mathematical manipulation, it becomes $\left(g_y = \frac{(s_n - \sigma)(1+\mu t)}{x\mu} \right)$ and the right hand side expression is further simplified and we have:[22]

$$g_y = \frac{s_n}{\sigma} - 1 \tag{4}$$

where s_n is the net proportion of savings that is invested in capital after we account for the growth in population and σ is a parameter (i.e. $\sigma = \left[\frac{(1-\alpha-\beta)s_n + \alpha\beta}{1-\beta} \right]$). The per capita output and per capita consumption functions are hence given by,

$$y(t) = y(0)(1+\mu t)^{\frac{s_n}{\sigma}-1} \tag{5}$$

$$c(t) = (1-s)c(0)(1+\mu t)^{\frac{s_n}{\sigma}-1} \tag{6}$$

Total consumption is the proportion of output that is not saved and a general investment rule for per capita output in the face of population growth is derived as follows. If we take the time derivative of equation (5), then we obtain $\dot{y}(t) = y(0)\left(\frac{s_n}{\sigma} - 1\right)\mu(1+\mu)^{\left(\frac{s_n}{\sigma}-2\right)}$. Since $y(0), \mu, t, s_n$, and σ are positive, the only way for a constant per capita output, $(\dot{y}(t) = 0)$, is when $\left(\frac{s_n}{\sigma} = 1\right)$, which implies $(s_n = \sigma)$.[23] Substitute $\left(s = s_n + n\frac{K}{Y} \right)$ and arrange the gross savings rate, s, to the left hand side,

$$s = n\frac{K}{Y} + \beta \tag{7}$$

---

[22] See Appendix A, Proof (2), for derivation of equation (4).

[23] If $(s_n = \sigma)$, then s_n becomes β.

We leave equation (7) as it is now and undertake further simplification later when we consider technological progress.

Suppose now that the economy has quasi-arithmetic technological progress but has a constant population (i.e. $\frac{\dot{L}}{L} = 0$). The production function is written as follows:

$$Y = AK^{\alpha}R^{\beta}L^{1-\alpha-\beta} \qquad (1')$$

where A represents the level of technology in the economy and the other specifications are the same as in the earlier part of this section. Note that the gross and net savings rates are the same when there is no growth in population. But we define savings as s_n because s_n is the amount of gross savings left when we have accounted for the increase in population. Hence, the savings in an economy with constant population is related closer to s_n rather than s by definition, even though both are mathematically identical. Also, since population is constant in this model, there is no distinction between the growth rates of Y, K, R, etc. in per capita and gross term.

Following the same steps in the earlier part of this section, we start off with the rate of change of output by taking the natural log of equation (1′) and differentiating with respect to time,

$$\frac{\dot{Y}}{Y} = g_A \frac{\mu}{1+\mu t} + \alpha\frac{\dot{K}}{K} + \beta\frac{\dot{R}}{R} \qquad (8)$$

Before we proceed with the derivation of the growth rate of the capital-output ratio, $\dot{k}$, it is important to note that the term $\left(\frac{\mu}{1+\mu t}\right)$ in equation (8) is identical to the growth rate of capital-output ratio, $\left(\frac{\dot{K}}{K} - \frac{\dot{Y}}{Y}\right)$.[24] This insight is useful as it helps to express $\dot{k}$ in more familiar notations. Hence, by eliminating $\frac{\dot{R}}{R}$ and rearranging equation (8), we have the output and consumption per capita as follows:

$$y(t) = y(0)(1+\mu t)^{\frac{s_n}{\sigma}-1} \qquad (5')$$

$$c(t) = (1-s)c(0)(1+\mu t)^{\frac{s_n}{\sigma}-1} \qquad (6')$$

[24] See Appendix A, Proof (3) for a derivation on the growth rate of the capital-output ratio.

We can infer from equation (5′) that to have a constant per capita output, the rate of savings, s, must be equal to the constant term, σ ($\sigma = \left[\frac{(1-\alpha-\beta)s_n + \alpha\beta}{1-\beta+g_A}\right]$) i.e. $\left(s_n = \frac{(1-\alpha-\beta)s_n + \alpha\beta}{1-\beta+g_A}\right)$. We obtain the investment rule by arranging the rate of savings, s_n, to the left hand side,

$$s_n = \frac{\alpha\beta}{g_A + \alpha} \tag{9}$$

This is the investment rule to maintain a constant output per capita with technological progress and constant population. We combine the investment rule in equation (7) and (9) to obtain a new rule that applies to economies that experience change in both their technology and population. The new investment rule is obtained when we substitute $\left(s_n = s - n\frac{K}{Y}\right)$ into equation (9).

$$s = \frac{\alpha\beta}{g_A + \alpha} + n\frac{K}{Y} \tag{10}$$

Equation (10) is not yet a closed-form solution since output, Y, remains in the equation. To remove Y, multiply both sides of equation (10) by Y and $\frac{R}{R}$, and we have

$$sY = \left(\frac{\alpha}{g_A + \alpha}\right)\frac{\beta Y}{R}R + nK \tag{11}$$

Since $\left(\frac{\beta Y}{R}\right)$ are the Hotelling rents for a unit of non-renewable resource, equation (11) can be expressed in terms of the total Hotelling rents received so as to compare better with the Hartwick Rule.[25] We have the investment rule for the HSM,

$$sY = \left(\frac{\alpha}{g_A + \alpha}\right)(Y_R - a)R + nK \tag{11′}$$

The Way Forward towards Weakly Sustainable Development

The Hartwick Rule is a particular case, where there is no technological progress and a constant population. Hence, the result of "invest all rents from natural capital into renewable capital" is only sufficient in illustrat-

[25] Hotelling rents are net or scarcity rent and expressed as $(Y_R - a)$, and the original Hotelling Rule uses the unobservable utility discount rate instead of interest rate. See Harold Hotelling, "*The Journal of Political Economy*, Vol. 39, No. 2 (1931), pp. 137-175.

ing the usefulness of the Hartwick Rule in this type of economy. A more general version of the Hartwick Rule is derived in section three in which an economy with increasing population is considered and an economy with technological progress is also considered. It represents a new investment rule for an economy with both technological progress and population change. This new investment rule is tested to support a few propositions specifying conditions for investment rules that secure weak sustainability.

We now consider whether the required investment to keep per capita output constant is greater or lesser than the entire Hotelling rents under different permutations of technological and population growth rates. We present a few propositions to achieve a sustainable development.

Proposition (1): *If an economy has positive population growth rate and a constant level of technology,* $(n > 0, g_A = 0)$, *then the amount of investment in man-made capital needed to maintain per capita output at the current period level is more than the total Hotelling rents.*

Proof: Using equation (11′), in the situation of positive population growth rate and constant level of technology. The required investment is $[sY = (Y_R - a)R + nK]$ and this amount is clearly larger than the total Hotelling rents by nK. (QED)

This result is not surprising; as the required investment must first increase as replacement investments are needed to make up for the increased population. Second, as the level of technology remains constant, there are no efficiency gains in production. In all, the amount of required investment must increase. The result of proposition (1) can also be generalized to the stricter conditions of positive population growth rate and decreasing level of technology.

Proposition (2a): *If an economy has constant population and positive technological progress,* $(n = 0, g_A > 0)$, *then the amount of investment in man-made capital needed to maintain per capita output at the current period level is less than the Hotelling rents.*

Proof: Using equation (11′), in the situation of constant population and positive technological progress, the required investment is

$\left[sY = \left(\frac{\alpha}{g_A + \alpha}\right)(Y_R - a)R\right]$. Since $\left(\frac{\alpha}{g_A + \alpha}\right)$ is smaller than unity, the required investment to keep per capita output constant is less than the entire Hotelling rents. (QED)

Proposition (2b): *If an economy has constant population and negative technological progress,* $(n = 0, g_A < 0)$, *such that* $(|g_A| < \alpha)$, *then the amount of investment in man-made capital needed to maintain per capita output at the current period level is more than the Hotelling rents.*

Proof: Using equation (11′), in the situation of constant population and negative technological progress, the required investment is $\left[sY = \left(\frac{\alpha}{g_A + \alpha}\right)(Y_R - a)R\right]$, but with the condition, $(|g_A| < \alpha)$, the required investment to keep per capita output constant is clearly less than the entire Hotelling rents. (QED)

With a constant population, there is no need to undertake replacement investment in man-made capital. Hence, the key remains in technological progress in Proposition (2a), positive technological progress results in more efficient use of inputs and hence requires less required investment and vice versa in Proposition (2b).

Proposition (3a): *If a economy has positive population growth and technological progress,* $(n, g_A > 0)$ *such that* $\left[nK \le \left(\frac{g_A}{g_A + \alpha}\right)(Y_R - a)R\right]$, *then the amount of investment in man-made capital needed to maintain per capita output at the current period level is never more than the entire Hotelling rents.*

Proof: Using equation (11′), in the situation of positive population growth and technological progress, the required investment is $\left[sY = nK + \left(\frac{\alpha}{g_A + \alpha}\right)(Y_R - a)R\right]$, but with the condition $\left[nK \le \left(\frac{g_A}{g_A + \alpha}\right)(Y_R - a)R\right]$, the required investment to keep per capita output constant is never more than the entire Hotelling rents. (QED)

Proposition (3b): *If a country has positive population growth and technological progress,* $(n, g_A > 0)$ *such that* $\left[nK > \left(\frac{g_A}{g_A + \alpha}\right)(Y_R - a)R\right]$, *then the amount of in-*

vestment in man-made capital needed to maintain per capita output at the current period level is more than the entire Hotelling rents.

Proof: Using equation (11′), in the situation of positive population growth and technological progress, the required investment is $\left[sY = nK + \left(\frac{\alpha}{g_A + \alpha}\right)(Y_R - a)R\right]$, but with the condition $\left[nK > \left(\frac{g_A}{g_A + \alpha}\right)(Y_R - a)R\right]$, the required investment to keep per capita output constant is more than the entire Hotelling rents. (QED)

The condition, $\left[nK > \left(\frac{g_A}{g_A + \alpha}\right)(Y_R - a)R\right]$ in Proposition (3b) implies that the required investment is more likely to be greater than the Hotelling rents when the amount of man-made capital is larger than the Hotelling rent and when technological progress is slow. This study examines if Proposition (3b) still holds for a plausible amount of man-made capital and level of technological progress.

In a nutshell, the amount of required investment varies according to the population and technological growth rates. A higher population growth rate increases the amount of required investment while faster technological progress decreases the amount of required investment. The HSM investment rule is more general than the Hartwick Rule and hence can be applied to more countries. This rule is also different from the ones derived in Asheim et al.[26] This is because the cases of population growth and technological progress are considered separately and not together.[27]

Different permutations of technological progress and population growth rate are considered here. A numerical simulation is conducted to assert the empirical viability of Proposition (3b). Before we carry on with the simulation, some estimations and assumptions about the variables are needed. The capital share of output, α is taken to be 0.33, as estimated by Baier et

---

[26] Geir Asheim, Wolfgang Buchholz, John M. Hartwick, Tapan Mitra and Cees Withagen, "Constant Saving Rates and Quasi-Arithmetic Population Growth Under Exhaustible Resources Constraints," *CESIFO* Working Paper No. 1573 (2005).

[27] The case of negative population growth has not been discussed so far as this case does not provide us with any insight with regards to savings behaviour since resource constraint is not an issue here. See Ibid.

al. (2002).[28] The rate of technological progress is defined as Total Factor Productivity (TFP), also known as "Solow Residual."[29] TFP measures the per capita growth in output that is not attributed to the growth of other inputs, such as labour or capital.[30] But the maximum potential technological progress rate, g_A, is used in equation (11′) rather than the TFP, $\left(\frac{g_A \mu}{1+\mu t}\right)$. Since g_A is not readily available, TFP is used to estimate for g_A. The growth rate of population, n, is defined as the instantaneous growth rate or known as the intrinsic growth rate,

$$N_{1990} = N_{1900} e^{nt} \tag{12}$$

where N_{1990} and N_{1900} represent the population in year 1990 and 1900 respectively, while e is the base of natural logarithm and t is the time period. The Hotelling rents represent the price of non-renewable resources multiplied by the units of non-renewable resources used rather than extracted. This is because countries such as Singapore and Japan import almost of all their non-renewable resources and net importer countries need to invest more in man-made capital so as to make up for the terms of trade effect in the future.[31]

With all the terms defined, a numerical simulation of the HSM investment rule is presented in Table 1.

Technological progress takes on a high, medium or low value. The population growth rate is taken to be the world population growth rate, which is 0.011 or 1.1 per cent.[32] Man-made capital is deliberately chosen to be larger than the Hotelling rents as this provides a stricter case for the required investment to be smaller than the Hotelling rents.

---

[28] Scott L. Baier, Gerald P. Dwyer Jr. and Robert Tamura, "How Important are Capital and Total Factor Productivity for Economic Growth?" *FRB Atlanta Working Paper*, No. 2002–2a (2002).

[29] Solow, "Technical Change and the Aggregate Production Function."

[30] Robert Barro and Xavier Sala-I-Martin's book has a detailed treatment on the derivation of TFP using Solow growth frameworks. See Robert Barro and Xavier Sala-I-Martin, *Economic Growth*, 2nd ed. (Cambridge: MIT Press, 2003).

[31] Geir Asheim, "Hartwick's Rule in Open Economies," *Canadian Journal of Economics*, Vol. 19, No. 3 (1986), pp. 395–402; John Hartwick, "Constant Consumption Paths in Open Economies with Exhaustible Resources," *Review of International Economics*, Vol. 3, No. 3 (1995), pp. 275–83.

[32] U.S. Census Bureau, International Programs Center (IPC).

Table 1. Numerical Simulation of Required Investment

No.	(a) α	(b) Technological progress, g_A	(c) Population growth rate, n	(d) Man-made capital, K	(e) Hotelling rents, $(Y_R - a)R$	(f) sY
(1)	0.33	0.05 (high)	0.011	50,000	30,000	26602.63
(2)	0.33	0.03(medium)	0.011	50,000	30,000	28050.00
(3)	0.33	0.01 (low)	0.011	50,000	30,000	29667.64
(4)	0.33	0.007	0.03	31,795	46,667	46,651.5

Row (4) data indicates Dubai's data in million Dhs for year 2003. Row (4), column (a) is obtained from (Baier, *et al*., 2002). Row (4), columns (b) and (c) is obtained from (Rettab and Kwaak, 2005). Row (4), columns (d) and (e) are obtained and/or computed from Dubai Statistical Yearbook (2004).[33]

Technological progress takes on a high, medium or low value. The population growth rate is taken to be the world population growth rate, which is 0.011 or 1.1 per cent.[34] Man-made capital is deliberately chosen to be larger than the Hotelling rents as this provides a stricter case for the required investment to be smaller than the Hotelling rents.

In rows (1), (2), and (3) of Table 1, the amount of required investment is less than the Hotelling rents but the difference becomes smaller as the rate of technological progress slows down. This shows that required investment is generally less than the entire Hotelling rents for plausible levels of technological progress and man-made capital. Therefore, while Proposition (3b) is mathematically valid, it may not be applicable to real cases. To confirm this result, we calculate the required investment for a real-life economy with positive technological progress and population growth. Dubai is chosen because of the availability of data and because the princi-

[33] Baier et al., "How Important are Capital and Total Factor Productivity for Economic Growth?"; Belaid Rettab and Ton Kwaak, "The Structure of Economic Development in UAE: Benchmarking Dubai against the Other Emirates," DCCI; *Dubai Statistical Yearbook 2004*, Dubai Municipality (2005).

[34] U.S. Census Bureau, International Programs Center (IPC).

pality had experienced technological progress and high population growth. From row (4), the required investment for Dubai is 46.651.5 million Dhs, which is only negligibly less compared to its Hotelling rents of 46,667 million Dhs. This is due to Dubai's slow rate of technological progress and very high rate of population growth. Nonetheless, as Dubai ascends closer to the ranks of developed economies, its required investment is bound to decrease as its level of technology increases more rapidly and population growth slows down.

Using the five propositions and Table 1, all meaningful permutations of population growth rate and technological progress have been exhausted. The HSM investment rule has shown that in cases of positive population growth and technological progress, economies are generally "more" than weakly sustainable as they still have residual Hotelling rents left after ensuring for constant per capita output from the previous period. In the next section, this study explores how the usage of the residual Hotelling rents can lead to strong sustainability.

Digressions: Strong Sustainability

Unlike the Solow-Hartwick sustainability model, economies that follow the path suggested by the Hybrid Sustainability Model (HSM) may not need to invest all of their Hotelling rents into man-made capital to maintain a constant per capita output. In other words, weak sustainability (WS) is achievable by just investing part of the Hotelling rents. This section explores how we can reach a strong sustainability (SS) state by utilizing the residual Hotelling rents. It discusses the inadequacy of WS and defines SS in the context of the HSM, and shows the policy implications from the HSM.

Renewable natural resources are distinctly omitted from the production function of the Solow-Hartwick sustainability model. It is not because they are deemed unnecessary for production. Rather, it is because they are shown to be self-sustainable.[35] The function of renewable natural resources in the Solow-Hartwick model is mainly to provide ecological goods such as fisheries and lumber. These resources are self-sustainable

[35] John Hartwick and Nancy Olewiler, *The Economics of Natural Resource Use*, 2nd ed. (New York: Addison-Wesley, 1998).

because rents extracted from ecological goods can be maintained separately from the stock of renewable natural resources, and also the stock of capital goods used to harvest ecological goods, at a non-decreasing level. The HSM, on the contrary, argues that renewable natural resources provide not just ecological goods but services as well and this leads to market inefficiencies as users of ecological goods and services do not pay the full cost of their consumption. This is because most ecological goods and services fall into the categories of common resources and pure public goods respectively.[36] A common resource has the property of being non-excludable and rivalry in consumption, which means that it is not possible to exclude anyone from consuming, and consumption increases the scarcity of the ecological goods. Pure public goods have the characteristics of being non-excludable and non-rivalry in consumption.[37] This means that not only can we not exclude anyone from consuming, one's consumption also does not increase the scarcity of the ecological goods. The undervaluation of ecological goods and services is discussed in the next part.

Ecological goods are defined as seafood, crops, lumber, bio-fuels, etc. They exist naturally, can be harvested from renewable natural resources for consumption or production, and are given monetary value in the marketplace.[38] Ecological goods such as fisheries are common resources because it is difficult to exclude fishermen from fishing in open-access oceans, but their catch will directly affect the catch of others. Common resources typically have the "Tragedy of the Commons" problem, where the resource ends up being overused and depleted as each individual cares only about

---

[36] John Loomis, Paula Kent, Liz Strange, Kurt Fausch and Alan Covich, "Measuring the Total Economic Value of Restoring Ecosystem Services in an Impaired River Basin: Results from a Contingent Valuation Survey," *Ecological Economics*, Vol. 33, No. 1 (2000), pp. 103–17.

[37] Richard Cornes, *The Theory of Externalities, Public Goods, Club Goods*, 2nd ed. (Cambridge, UK: Cambridge University Press 1996).

[38] Norman Christensen, Ann Bartuska, James Brown, Stephen Carpenter, Carla D'Antonio, Robert Francis, Jerry Franklin, James MacMahon, Reed Noss, David Parsons, Charles Peterson, Monica Turner and Robert Woodmansee, "The Report of Ecological Society of America Committee on the Scientific Basis for Ecosystem Management," *Ecological Applications*, Vol. 6, No. 3 (1996), pp. 665–91.

his or her consumption and does not realize the negative externalities their consumption have on others.[39]

Ecological services are defined as processes that fulfil and sustain life made up by either natural ecosystems or living things.[40] These processes are mostly naturally occurring phenomena. Some examples of ecological services are the purification of air and water, the renewal of topsoil, flood and climate control. An example that shows the link between the processes and services is rainfall. The processes are condensation, transpiration and evaporation. The services gained are refilling of groundwater, removal of dust from the atmosphere, moderation of climate and aesthetic appreciation of the rainbow. The natural resources that facilitate these processes are forests and soil. Ecological services are mostly undervalued simply because markets do not exist for them due to their non-excludable and non-rivalry characteristics.[41] The implication of not having a market is that allocation of ecological services is inefficient and hence used in an unsustainable manner. For example, a fish caught from the ocean provides US$10.00 worth of nutrients. In addition, the fish may also provide US$2.00 worth of recreational value and US$1.00 worth of water purification service. But the market in which the fish is traded only recognizes the US$10.00 worth of nutrients and the other US$3.00 worth of ecological services is lost. Therefore the money economy almost always underpays the full value of the ecological goods and services.[42]

Due to the market's failure to recognize or assign a suitable economic value to both ecological goods and services, they are often under-priced or over-consumed in the markets. This means that the natural renewable resources are not consumed in a sustainable manner, as opposed to what is

---

[39] Garrett Hardin, "The Tragedy of the Commons," *Science*, Vol. 162, No. 3859 (1968), pp. 1243–8.

[40] Gretchen Daily, *Nature's Services* (Washington, D.C.: Island Press, 1997).

[41] Partha Dasgupta, Simon Levin and Jane Lubchenco, "Economic Pathways to Ecological Sustainability," *BioScience*, Vol. 50, No. 4 (2000), pp. 339–45.

[42] Robert Costanza, Ralph d'Arge, Rudolf de Groot, Stephen Farber, Monica Grasso, Bruce Hannon, Karin Limburg, Shahid Naeem, Robert V. O'Neill, Jose Paruelo, Robert G. Raskin, Paul Sutton and Marjan van den Belt, "The Value of the World's Ecosystem Services and Natural Capital," *Ecological Economics*, Vol. 25, Issue 1 (1997), pp. 3–15.

suggested in the Hartwick-Solow sustainability model. Consequently, WS is a necessary but insufficient condition for an economy to be sustainable.

WS alone cannot ensure for sustainable development (SD) due to markets' undervaluation of ecological goods and services. Hence SS approaches are needed in the pursuit of SD. Among the various models of SS, the HSM adopts the Safe Minimum Standards (SMS) approach as its SS definition.[43] However, unlike the original SMS model, the HSM does not seek to maintain all stocks of natural resources at the SMS level. This is because non-renewable resources are assumed to be substitutable by man-made capital, and hence the HSM focuses on only maintaining the stock of renewable natural resources towards the SMS level. By maintaining and/or conserving renewable natural resources at the SMS level, the HSM ensures that the next generation can enjoy the same ecological goods and services that the current generation are enjoying. In notational form we have the time derivative of the stock of renewable natural resources as follows,

$$\dot{S}_{Rr} = g(S_{Rr}, I_{Rr}) - R_{Rr} - P(K) \qquad (13)$$

$$\text{s.t. } S_{Rr} \geq \overline{S}_{Rr}$$

where S_{Rr} is the stock of renewable natural resources, $g(S_{Rr}, I_{Rr})$ is the growth rate of this stock, I_{Rr} is the remaining Hotelling rents, R_{Rr} is the amount of renewable resources harvested and P is the amount of pollution. Pollution is written as an increasing non-linear function of man-made capital K. This is to capture the fact that pollution is an inevitable by-

[43] For more discussions on the SMS, see Robert C. Bishop, "Economic Efficiency, Sustainability, and Biodiversity," *Ambio*, Vol. 22, No. 2–3 (1993), pp. 69–73; Robert C. Bishop, "Endangered Species and Uncertainty: The Economics of a Safe Minimum Standard," *American Journal of Agricultural Economics*, Vol. 60, No. 1 (1978), pp. 10–18; Siegfried V. Ciriacy-Wantrup, *Resource Conservation, Economics, and Policies* (Berkeley: University of California Press, 1952); Ger A. J. Klassen and Johannes B. Opschoor, "Economics of Sustainability or the Sustainability of Economics: Different Paradigms," *Ecological Economics*, Vol. 4, No. 2 (1991), pp. 93–115; David W. Pearce and R. Kerry Turner, *Economics of Natural Resources and the Environment* (Baltimore: John Hopkins University Press, 1990). For operational principles, see Herman Daly, "Toward Some Operational Principles of Sustainable Development," *Ecological Economics*, Vol. 2, No. 1 (1990), pp. 1–6.

product of economic activities.[44] The stock of renewable natural resources is assumed to be depleted only through human activities such as harvesting and pollution, and natural occurrences such as volcanic eruptions.[45] But the latter is of little concern since we virtually cannot avoid natural disasters and effects of natural disasters are exacerbated by human activities such as pollution or urban development. Hence it is more accurate to consider the effects of natural disasters under pollution.[46] The growth rate of renewable natural resources, $g(S_{Rr}, I_{Rr})$, is an increasing function of its existing stock and investment, and it follows a logistical growth path so that its growth rate is dependant on the size of its stock. If the existing stock is depleted or polluted such that it goes below the SMS level of $\bar{S}_{Rr}$, the stock of resources will fail to renew itself.[47] Therefore, to ensure SS in the HSM, the residual Hotelling rents must be invested in a way to ensure that the stock of renewable natural resources remains above $\bar{S}_{Rr}$.

Having defined the WS and SS conditions in the HSM, some possible policies that can lead the economy closer towards achieving WS and SS are suggested in this section. The policy implications are suggested in terms of technological progress, population growth and management of Hotelling rents. Technological progress must be encouraged because the amount of required investment falls if the pace of technological progress hastens, as seen in Table 1. Technological progress generally refers to the level of technology, presence of strong institutions and regulatory environment.[48] Hence, the government can increase R&D spending, pass laws and poli-

---

[44] Sjak Smulders and Raymond Gradus, "Pollution Abatement and Long-term Growth," *European Journal of Political Economy*, Vol. 12, No. 3 (1996), pp. 505–32.

[45] Although animals can also degrade the environment as in the case of reindeers on St. Matthew Island, the cause is ultimately human-induced as non-native species were introduced. George Tyler Miller, *Living in the Environment: Principles, Connections, and Solutions*, 14th ed. (Pacific Grove, CA: Thomson Brooks/Cole, 2005).

[46] Risa I. Palm, *Natural Hazards: An Integrative Framework for Research and Planning* (Baltimore: Johns Hopkins University Press, 1990).

[47] Ciriacy-Wantrup, *Resource Conservation, Economics, and Policies*; Mark L. Shaffer, "Minimum Population Sizes for Species Conservation," *BioScience*, Vol. 31, No. 2 (1981), pp. 131–4.

[48] Baier, et al., "How Important are Capital and Total Factor Productivity for Economic Growth?"

cies to open up the economy, among other means to encourage technological progress.

It is more difficult to determine how the population growth rate, n, should behave in order to aid the economy onto a sustainable path. Mathematically, the HSM investment rule suggests that a lower population growth rate reduces the amount of required investment. But this is not to suggest that a negative population growth is desirable as a decrease in population means a decrease in total output even though per capita output could be maintained at the level of the previous period. Furthermore, a long-term decrease in population exerts a strain on other inputs in the production function. So, as a general rule, n should be discouraged if the required investment is larger than or equal to the Hotelling rents and encouraged if n is negative, even if required investment is smaller than the Hotelling rents.

The management of investing the Hotelling rents in man-made capital has been discussed in other literatures such as Howarth (1997) and Asheim et al. (2003).[49] Regarding the management of residual Hotelling rents, this study proposes using global agencies such as the United Nations-initiated Global Environment Facility to carry out coordination in ensuring the stock of renewable natural resources. The task of the agency is to first identify the SMS level of renewable natural resources for different geographical areas so as to provide an objective standard for all countries to follow. The second task is to collect and redistribute Hotelling rents from net importers of renewable natural resources such as Singapore, Japan and Dubai. This is because their use of other nations' natural resources also has an impact on the global environment. Therefore these resource-importing countries must contribute to the restoration of natural renewable resources in the countries that they import these resources from. The third task then is to determine the existing stock of renewable natural resources and hence advocate on the allocation of the residual Hotelling rent.

There has been increasing interest and research on the importance of ecological goods and services. These interests stem from both public and private sectors that are to be discussed respectively. The Millennium Ecosystem Assessment (MEA) was launched by the United Nations in 2001 to

---

[49] Richard Howarth, "Sustainability as Opportunity," *Land Economics*, Vol. 73, No. 4 (1997), pp. 569–79; Asheim, et al., "The Hartwick Rule: Myths and Facts."

study the current state and human impact on global ecosystems (MEA website, 2006). (Ecosystems are roughly defined as stock of renewable natural resources in our context.) The main finding of the MEA is that ecosystems have been changed and degraded extensively by human usage and activities in the last 50 years. The startling conclusion of the MEA is that human actions is putting so much strain on the Earth's ecosystems such that there are doubts on whether future generations can enjoy the same ecological goods and services the current generation is enjoying. The MEA recommends significant changes in policies and institutions so as to enhance and/or conserve existing ecosystems. This provides evidence that the stock of renewable natural resources is indeed degraded by our decades of unsustained economic growth. Hence steps need to be taken to restore them to prevent economic disruptions.[50]

Costanza et al., in a seminal paper, estimate Earth's ecological goods and services to be worth about US$33 trillion.[51] Due to increasing recognition in the values of ecological services, more decisions involving management of natural resources include these benefits in the cost-benefit analyses. There is a scheme in Costa Rica where markets are created to pay the forest owners for the ecological services these forests provide.[52] Similar schemes are also taking place in New York, Quito in Ecuador and Cacau River in Colombia, among many others around the world.[53] A cost-benefit analysis has also been done for the restoration of Croatia's costal forest after much of it was destroyed in the war. Other than wood production and hunting, ecological services such as erosion control, recreational value, aesthetic value to tourists and microclimatic effects have also been

---

[50] Robert Costanza and Herman Daly, "Natural Capital and Sustainable Development," *Conservation Biology*, Vol. 6, No. 1 (1992), pp. 37–46.

[51] Costanza, et al., "The Value of the World's Ecosystem Services and Natural Capital."

[52] Kenneth Chomitz, Esteban Brenes, and Luis Constantino, "Financing Environmental Services: The Costa Rican Experience and its Implications," *Working Paper No. 20014* (Washington: World Bank, 1998).

[53] Sandra L. Postel and Barton H. Thompson Jr., "Watershed Protection: Capturing the Benefits of Nature's Water Supply Services," *Natural Resources Forum*, Vol. 29, No. 1 (2005), pp. 98–108.

considered benefits in the analysis.[54] There is increasing recognition of ecological services and their valuation is now closer to the true worth. However, it is still too early to declare that markets are able to allocate full true valuation to these ecological services.[55]

In sum, the HSM uses the Solow-Hartwick model and the SMS approach to derive the two WS and SS conditions. First, to fulfil the WS condition, economies should invest Hotelling rents in man-made capital according to the HSM investment rule. Second, to fulfil the SS condition, the residual Hotelling rents should be used to maintain the stock of renewable natural resources towards the SMS level.

To further assert the viability of the HSM, future research in this issue should expand to include providing an operational definition of the SMS, and empirically assess the effectiveness or adequacy of investing the residual Hotelling rents in renewable natural resources. This adequacy is not simply measured by calculating the difference in the true and market valuation of ecological goods and services. Rather, it should be measured by the amount needed to invest in renewable natural resources that provide for these ecological goods and services.

Conclusion

When the Solow-Hartwick Rule is extended to include technological and population change, the resulting rule ensures that weak sustainability is achievable using less than the total Hotelling rents. Applying this modified measure of "weak sustainability," there are seemingly conflicting interrelations between energy use and climate change in a sustainability framework by four broadly defined perspectives. First, reducing energy use can go against sustainable development as the measure reduces output at least for short term. Second, a cap-and-trade scheme or tax can also decrease output and go against sustainable development. Third, reduced carbon emissions can decrease the magnitude of possible damage, which

---

[54] S. Pagiola, "Republic of Croatia Coastal Forest Reconstruction and Protection Project," Report No. 15518-HR (Washington: World Bank, 1996).

[55] Howarth and Faber argue that a lack of scientific knowledge may obscure the benefits that one has gained from ecological goods and services in daily life. Richard Howarth and Stephen Farber, "Accounting for the Value of Ecosystem Services." *Ecological Economics*, Vol. 41, No. 3 (2002), pp. 421–29.

can be considered a positive outcome of using energy as an instrument for securing sustainable development. Fourth, strict carbon regulations can induce technological progress and are believed to bring double dividend in the long term if not in the short term. Aside form costs needed to develop and commercialize such technologies, this path can be considered sustainable.

The Hybrid Sustainability Model (HSM) is introduced in this study and it incorporates both weak sustainability (WS) and strong sustainability (SS) approaches in a single model so as to provide a less contentious path for Sustainable Development (SD). The HSM could resolve the confusion surrounding the path towards SD due to the differing assumptions of WS and SS. The HSM first uses the WS approach by extending the Solow-Hartwick model to include population and technological changes. An investment rule for the HSM is derived as a result. The most interesting result of the HSM investment rule is that economies with positive population growth and technological progress are generally "more" than weakly sustainable. This tells us that most economies need not use all of their Hotelling rents to ensure WS.

Continuing from this result, the HSM suggests that the residual Hotelling rents must be invested in renewable natural resources towards the Safe Minimum Standards (SMS) level to achieve SS. The focus is on renewable natural resources because ecological goods and services are not used in a sustainable manner due to their nature of common resources and pure public goods characteristics. This is in direct contrast to the Solow-Hartwick model, where renewable natural resources are believed to be used in a sustainable manner. Hence, to make up for this undervaluation and at the same time achieve SS, the HSM suggests that the residual Hotelling rents be invested in renewable natural resources towards the SMS level. Together, when these two conditions of WS and SS are met, SD could be achievable.

To aid economies towards these two paths of WS and SS, some policy implications are discussed. First, technological progress should be promoted by allowing more people to access the markets and/or by having more research-friendly policies as rapid technological progress reduces the amount of required investment. Second, an international agency should be

set up to provide directions such as determining the SMS level of resources. This agency should also have the authority to redistribute Hotelling rent from net importers of natural resources such as Singapore and Japan to the countries that they import from. This serves to make up for the market undervaluation so that the exporters will have adequate amount to maintain their renewable natural resources towards the SMS level.

An insight from the HSM is that WS and SS are both individually necessary but insufficient conditions for SD. This follows that, while WS ensures a non-declining per capital output, no solutions are offered for the over-consumption of renewable natural resources. On the other hand, while SS ensures that renewable natural resources are not depleted beyond the SMS level, it does not ensure a constant per capita output nor does it suggest a source for the funds to maintain the stock of renewable natural resources. Hence, it is more likely that SD can be achieved when economies follow both paths of WS and SS, rather than exclusively down any individual path.

Appendix A: Mathematical Proofs

Proof (1)

To prove that $s_n = \frac{\dot{k}}{y}$. It is the same if we assume that $s_n = \frac{\dot{k}}{y}$ is true and use to derive the definition of net savings where, $s_n Y = sY - nK$

$$s_n = \frac{\dot{k}}{y}$$

$$s_n = \frac{1}{y}\frac{\partial\left(\frac{K}{L}\right)}{\partial t}$$

$$s_n = \frac{1}{y}\frac{\dot{K}L - K\dot{L}}{L^2}$$

$$s_n = \frac{L}{Y}\left(\frac{\dot{K}}{L} - \frac{K}{L}\frac{\dot{L}}{L}\right)$$

$$s_n = \frac{1}{Y}\left(\dot{K} - Kn\right)$$

$s_n Y = I - nK$ (proved)

Proof (2)

To show $\left(g_y = \frac{s_n}{\sigma} - 1\right)$. we originally have $\left(g_y = \frac{(s_n - \sigma)(1+\mu t)}{x\mu}\right)$ as an expression for the growth rate of per capita output. First we reproduce equation (14) and (16) respectively,

$$x(t) = x(0) + \sigma t \tag{14}$$

$$x(t) = x(0)(1+\mu t) \tag{16}$$

We equate the right-hand-side of both equations and we obtain $\left(x(0) = \frac{\sigma}{\mu}\right)$.

Second, we substitute $\left(x(0) = \frac{\sigma}{\mu}\right)$ into equation (16) and we obtain $\left[x(t) = \frac{\sigma}{\mu}(1+\mu t)\right]$. Lastly, this expression for $x(t)$ is substituted into $\left(g_y = \frac{(s_n - \sigma)(1+\mu t)}{x\mu}\right)$ and we get $\left(g_y = \frac{s_n}{\sigma} - 1\right)$. (proved)

Proof (3)

To show $\left[\left(\frac{\dot{K}}{K}-\frac{\dot{Y}}{Y}\right)=\left(\frac{\mu}{1+\mu t}\right)\right]$. First we define x as the capital-output ratio $\left(\frac{K}{Y}\right)$ and hence we can rewrite the rate of change of capital-output ratio as $\left(\frac{\dot{x}}{x}\right)$. Second, Using equation (13) and (14), the capital-output ratio is $\left(\frac{\dot{x}}{x}=\frac{\sigma}{x(0)+\sigma t}\right)$. Third, we substitute $\left(x(0)=\frac{\sigma}{\mu}\right)$ into $\left(\frac{\dot{x}}{x}=\frac{\sigma}{x(0)+\sigma t}\right)$ and we obtain $\left(\frac{\dot{x}}{x}=\frac{\mu}{1+\mu t}\right)$. (proved)

13. Assessing the Cebu Declaration on East Asian Security: Issues and Challenges in Regional Energy Cooperation

Renato Cruz De Castro*

Introduction

A product of the Cold War era in the 1950s, Security Studies focuses on the interests and preservation of the state, its people, armed services and, potentially, the threat or enemies. This area of study presupposes that a state enjoys security when it does not have to sacrifice its legitimate interests to avoid war and is able, if challenged, to preserve and advance them by war or the use of force. High politics and strategic matters dominate this budding academic discipline. It is primarily concerned with the issues of war and peace, nuclear deterrence and crisis management, summit diplomacy, arms control, and alliance politics. Conventionally, Security Studies ignores the topics or subjects of low politics such as the environment, the management of scarce resources, control of population growth and global epidemics.

The end of the Cold War in the 1990s, however, generated an intellectual movement calling for a broader concept of security. In the post-Cold War era, the threat of nuclear holocaust had all but disappeared and this allowed previously marginal security issues to emerge from the shadow of superpower rivalry and competition and make their mark on the international political agenda. The United Nations took an active role in extending the definition of security in the 1990s by focusing the attention of the international community on the issue of human security. It argued that the concept of security must change – from the exclusive domain of national

* Renato Cruz De Castro is Associate Professor at the International Studies Department, De La Salle University, Manila, the Philippines. He is currently the U.S. State Department ASEAN Research Fellow based at the Political Science Department, Arizona State University, Tempe, Arizona, United States of America.

security to a much greater emphasis on people's security, from security through armaments to security through human development, and from territorial security to food, employment and environmental security.[1]

Consequently, in the 1990s, political analysts, scholars and policymakers started popularizing the idea that non-military issues could be securitized and privileged with a national security status accorded to the issues relative to war and peace. Thus, poverty, armaments, managing scarce resources and environmental degradation were made the interlocking sectors for the new conception and policy formulation of international security.[2] Starting in the 1990s, the distinction between high- and low-politics issues has begun to blur as many scholars and analysts contended that non-strategic/military issues should be placed at the top of national security agendas and inquiry. Phrases such as environmental security, human security, societal security and energy security have emerged as new lexicons in security studies and have become buzzwords for the changing dialogue in this discipline. Securitizing these issues, however, has become extremely arbitrary and thus does not necessarily tally with the realities of these threats which are not commonly articulated in a state's priorities. Furthermore, these new terms still remain undeveloped in the academic discourse of security studies and in the real world of policy-making.

As a case in point, where energy security is concerned, there is still an ongoing debate on how this concept can be operationalized in policy terms. Conceptually, energy security begins and ends with the focus on maintaining energy supplies –particularly associated with oil, a fossil fuel.[3] A state enjoys energy security to the degree that fuel and energy services are available to ensure three vital objectives.[4] These are: (1) the survival of the nation; (2) the protection of national welfare; and (3) the minimization of risk associated with supply and use of fuel and energy services. In policy terms, however, there is still an ongoing debate on how national policy

---

[1] Peter Hough, *Understanding Global Security* (London and New York: Routledge, 2004), p. 13.
[2] Bill McSweeney, *Security, Identity and Interests: A Sociology of International Relations* (Cambridge, UK: Cambridge University Press, 1999), p. 51.
[3] Peter Hayes and David Von Hippel, "Energy Security in Northeast Asia," *Global* Asia, Vol. 1, No.1 (September 2006), p. 91.
[4] Ibid., p. 96.

should be formulated and implemented to achieve these three objectives of energy security. The first perspective argues that energy security means ensuring unhampered access to the world's limited oil supply and reserves. It assumes that oil will remain abundant and cheap for the foreseeable future, and security concerns should be directed to the geo-strategic reality that these oil supplies and reserves are largely controlled by a few major oil-producing states. The second view, on the contrary, argues that there is already fossil fuel scarcity at the macro-level and there will be major security problems from the tightening supply of oil. Accordingly, the current security issue is beyond ensuring access to the dwindling oil reserves. It is about developing workable technologies necessary to enable the gradual transition from reliance on fossil fuel to renewable alternative sources in generating energy. The key challenge, when it comes to energy security, is to create the socio-technological basis for a global economy that operates not on fossil fuels but on alternative and renewable energy sources.

The 2007 Cebu Declaration on East Asian Energy Security is an attempt to address this major security challenge of the twenty-first century on the basis of the second perspective. One of the key documents signed by member-states of the Association of Southeast Asian Nations (ASEAN) and the regional organization's six dialogue partners during the Second East Asian Summit (EAS), the declaration calls for an international collaboration to reduce dependence on conventional fuels through intensified energy efficiency and conservation programmes and, more importantly, through the development and wide and extensive use of renewable sources of energy. The document underscores the fact that the search for alternative fuel sources has been prompted by an awareness of the diminishing supply of fossil fuels, the unstable global prices of oil and the worsening problems of the environment. The declaration succinctly espouses the use of bio-fuels as an alternative to fossil fuels. It also urges member-states to boost freer trade on biofuels and encourage investments in energy infrastructure to lessen dependence on conventional fuels. Most of the sixteen countries that signed the declaration rely on imported fossil fuels. Only Indonesia and Malaysia are traditional oil-exporting countries but the latter has become a net-importing country after its production decelerated because of the lack of new investment in the petroleum industry.

Through merely a declaration without any legal and binding provisions, the Cebu Declaration on East Asian Energy Security reflects the aspiration of the signatories to explore alternative energy technologies as a means to ensure their energy security.

The crucial question now is whether this two-page document can indeed mobilize the 16 EAS member-states to explore and develop renewable alternatives to fossil fuel. There is a need to examine the political feasibility and practicality of the goals set by the Cebu Declaration on East Asian Energy Security. In determining the viability and achievability of declaration's long-term objectives, three factors should be considered: (1) the nature of expedient situation (whether it is a strategic or a functional problem); (2) the support of a big power or powers (the presence and support of a cooperative hegemon); and (3) how the countries involved will balance their absolute gains vis-à-vis their relative gains. The chapter also provides a background on the Cebu Declaration by looking into the host country's motive in proposing bio-fuels as an alternative to fossil fuels, and its current strategy in propagating this schema to the other 15 member-states of the EAS.

An Energy Agenda for East Asia?

In 2006, the price of crude oil went up to a record high of US$70 per barrel. Despite the dramatic price increase, the global oil consumption has not gone down. The world uses roughly 29 billion barrels a year and this figure is estimated to go up by an average of 2 per cent a year. Asia accounts for about 50 per cent of this increase, and the region's demand in 2030 is expected to grow by about 200 per cent from its current level of consumption.[5] The high demand for energy and the increasing price of oil will definitely hamper the region's future economic growth. As the regional economy expands, each East Asian state is confronted with two major security challenges: (1) the need to have a secure source of energy; and (2) the containment of environmental degradation resulting from rapid economic growth fuelled by a carbon-based economy.

[5] "Towards Energy Efficiency in Asia," presented during the East Asian Summit, January 16, 2007, Cebu, the Philippines, p. 1.

Currently, East Asian states are competing with one another for new sources of oil in Africa, Central Asia and Russia while the major Asian powers are engaged in a tense rat race for securing their claims to explore oil and natural gas deposits in the East and South China Sea. Since the beginning of the twenty-first century, oil-starved China has been more than willing to negotiate its territorial claims over the South China Sea with other claimant states. Ironically, China has behaved belligerently in the East China Sea when it initially deployed its naval vessels in Japanese-claimed waters around the Senkaku Islands.[6] Producing almost 20 per cent of the world's natural gas, Russia and other oil-producing countries are adopting increasingly rigid postures and opting to assert their rights over their oil resources to generate more profits in the light of an expected increase in energy demand in the near future. China, Korea and Japan forwarded nearly 20 proposals to Russia for the transit of gas from Eastern Russia to Northeast Asia. All these proposals share in the high capital cost that is currently causing national competition and creating formidable technical and political barriers to the actual implementation of a trans-Euro-Asian energy pipeline.[7] Indeed, the prospect of the end of the oil age presents East Asia with a grim economic future, with potentially catastrophic geo-strategic consequences.

There are basically two ways by which the East Asian states can deal with this impending energy security crisis. One is to decrease their demand for oil via demand-side policy such as fuel conservation through rationing, increasing excise taxes on gasoline and other petroleum products, and upgrading fuel-economy efficiency.[8] Hopefully, these demand-side measures can counter the one-sided moves of supplier states to pump up prices, remove the sting from any possible confrontation for oil resources by East Asian states and prolong the dwindling oil reserve in the foreseeable future. The other approach is to explore the prospects of expanding the use

---

[6] See Peter A. Dutton, "International Law and November 2004 Han Incident," *Asian Security*, Vol. 2, No. 2 (June 2006), pp. 87–88.

[7] Hayes and Von Hippel, "Energy Security in Northeast Asia," pp. 98–99.

[8] For an interesting discussion on the mechanics and implications of these demand-side measures in addressing the energy crisis, see Robert Carbaugh and Charles Wassell, Jr., "Oil Debates: Reducing American Dependence on Oil," *Challenge*, Vol. 49, No. 6 (November 2006), pp. 55–77.

of nuclear energy and, alternatively, renewable energy sources.[9] In the 1970s, renewable energy technologies were seen as the best solution to the energy crunch. However, the interest and support for these alternatives were not sustained. In recent years, however, dramatic improvements in the performance and affordability of solar cells, wind turbines and bio-fuels – ethanol and other fuel alternatives derived from plants – have paved the way for mass commercialization.[10] Aside from their claims to be relatively benign to the environment, renewable energy sources promise to enhance energy consumption and security by reducing the reliance on fossil fuels. Moreover, with the fluctuating prices of petroleum products, renewable alternatives seem more economical and environmentally friendly.

The 15 January Cebu Declaration on East Asian Energy Security pursues the second approach. The declaration expresses EAS's long-term goal of reducing energy consumption in the region by promoting the use of renewable energy sources and energy-saving technologies. It contains the resolve of the 16 countries "to reduce dependence on conventional fuels" through the above-mentioned measures. It also affirms their commitment to work towards "freer trade on bio-fuels and a standard on bio-fuels used in engines and motor vehicles" and to engage in "collective efforts" to search for renewable energies, including "research and development of biofuels." Likewise, the declaration echoes that regional collaboration is essential to protect the environment, particularly in reducing greenhouse gases and promoting energy conservation for the sake of sustainable growth of the regional economy.

Devoid of any binding legal obligation, the Cebu Declaration on East Asian Energy Security is deemed as the first tentative step towards addressing mutual concerns on energy matters, and identifying possible areas of energy cooperation. These areas include: intensified energy efficiency and conservation programmes; bio-fuel production; and nuclear energy generation with stringent safeguards (for interested parties). The

---

[9] Nader Elhefnawy, "Toward a Long-Range Energy Policy," *Parameter*s, Vol. 36, No. 1 (Spring 2006), p. 101.

[10] Daniel M. Kammen, "The Rise of Renewable Energy," *Scientific American*, Vol. 295, No. 3 (September 2006), p. 85.

declaration also mentions the need to establish strategic oil stockpiles as a buffer to oil-price shocks and formulate concrete policies to mitigate greenhouse emissions. Interestingly, it appeals for active private sector participation in enhancing regional energy security as it exhorts member states to "pursue and encourage investment in energy resource and infrastructure development through greater private sector involvement."

The declaration's overall goal is to lessen the region's heavy dependence on fossil fuels as a key to sustaining economic growth. Nevertheless, it acknowledges that fossil fuels will continue to underpin East Asian economies and will be an enduring reality in the near future. Immediately, analysts and critics warn that the declaration on East Asian energy security is unlikely to take off. Accordingly, this is because Japan and China, the region's most major politico-economic powers, are competing for oil supply sources across the globe at a time when oil is emerging as a strategic leverage for oil-producing countries such as Russia and Venezuela.[11] The declaration's wordings on the mechanics of energy cooperation are vague. For example, the declaration alludes that the countries will "ensure availability of stable energy supply through investments in regional energy infrastructure" and will explore possible modes of strategic fuel stockpiling. However, it merely states that East Asian countries may adopt these measures but not urgently or immediately, considering the fact that some countries that signed the agreement have reservations about its practicality and given the volatile price of oil in the world market.[12]

Furthermore, while the declaration has drawn attention to biofuels as a viable alternative to fossil fuels, signing states do not consider the shift to this alternative energy source of utmost urgency because they still have to grapple with its "social acceptability."[13] In fact, it sets no specific spending

---

[11] Ishiguro Rie, "East Asian Nations Aim from Shift from Oil to Alternate Energy," *JIji Press English News Service*, January 15, 2007, p. 1, http://proquest.umi.com/pqdweb?index=17&did=1194487541&SrchMode=1&sid=1&Fmt (accessed April 30, 2008).

[12] Josefa L. Cagoco and Karen Flores-Garcia, "Energy Deal Caps week of High-Level Diplomacy," *Business World*, January 16, 2007, p. 1, http://proquest.umi.com/pdweb?index=9&did=11954102881&SrchMode=1&sid=4&Fmt= (accessed April 30, 2008).

[13] Ibid., p. 2.

targets for the development of alternative energy sources, including biofuels. Perhaps, funding for these projects appears to be the most fundamental and influential requirement for reducing East Asia's dependence on imported oil.[14] Despite the criticism against it, the declaration has one undeniable major accomplishment – calling the region's attention to the urgent need of ensuring energy security through the development of alternative energy technologies.

The Host Country's Agenda: Propagating Biodiesel

Before the viability of the declaration's visions can be assessed, it is important to know the host country's agenda in this declaration. The Philippines played a vital role in its formulation, drafting and eventual signing during the summit. The decision of ASEAN member-states and the regional organization's six dialogue partners to come up with a joint declaration is largely a result of the Philippines' interest and lobbying for the promotion of liquid biofuels. This is only logical since the country considers itself as the leading Southeast Asian country bent on advancing the large-scale use of their alternative.[15] Highly dependent on imported petroleum for 99 per cent of its energy needs, the Philippines looks optimistically into developing biodiesel from jathropa oil, which could be used commercially throughout Southeast Asia.

Commonly known as physic or purging nut, jathropa is a non-edible oil-yielding perennial shrub that has green leaves whose length and width measures from 6 cm to 15 cm; reaching a height of up to five metres, the plant grows in tropical and subtropical regions and is drought-resistant. Known locally as *tuba-tuba,* jathropa is used in the country as traditional medicine, a pesticide, ingredient in soap and candle-making, and as fuel oil for lighting and cooking. Jathropra has an oil content that varies from 30 per cent to 40 per cent in the seed, and 40 per cent to 58 per cent in the kernel with good quality seed plantation. It can easily be cultivated by

---

[14] Carlos H. Conde, "Asia Leaders Sign accord to Cut Dependence on Fossil Fuels," *International Herald Tribune,* January 16, 2007, p. 13, http://proquest.umi.com/pqdweb?index=12&did=1195177041&SrchMode=1&sid=1&Fmt (accessed April 30, 2008).

[15] Ronnel W. Domingo, "RP Leads Efforts to Take Alternative Energy," *Philippine Daily Inquirer,* January 16, 2007, p. 6.

seed and cutting. Jathropa also has a short gestation period and the plant can generate a high yield per hectare, depending on ample irrigation, the fertility of the soil, favourable climatic conditions and the right variety of seed. Furthermore, compared to the more expensive energy feedstock like sugar cane, soybeans and corn that are food crops that can also be used for the manufacture of ethanol, jathropa is cheaper since it has no other application except biodiesel production. As one corporate adviser notes: "Jathropa is attractive [feedstock] because it is non-edible oil compared to other oils, and therefore it does not compete with the food chain."[16]

The Philippines hopes to utilize this nut to produce oil similar to mineral diesel that can be used in many diesel engines, and can be mixed with mineral diesel in varying percentages. As a liquid with energy content comparable to petroleum, biodiesel retains the advantages of transportability and storability typical of the supplies and stocks of oil companies. Furthermore, as a form of bio-mass fuel, biodiesel has several advantages over fossil fuels.[17] First, it is an alternative fuel that can be developed as a substitute (or a supplement) for exhaustible fossil fuels. Second, biodiesel does not contribute to adverse climate change. Finally, this fuel can be derived from a renewable (inexhaustible) source.

> The country's goal to develop biodiesel as a means of ensuring the steady supply of energy is emphasized in the "2004–2013 Department of Energy Plan." The plan specifically states the following:
>
> One of the DOE's more critical objectives is to ensure, accessible and reasonably priced energy supply. This translates to a targeted 50.0 per cent average energy self-sufficiency level within the next ten years culminating by the end of 2013 …
>
> The state's self-sufficiency levels should result from the intensified and efficient exploration, development and utilization of indigenous energy resources. In addition, efforts will be ac-

---

[16] Alean Mae S. Flores, "UK Firm Invests in Bio-Fuel," *Business Today*, May 24, 2007, p. 11.

[17] Edward S. Cassidy, *Prospects for Sustainable Energy: A Critical Assessment* (Cambridge, UK: Cambridge University Press, 2000), pp. 67–68.

> celerated to develop and promote the use of renewable energy and alternative fuels …[18]

To realize the ambitious goal of 50 per cent self-sufficiency in the country's energy needs, the government intends to pursue a clear and coherent energy programme. The high cost of crude oil and the clamour for clean air have created the market conditions for the emergence of biofuels. The DOE has set specific goals to foster the development of technology for and consequent production of biofuels.[19] These are: (1) the creation of a commercially viable environment to further encourage public-private partnership in bio-mass, solar and wind energy development; (2) the optimal use of these resources, particularly in off-grid areas; and (3) the enhancement of local manufacturing capability for these energy systems.

In a speech, President Gloria Macapagal Arroyo emphatically articulates the need to ensure the country's energy security through the production of biodiesel:

> This is a commitment I have with the Filipino people when I announced in my first State of the Nation Address after being elected as President that we can meet the demands of the growing economy, so as not to choke off growth when it comes, and thereby lose the opportunities that may not come again.
>
> We owe it our people to find alternative sources of energy to reduce our dependence on price-vulnerable fossil fuel and rid the air of carbon emissions which is a major cause of global warming.
>
> We, therefore, buckle down to work and allotted chapter ten of our medium-term development plan to energy independence. Energy independence can only be achieved through a predictable policy that promotes a level playing field. Part of

---

[18] Philippine Department of Energy, *The Philippine Energy Plan 2004–2003* (Taguig City: Department of Energy, 2003), p. 4.
[19] Ibid., p. 17.

> our strategy is accelerated development of biofuel blends to boost our energy independence agenda.[20]

In line with this policy, the Philippine Department of Agriculture's Bureau of Plant Industry has identified places in the country where the plant has varieties that bear more fruits. It is estimated that the Philippines has a potential of about four million hectares of land that can be cultivated with jathropa. More significantly, the Philippine government created the Philippine National Oil Company–Alternative Fuel Corporation (PNOC-AFC) on 13 July 2006 as the lead government agency tasked with bio-fuel research and production. The corporation's principal mandate is to explore, develop and accelerate the utilization and commercialization of alternative fuels in the Philippines. It is primarily banking on jathropa to achieve 60 per cent self-sufficiency in energy for the country by 2010. According to AFC board chairman Dr. Renato Velasco:

> We will develop jathropa as the primary feedstock from which extracted oil can be converted into fuel. The idea is not novel. There is now a race worldwide in trying to make jathropa commercially viable. India, Africa, Indonesia and Malaysia are well ahead of us. What pushed the Philippine government to consider jathropa was the dramatic rise in the price of crude oil.[21]

Truly, the high price of fossil fuels has exerted additional pressure to pursue the research on and possible adoption of alternative and renewable fuels.[22] This trend has pushed the PNOC-AFC to focus on developing and utilizing domestically produced biodiesel that, hopefully, can cover a significant portion of the country's diesel requirement. The undertaking is expected not only to lessen the country's dependence on imported diesel but also to increase economic activity and generate employment in the

---

[20] President Gloria Macapagal Arroyo, Speech during the 2007 Bio-fuels and Feeds Conference. EDSA Shangri-la Hotel, May 23, 2007, p. 1.

[21] Antonio S. Lopez, "PNOC-AFC: The Next Agro-Industrial Giant," *BUZNews Asia*, Vol. 5, No. 20 (June 4-11, 2007), p. 6.

[22] Cassidy, *Prospects for Sustainable Energy*, p. 101.

countryside. In addition, it is seen as contributing to the improvement of air quality by reducing the overall carbon emission of vehicles.

As part of its mandate, the PNOC-AFC has conducted ocular surveys on potential nurseries and plantations sites for jathropa in terms of land availability, climate, soil type, demography and accessibility to planned refinery and extraction facilities. The PNOC-AFC technical staff likewise assessed several areas for possible locations for jathropa's refineries. In determining the sites, the PNOC-AFC considers the proximity of the plantation to reduce the transport and delivery cost of feedstock to the refinery, availability of utilities (power, water) and communication, accessibility to major roads, direct terminal access to ocean vessels, and general peace and order situation. To develop jathropa oil extraction technology on a commercial scale, the PNOC-AFC needs to manage the entire biodiesel project that involves the contraction of oil extraction, biodiesel refinery and transesterification.[23]

Two weeks before the ASEAN-EAS summit in Cebu, the Philippine government passed Republic Act 9367 or the Biofuel Act of 2006. This law, mandating the use of biofuels in the country, is the first of its kind in Southeast Asia. It requires the blending of 1 per cent locally-produced biodiesel in all diesel products, manufactured and sold by May 2007. It stipulates as well a 5 per cent locally sourced bio-ethanol blend in all gasoline products by 2009 and a 1 per cent bio-ethanol blend by 2008. It also specifies that within four years from the law's implementation, a minimum of 10 per cent bio-ethanol blend should be included in all gasoline sold and distributed in the country. Clearly, the law aims to generate a commercial demand for biodiesel in the near future. The 1 per cent minimum blend of biodiesel will translate into an estimated average demand of about 78 million litres in 2007, while the required biodiesel blend of 2 per cent by 2009 will lead to a demand for 167 million litres. However, local demand for biodiesel may not be enough to sustain the commercial production of this alternative fuel.

The Philippines can only develop its comparative advantage in biodiesel production if regional and global demands increase as a result of the

---

[23] Philippine Information Agency, *PNOC-AFC Annual Report 2006* (Quezon City: The Philippine Information Agency, Quezon City), p. 9.

widespread adoption and use of biodiesel. The PNOC-AFC hopes that the country's biodiesel manufacturing sector will be able to compete with the already established alternative fuel manufacturers because of the lower labour costs and production expenses in the Philippines.[24] It is also optimistic that Philippine biodiesel will be globally competitive against alternative fuel producers in Europe and the United States because of the lower production cost of jathropa compared to Europe's feedstock of rapeseed and the U.S.'s feedstock of soybeans. However, the Philippine government needs foreign investments and partners in developing biodiesel technology and production facilities.[25] These goals can only be achieved if the Philippines, its ASEAN neighbours and dialogue partners will collectively promote the trade on bio-fuels and encourage investments in alternative fuel technology and support structures to cut down their dependence on fossil fuels. Biodiesel as a form of renewable form or source of energy is near its tipping point, the crucial stage when investment and innovation, as well as international market access, can make the Philippines a major contributor to regional and even global energy supplies.

---

[24] David Cagahastian, "PNOC-AFC Eyes Global Market for Biodiesel," *Manila Bulletin,* May 20, 2007, p. G-26.

[25] Early this year, the PNCO-AFC signed a US$1.3 billion deal with the U.K. based bioenergy technology provider NRG Chemical Engineering Pte Ltd for the development of clean and renewable energy sources in the Philippines. Based on the Memorandum of Understanding (MOU) between the PNOC-AFC and NRG, the U.K.-based company will invest US$600 million for the cultivation of about 500,000 hectares of land for jathropa cultivation, another US$200 million for the building of a 300,000-metric-ton bio-ethanol plan. NRG and the PNOC-AFC are looking at the prospect of building between 350,000 and 700,000 tons of biodiesel production capacity by 2008. The PNOC-AFL is also in the process of signing a Memorandum of Understanding (MOU) with the Singaporean-owned natural Resource Group for the construction of a biodiesel refinery with a capacity of 500,000 tons. PNOC-AFC has already received US$5 billion worth of investments from more than 40 firms in 2007. These firms that have invested in the biodiesel production include the Malaysian Biogreen Energy Sdn. Bd., the Norwegian Norfuels and Southern Korean Technology Industry Co., Ltd. and Ecosolution. See Donnabelle L. Gatdula, "UK-Based Firm to Invest US$1.3B on biofuel Refineries in RP," *The Philippine Star,* May 24, 2007, p. 8, and Reuters, "Deal with Singapore Firm to Build World's Biggest Bio-fuel Refinery," *Business World*, October 24, 2007, p. 7.

Assessing the Declaration's Political Feasibility

Whether the declaration's goals will be realized depends on three major political factors: (1) the nature of the exigency of the international problem; (2) the presence and support of a cooperative hegemon; and (3) the balance of the participating countries' absolute gains against their relative gains.

The Nature of the Expedient Situation: Strategic or Functional?

In the late 1960s, the process of European integration suffered a major setback when the late French President Charles De Gaulle attempted to assert his country's primacy in the European Economic Community (EEC). The impasse prompted American scholar Stanley Hoffman to examine the process of regional integration in particular and international cooperation in general through the theoretical framework of inter-governmentalism. According to Hoffman, there is a need to draw a distinction between high and low politics to explain why integration or cooperation is possible in certain technocratic and non-controversial areas and why it is likely to generate conflicts or failure in matters where the survival and/or autonomy of the states or components of national identity are involved or at stake.[26] He argues that negative integration or the removal of barriers to the operation of the market fits into the low-politics category because it neither threatens the position of the national elite nor endangers particular vital interests. Accordingly, states prefer certainty or self-control or national self-reliance when it comes to vital interests and they will allow the interests to be subjected to the uncontrolled uncertainty of the interested blender.[27] Hoffman contends that issues related to high politics and strategic matters are usually immune from the penetration of integrative or cooperative impulses and are often within an autonomous sphere of political or military activity. On the other hand, states are actually willing to cooperate in the realm of low politics because it is a way of retaining control over areas where inter-societal (as opposed to interstate) transaction is becoming a norm.

---

[26] Ben Rosamond, *Theories of European Integration* (London: MacMillan Press, 2000), p. 77.
[27] Ibid.

The issue of reducing dependence on fossil fuels through intensified energy efficiency and biofuel production and utilization cannot be strictly considered as a high-politics or strategic issue. The threat to national security posed by the dramatic price increase or the decreasing supply of oil is mainly indirect and long term. This actually heightens societal vulnerability, just like other threats such as epidemics, natural calamities or long-term security challenges, i.e. transnational crimes and global terrorism. Although there is indeed a possibility that oil scarcity can cause a military conflict, this has not really happened in recent times. Moreover, tackling issues like enhancing necessitates societal interactions and global actions more so when limitations of sovereign states are exposed.

The issue of energy security is actually a form of "Tragedy of the Commons," requiring some kind of collective state actions. Environmental and global resource issues are generally low-politics matters that can be classified as common issues. Addressing common issues is actually beyond the reach and capability of a single state or even a group of states. Like other international issues such as engineering, public health, finance, trade or educational problems, it is more constructive to address the problem of energy security through collective actions. Collective actions are usually required to address the externalities that can be generated by a common problem like the scarcity of fossil fuel. As such, states, non-state actors and multinational corporations will have to assume the various roles of lead actors, veto actors and vote coalitions in addressing a long-term common issue like an energy crisis.

The Support of a Cooperative Hegemon

In his work *Germany, France, and Integration of Europe: A Realist Interpretation* Thomas Pedersen attributed the success of European integration to the existence and operation of a cooperative hegemon.[28] The concept of cooperative hegemony is based on the assumption of certain big and powerful states primarily pursuing relative gains, but it emphasizes that they do so using non-coercive or soft coercive means. A cooperative hegemon is usually a big state that lacks the resources to act as a world power on its

[28] Thomas Pedersen, *Germany, France and the Integration of Europe: A Realist Interpretation* (London: Pinter Publisher, 1998), p. 38.

own and finds it attractive to merge (or cooperate) with smaller neighbours to achieve its global interests. This state has underlying interest in gaining secure access to markets in neighbouring states, to the extent that it will make large direct investments in the region and harmonize regional norms, standards and laws so as to develop an extended home market. Such a state also takes positive steps to reassure its neighbours of its benign regional goals, and in enhancing its legitimacy, by creating a shield or collective cooperative or integrative structure.

According to Pedersen, European integration materialized because Germany played the role of a cooperative hegemon. To succeed, the Cebu Declaration needs a cooperative hegemon to succeed. In the past, Japan was the perennial cooperative hegemon, fostering regional economic cooperation in East Asia. This time, Japan is playing the role of a supportive player in the drafting of the Cebu Declaration.[29] Immediately after the signing of the declaration, Japanese Prime Minister Shinzo Abe pledged a US$2 billion package to assist East Asian states in the development of energy-saving technologies to help reduce their dependency on fossil fuels.[30] This seems natural and logical, since Japan is a front-runner in energy-efficient technologies, being a resource-poor-nation desperately seeking to cut its domestic oil consumption since the oil price shock of the 1970s. Thus, Japanese Minister of Economy, Trade and Industry Akira Amari called the declaration "a significant step toward [at] enhancing energy security in the Asia-Pacific region." As a leader in the research and use of biodiesel, the Philippines is banking on the Abe aid-package to finance its efforts to produce an alternative fuel.[31]

Balancing Absolute Gains against Relative Gains

Another important consideration affecting the feasibility of the Cebu Declaration's goals is how member-states will strike a healthy balance between their absolute gains against relative gains in this cooperative ven-

---

[29] Interview with Department of Energy Undersecretary Guilliermo Balce, August 7, 2007, Department of Energy, Taguig City, Metro-Manila.

[30] Eric Teo Chu Cheow, "Can Energy Stakes Unite East Asian Countries," *China Daily*, February 28, 2007, www.china.org.cn/international/opinion/2007-02/28/content_1201024.htm (accessed April 30, 2008).

[31] Interview with Department of Energy Undersecretary Guilliermo Balce.

ture in energy security. A dramatic shift from oil to an alternative energy source will have a major consequence on regional trade, production, economic growth, and overall wealth generation and distribution. In general, developing countries in the tropics with huge tracts of arable lands may benefit from the cultivation and production of biodiesel. Developed countries like Singapore, Japan, South Korea and even Australia may not have the arable land for the cultivation of biodiesel feeder plants. Thus, they might end up depending on tropical countries for a significant part of their energy needs. A crucial issue confronting these states is whether the production of biodiesel will cause some participating states to be more concerned with the relative gains producing states may generate if the commercial production of biodiesel takes off. If the developed countries see the gains of the developing countries as their loss, then the prospect of cooperation in energy security may be bleak.

The cultivation and production of biodiesel, however, will not lead to a sudden and dramatic shift in energy use in the region. The Cebu Declaration clearly acknowledges that fossil fuels still underpin the regional economy and will be an enduring reality in the near future. The production of alternative energy source will only lead to an increased supply of energy, not a qualitative change in the generation of energy source. As sponsor of the draft of the declaration, the Philippines is realistic enough to know that the production of biofuels to replace oil and natural gas is a continuous and long-term goal that will require the development of technology and the market so that cheap organic matter can be transformed into efficient liquid and gas biofuels with high net energy gain. The production of biodiesel is not meant to effect a rapid and overnight replacement of fossil fuels. The short-term purpose is to provide temporary relief until a more complete transition from oil to alternatives can be effected. In this case, it does not matter if renewable energy production exist side-by-side with traditional sources of energy like fossil fuels. One percent biodiesel mixed with 95 per cent carbon diesel will still be the norm in the next five to ten years.

The declaration's vision is that the energy base of the future will have to be created using the existing energy base now, just as the oil-based economy was built using previous energy sources (coal and wood). The issue at hand that the declaration aims to address is not the technical aspect

needed to produce these alternatives biofuels but rather of the "politico-diplomatic" ingenuity that will create the basis for a regional and global market for these products. Indeed, alternative and renewable energy sources have the potential to replace fossil fuels in the future. What is imperative is to create the socio-political acceptance of this alternative.

The development and production of biodiesel will potentially exact costs on the countries that will stake their production facilities and economic future on biofuel feedstock. In general, they will eventually convert their available agricultural lands and even rainforests into energy crop-producing plots.[32] Having struggled for decades to produce enough food for their increasing population, these countries will find themselves arenas for the energy-versus-food wars of the twenty-first century.[33] Furthermore, these countries' utilization of large tracts of land for energy feedstock will probably happen after the widespread adoption of biodiesel in the developed countries of East Asia. Worse, if indeed massive industrial and commercial needs and demand for biodiesel do occur, these biodiesel producing countries may likely become food-dependent countries.[34] If this will be the case, the shift from oil to bio-fuels will not only generate relative gains but also relative costs that the producing countries will have to bear.

Perhaps, the best attitude to take regarding energy security in East Asia is not to measure its effects in terms of absolute versus relative gains but to address a common challenge that requires a collective action. The major task of the 16-member states comprising the EAS is to step in when and where the private sector is either unwilling or unable to undertake the development of an alternative energy source in the form of biofuels. Surely, a project that aims to limit the region's level of oil dependence deserves collective attention and action. And in embarking on a collective venture,

---

[32] See Cassidy, *Prospects for Sustainable Energy*, pp. 77–78.

[33] For an interesting discussion of this concept, see Lester R. Brown, "Distillery Demand for Grain to Fuel Cars Vastly Understated: World May Be Facing Highest Grain Prices in History," *Earth Policy Institute* (January 4, 2007), pp. 1–5, www.earth-policy.org/Updates/2007/Update63_printable.htm (accessed April 30, 2008).

[34] Cassidy, *Prospects for Sustainable Energy*, p. 78.

countries in the region should be guided by this vision. As David Gostein puts it:

> […] there is no single magic bullet that will solve all our energy problems. There is no existing technology capable of replacing oil we will soon be without, nor is there any on the horizon that we can depend on to replace the remaining fossil fuels when they are exhausted. And if we permit them to become exhausted before replacing them, we may place the climate of our planet in grave danger. The best hope for our civilization lies in technologies that have not yet risen – possibly based on scientific discoveries that have not yet been made. Most likely, progress will lie in incremental advances on many simultaneous fronts, based on principles we already understand: controlled nuclear fusion, safe breeder reactors, better materials for manipulating electricity more efficient fuel cells, better means of generating hydrogen and so on. Developing those technologies will require a massive, focused commitment to scientific and technological research. That is a commitment we have not yet made. We urgently need to make it.[35]

In effect, this is the commitment that the 16 states made when they signed the Cebu Declaration on Energy Security.

Conclusion

Based on the analysis of the preceding three factors, the necessary political prerequisite for the realization of the Cebu Declaration on East Asian Energy Security is present. The two-page non-binding declaration indicates that the 16 member states of the EAS have realized their mutual interests in ensuring energy security and in fostering a sense of interdependence to address this pressing issue. What is imperative now is to launch a series of

---

[35] David Goodstein, *Out of Gas: The End of the Age of Oil* (New York: W.W. Norton and Company, 2004), pp. 115–6.

required politico-economic initiatives to generate the requisite political will that can further regional energy cooperation.

14. The Global Race for Oil and Gas: Signals from Asia

Ingolf Kiesow*

Introduction

According to some scientists, the world is facing an increasingly worrying energy supply gap caused by growing consumer demand and fast declining production by exporters. While this view, known as Peak Production Theory, continues to be questioned by many energy analysts, some politicians have began to hedge against the supply gap possibility by unilaterally attempting to buy up as much oil and gas resources as possible. Such actions are likely to create political problems, raising tension with other major consumer states.

This chapter is divided into two parts. The first part will cover the growing global race for oil and gas supplies, focusing on the role of the major consuming states, namely the United States, China, India, and Japan. It will also discuss the relevance of the Energy Charter Treaty (ECT) in view of such developments. There are hopes that the spirit expressed in the ECT can serve as a guide for an international policy of cooperation. The second part will discuss North Korea's nuclear program in relation to its domestic energy shortage. It will be argued that the European Union should take an active interest in the direction of the Six-Party Talks the relevance of the ECT principles in this context will also be discussed.

Causes of Expensive Oil

The price of oil has risen dramatically since 2003, when the level was around US$24-28 per barrel. This is primarily due to three reasons: the growing structural instability in several producer countries; rapid increase in world demand for oil; and finally, fears of "Peak Production" where it is believed that global oil and gas production is on the decline.

---

* Ingolf Kiesow is Ambassador and Senior Researcher at the Institute for Security and Deveopment Policy, Sweden.

Political Unrest

Domestic ethnic and social strife in combination with political violence has hit oil producing muslim countries like Nigeria, Saudi Arabia, Iraq, Sudan, Indonesia. The civil unrests in many of these Muslim countries are related to conflicts between traditionalists and those who seek to modernize the country; another cause is political competition between Shia and Sunni sects, and between Sufi, Deobandi and Wahabbi ways of life, and methods of interpreting the Koran.

In Venezuela, which is another significant oil producer, a deep rift between socialists, led by President Hugo Chavez, and liberals plagued the country with few signs that the political situation will improve in the foreseeable future. Political unrest means higher investment risks, and investments by local capitalists in oil production equipment have lagged for many years, which partly explain the rise in the price of oil. One other notable example is Iran, an OPEC member in conflict with the U.S. over its nuclear ambitions. It has economic sanctions imposed on it by the U.S., as well as some limited UN sanctions.[1] This has led many international companies to abstain from energy investments in Iran.

There is also the issue of growing government intervention in the energy sector. Venezuelan President Chavez has staged the state takeover of several major oil operations controlled by foreign-owned corporations.[2] In Russia, several oil and gas companies have been made into state enterprises when Vladimir Putin was President. Such moves have deterred foreign investors resulting in warnings that Russia will face capacity problems in the near future due to under-investment in their energy sector.[3]

---

[1] Security Council hightens sanctions against Iran over uranium enrichment, UN News Centre, available at http://www.un.org/apps/news/story.asp?NewsID=21997&Cr=Iran&Cr1 (accessed March 10, 2008).

[2] Michael Piskur, '"Venezuela Moves to Nationalize its Oil Industry," *Power and Interest News Report*, May 19, 2006, http://www.pinr.com/report.php?ac=view_report&report_id=492&language_id=1 (accessed May 15, 2008).

[3] "Rusian Oil/Gas Development and its Implications for Japan," The Institute of Energy Economics, Japan, available at http://eneken.iee/jp/en/data/pdf/402.pdf (accessed March 10, 2008).

Growing Gaps between Demand and Supply in Key Countries

Asia is a key region where energy demand has risen rapidly as a result of rapid economic expansion. There is growing concern on the emerging gap between demand and supply for oil and gas, which has led to high energy prices. This gap has been obvious since 1980; and from 2003 onward, the present trend of rapidly increasing prices started to develop in a serious way. The rising energy demand and import dependence in Asia in part explains the rise in energy prices since 2003.

China consumed 1.8 million barrels a day (Mb/d) in 1980 and produced 2.2 Mb/d. It was a net exporter of oil until 1993. By 2003, China was consuming 5.6 Mb/d and had only been able to raise its production of oil to 3.5 Mb/d, importing the remaining 2.1 Mb/d it required. India shows a similar picture. In 1980, it consumed 0.6 Mb/d and produced 0.2 Mb/d, importing 0.4 Mb/d. Due to rapid economic growth, the oil consumption had risen to 2.3 Mb/d in 2003, but production peaked at 0.8 Mb/d. As a consequence, 1.5 Mb/d oil had to be imported. Japan has almost no domestic oil production, and in 1980 imported all its needs for oil or 5.0 Mb/d. This figure has remained relatively stable since, rising slightly to around 5.4 Mb/d in 2003. This is partly due to slower economic growth, but also and possibly more importantly, attained through energy conservation.

The sum of these developments is that the three main oil consumers in Asia in 1980 consumed 5.0 Mb/d and in 2003 the sum was 9.0 Mb/d. Therefore, they had to import 4.0 Mb/d more than they did in 1980 with China becoming a net oil importer in 1996. These three major consumers in Asia resulted in a 12 per cent demand increase between 1980 and 2003, which translated into price increases.

However, it is the U.S. that is the largest source of pressure in rising international demand for oil. Its oil import rose from 6.7 Mb/d in 1980 to 13.5 Mb/d in 2005. During the same period, the U.S. share of the world's total oil import increased from 21 per cent to 27 per cent. Today it is consuming 20 Mb/d but only producing 5 Mb/d, importing the remaining 15 Mb/d. Domestic production is slowing down. In 2006 new oil fields and new reservoirs discoveries in oil fields containing 73 million barrels were discovered and added to "reserves." Estimated domestic production amounted

to 1.652 million barrels in the same year. This means that reserves declined by 785 million barrels and the present figure for the American share of the world's oil reserves of 1.8 per cent will be reduced successively.[4] Consumption, on the other hand, continues to grow at around 2.5 per cent each year. This increase is more than that of Europe and Asia taken together and yet, for some reason, it is rarely mentioned in international debates about the growing international demand for oil. Attention has so far focused more on China and India because their rapid economic development has made their increase in oil demand more visible.

The Peak Production Theory

Figure 1 at the end of this sub-section is prepared by Professor Kjell Aleklett, from Sweden's Uppsala University, who is chairing the Association for Studies of Peak Oil and Gas Production (ASPOG). ASPOG is an association consisting of specialists on different aspects of oil and gas production, like geologists, physicists, engineers and economists, who are concerned with the present trend of continued increase in oil and gas consumption. They consider that there is enough well established knowledge to say where oil and natural gas reserves have formed during the history of the earth. Furthermore, they believe that there is enough knowledge today to determine where hydrocarbon deposits are likely to be found. They also consider as matter of fact that the present level is the highest that all the oil fields of the earth will ever be capable of producing. ASPOG members tend to argue that we have already passed the "Peak Production" level and that we will have to reduce our hydrocarbon consumption levels, because production will be slowing down.

An article in the Swedish newspaper *Svenska Dagbladet* reported on a publication from the University of Uppsala.[5] It showed that the 507 largest oil fields in the world together produce 65 per cent of the world's oil and of these, 330 are still producing oil. By studying their production plans, the author concluded that the highest world production that will ever be

---

[4] "Crude oil proved reserves, reserves changes, and production," United States Energy Information Administration, available at http://tonto.eia.doe.gov/dnav/pet/pet_crd_pres_dco_NOS_a.htm (accessed March 10, 2008).

[5] "Oljetoppen snart nådd" [Oil peak reached soon], *Svenska Dagbladet*, April 10, 2007.

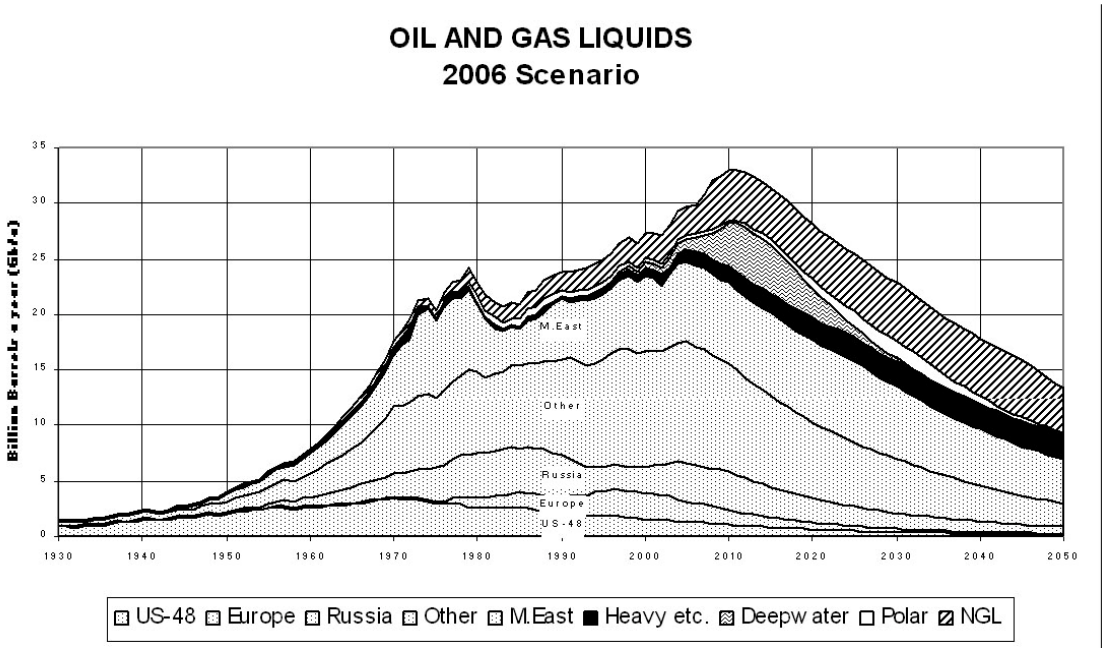
reached will be about 93 million barrels a day, far below the expected total global demand. Even if the annual rate of increase of world oil consumption, which stands at 1.7 per cent, is reduced to 1.4 per cent, the production peak cannot be postponed until later than in 2018. Even if this in no way can be taken as "the final truth," it shows that the situation is increasingly framed as one of urgency.

There is yet to be consensus within the energy community on the Peak Production theory. Energy economists, particularly American economists have accused the ASPOG members of being alarmist. Critics have pointed out that warnings about drying oil fields have gone on since the 19th century but never materialized.

It is difficult for a layman to judge who is right about this subject. However, one set of facts seems to support the standpoint of the "alarmists." Six oil companies together produce 15 per cent of the world's energy production and they are Exxon, Mobil, BP, Shell, Chevron and Texaco. The annual added capacity of their collective purchasing of new oil fields as compared to their combined sales of oil was 153 per cent in 1997. In 2000, that figure had decreased to 125 per cent, and in 2004 it was just 70 per cent. As in the case of U.S., it means that the combined resources in the form of production capability of these oil companies is declining.

The issue for discussion here is that there are politicians who are starting to base their actions according to the Peak Production scenario. Some states are beginning to compete openly to secure oil and gas resources in a way that reveal their zero-sum mentality.

Figure 1. Production of Oil and Gas Liquids to Year 2006 and Production Scenarios



Note: The regular oil is divided into the fractions U.S.-48, Europe, Russia, Middle East, and Other is the rest of the world.

(Source: Kjell Alekett, "Peak Oil and the Evolving Strategies of Oil Importing and Exporting Countries," in *ITF Round Tables Oil Dependence: Is Transport Running Out of Affordable Fuel?* (Paris: OECD Publishing, 2008), p. 60.

Consequences of Expensive Oil

Competition between consumer states for energy resources has already resulted in a race for oil and gas in Central Asia and Siberia. The availability of new natural gas fields and the attractiveness of gas as a less polluting form of energy have made competition over gas especially obvious. In Central Asia, American, European and Asian companies are struggling for new contracts and they are backed up by high level visits by government officials. The race to secure the rich gas fields in Turkmenistan is most notable. China has made strong diplomatic overtures to the country, while Russia has been struggling to remain as the sole outlet for Turkmen oil and gas, which were developed during the Soviet Union days. Meanwhile, European and U.S. companies have cooperated to get a second outlet

through Turkey to Europe, albeit in this case without overt European government support, at least at the time of writing this chapter.[6]

In Siberia, it is mainly Chinese and Japanese companies that have been vying for access to the new Siberian oil fields with both countries offering to finance the construction costs on generous conditions. The situation took on further political significance when both Chinese and Japanese politicians sought to lobby the Russians to their favour, resulting in additional tension to Sino-Japanese relations.[7]

Chinese and Indian companies have been backed by their governments as they sought to bid for oil and gas fields in Latin America, Canada, and Africa south of Sahara. For example, China has offered weapon sales and development aid in support for long term contracts about energy in some African countries.[8] In Canada, China has been operating through a Hong Kong Company in order to get control over some vast new fields of oil and tar sand.[9]

Another consequence of the increasing competition for oil and gas is the declining influence of OPEC in setting the price of oil. The OPEC member states, especially Saudi Arabia have usually kept a reserve production capacity to be used as a buffer between demand and supply. Most of these

---

[6] Franco-Turkish dispute overshadows Nabucco project, Euractiv.com, February 20, 2008, http://www.euractiv.com/en/energy/franco-turkish-dispute-overshadows-nabucco-project/article-170424 (accessed March 10, 2008).

[7] Gaye Christoffersen, "The Dilemmas of China's Energy Governance: Recentralization and Regional Competition," *China and Eurasia Forum Quarterly*, Vol. 3, No. 2 (November 2005), pp. 55-79.

[8] Xu Xiaojie, "China and the Middle East: Cross-investment in the energy sector," *Middle East Policy Council Journal,* Vol. VII No. 3 (June 2000), http://www.mepc.org/journal_vol7/0006_xu.asp (accessed September 22, 2004); "China emerges as a major energy player," *Alexander's Gas & Oil Connections*, Vol. 9, No. 17 (September 1, 2004), http://www.gasandoil.com/goc/news/nts43583.htm (accessed September 21, 2007); Ian Taylor, "Unpacking China's Resource Diplomacy in Africa," *Center on China's Transnational Relations Working Paper,* No. 19, Hong Kong University of Science and Technology, 2007, http://www.cctr.ust.hk/china-africa/papers/Ian,Taylor.pdf (accessed March 1, 2009).

[9] "China/India: Energy cooperation will not come easily," *Oxford Analytica*, January 16, 2006, http://www.oxan.com/Display.aspx?S=EES&SD=20060116&PC=OADB&SN=3&S (accessed January 17, 2006).

reserve capacities, including the Saudi one, have already been tapped in order to meet demand when oil was close to US$100 per barrel. As a result, statements about price levels from the OPEC heads of state meetings have lost much of their importance for the setting of the oil price.[10] Meanwhile in Latin America, Venezuela's Chavez has promised to "liberate" Venezuela from its dependence on the American market for its oil export, and officially invited India and China to replace the U.S. as customers.[11]

Expensive Energy: Geostrategic Thinking

If zero-sum geostrategic thinking is left unaddressed, it is likely that China and India, and ultimately even the U.S., the EU, and Japan will begin to "play hard-ball" while competing for access to energy resources. In this section, the profiles of the key global (and emerging) energy players are surveyed and would include discussion of how they have conducted their international energy diplomacy.

Russia

Russia is selling most of its energy resources to Europe. It is estimated to have around 6-7 per cent of the world's oil reserves and about 25 per cent of the world's natural gas reserves, making it a major player on the international markets.[12] It is also situated between Europe and Asia and an important supplier to both regions. According to the official Russian document, Russia's Energy Strategy to 2020, published in 2003, "ensuring National Security is the fundamental task of the energy policy."[13] Russia has

---

[10] Jim Jubak, "OPEC drives up oil prices in a new way," MSN Money, September 18, 2007, http://articles.moneycentral.msn.com/Investing/JubaksJournal/OPECDrivesUpOilPricesInANewWay.aspx (accessed April 15, 2008).

[11] "lndia takes stake in Venezuela oilfield," *Aljazeera*, March 5, 2005, http://english.aljazeera.net/archive/2005/03/200849132614136990.html (accessed May 15, 2008).

[12] *BP Statistical Review of World Energy, June 2008*, available at http://www.bp.com/productlanding.do?categoryId=6842&contentId=7021390 (accessed July 15, 2008).

[13] Robert Larsson, *Russia's Energy Policy: Security Dimensions and Russia's Reliability as an Energy Supplier*, FOI-R—1934—SE (Stockholm: Swedish Defence Research Agency, March 2006), p. 48.

been accused of using its energy assets for blackmailing others and for being egoistic in its behavior.

The development of Russia's Siberian oil and gas assets have been carried out in a slow but rather methodical way. The Sakhalin I and II projects have caused some unexpected cost increases and nationalization of some foreign shares in the projects. The environmental arguments used to justify the Russian government's actions have discouraged some investors from participating in Russian projects.[14] Nevertheless, on the whole, the development of Sakhalin I and II appear to be moving according to plan.

When Russia is considering building pipelines from the Baikal region for export of oil and gas to a harbor on the Pacific Coast, near Vladivostok, a pipeline for oil is first drawn from Baikal to connect with the long trans-Siberian web of pipelines. Russia first wants to make sure that it will get oil and gas for its own use, before the export can begin.[15]

Russia is constructing an oil pipeline from Tayshet in east Siberia via Skovorodino near the Chinese border to Kojimo Port near Nakhoda on the Sea of Japan, the so-called East Siberia-Pacific Ocean (ESPO) project. Negotiations have continued with China about making a bifurcation at Skorovodino to connect the pipeline with the Chinese web of pipelines, but Russia is still working to make sure that there is enough oil for supply to both the international market – where Japan is supposed to be the most important consumer – and for China. This has elements of power politics between

---

[14] "Russia: State will seek to revise Sakhalin-2 agreement," *Oxford Analytica*, November 21, 2006, http://www.oxan.com/ (accessed May 15, 2008); See also: Shoichi Itoh, *Can Russia Become a "Regional Power" in Northeast Asia? Implications from Contemporary Energy Relations with China and Japan,* Center for East Asian Studies, Monterey Institute of International Studies (May 2006), p. 28, http://gsti.miis.edu/CEAS-PUB/2006_Itoh.pdf (accessed May 15, 2008).

[15] At the same time, it has been said that Russia wants to make sure that oil can be transported in the other direction: when and if it takes longer time than projected to make the east Siberian oil-fields productive fast enough, oil will have to be taken from west Siberian fields to fill in the gap that may arise, according to contracts that will soon have to be made. Izuru Yokomura, "Despite the boom times, is Russia ready to go it alone?" *The Asahi Shimbun*, February 21, 2007, http://royaldutchshellplc.com/2007/02/21/the-asahi-shimbun-japan-despite-the-boom-times-is-russia-really-ready-to-go-it-alone/ (accessed May 15, 2008).

Japan and China; but for the Russians, economic factors seem to have been at least equally important as political relations.[16]

In Asia (and in Western Europe), economic considerations seem to have been more important on the whole for Russia. This is in contrast to the former Soviet states, especially Belorussia, Ukraine and the states in Central Asia, where political considerations have a higher priority for Russia.[17] It should, however, be added that the political and strategic factors considerably complicate the picture in Asia. Putin has been criticized in his own country for binding export of oil and gas by favoring construction of pipelines to markets in Asia, where the customers can dictate the price. These critics instead favor pumping Siberia's oil and gas from western Siberia to the ice-free ports in Murmansk.[18]

USA

About 50 per cent of U.S. oil imports come from the Western hemisphere. Three large suppliers, Canada, Mexico and Venezuela account for over 40 per cent of deliveries. A study of the energy situation in U.S.[19] concluded that that U.S. dependence on energy supply will remain great and the room for self sufficiency is small – in spite of ambitious plans for energy efficiency.[20] As a consequence, engagement in key energy supply regions and interest in transport lanes for oil will remain very strong.

At present the U.S. is suffering from several structural and mutually incompatible targets for its energy policy. As a leading article in *Oil and Gas Journal* in 2007 indicate:

> US Drivers continue to harbor the notion that they can have it all: gasoline prices that won't affect their driving habits, less carbon dioxide emissions, and a broader menu of cleaner fu-

---

[16] Larsson, *Russia's Energy Policy*, p. 295.
[17] Ibid., p. 296.
[18] Vladislav Inozemtsev, "The President Exaggerated," *Nezavisimaja Gazeta*, September 2006.
[19] Hans von Knorring and Robert Larsson, *Energisituationen i USA och amerikansk energipolitik* [The energy situation in the United States and U.S. energy policy], FOI-R—2308—SE (Stockholm: Swedish Defence Research Agency, August 2007).
[20] Ibid.

> els.[21] For instance: environmental parameters stand against security of supply and economy.[22]

Another observation is that there are differences between U.S. energy policy and the energy policies pursued by a number of European countries. One illustration of these differences is that U.S. energy taxes are low, while they are high in Europe. Another example is that receptiveness for environmental arguments is considerably higher in Europe than in America.

In January 1989, George H.W. Bush became the forty-first U.S. president and on August 2, Saddam Hussein invaded Kuwait, which borders the region in Saudi Arabia where the majority of the important oil fields are situated. The invasion was thus seen as a threat to the Saudi oil fields and global oil supply. A factor for U.S. intervention seemed to have been the understanding that disturbances in the oil supply chain from the Middle East to the Asia import countries would have global consequences.[23] He thus declared that "Saudi Arabia's sovereign independence is of vital importance for the United States."[24]

On the whole, this military conflict was largely caused by oil. After the war, a change was noticeable in the geopolitics of oil. Washington had retaken its position as the world's leading "oil power." The U.S. and Saudi Arabia together were responsible for the global order on the energy market. Saudi Arabia delivered the oil, and the U.S. offered the protection. For both exporters and importers, the goal for oil policy was to stabilize the price level so that it satisfied both suppliers and consumers.

On the surface, there seems to be many similarities between European and U.S. energy policies, and they could cooperate in many ways. In reality, however, there also remain important differences. It is for instance a U.S. interest to prevent Europe from becoming over-dependent on Russia for oil and gas. For Europe, on the other hand, Iranian energy is a potentially important substitute for Russian deliveries; and from that perspective, the

---

[21] David Nakamura, "You can have it all," *Oil & Gas Journal*, July 16, 2007, p.15.
[22] Von Knorring and Larsson, *Energisituationen i USA och amerikansk energipolitik* [The energy situation in the United States and U.S. energy policy], p. 13.
[23] Ibid., pp. 36-37.
[24] Ibid., p. 36.

U.S. would still prefer Europe to import energy supplies from Russia. There is also a difference in that the U.S. foreign energy policy confirms and reinforces the trend towards unilateral and bilateral state energy policies, as opposed to multilateral solutions and the use of spot markets as preferred by the Europeans.

Europe and the Spirit of the Energy Charter

Europe has had a relatively calm development in the field of energy, at least when compared with other regions. Economic growth has been slower than in the U.S. during some years in the period 1980-2003, but more importantly, the Europeans, like the Japanese, have made strong and partially successful efforts at energy conservation. European imports were 12.2 Mb/d in 1980 and in 2003 had grown to 13.3 Mb/d, an increase of only 1.1 Mb/d. This explains why there is rarely the same feeling of near desperation in Europe, when energy needs are discussed, as is sometimes the case in Asia and America.

The Energy Charter Treaty is a multilateral treaty targeted at the energy sector, which establishes legal rights and obligations.[25] Its aim has developed to reflect an international effort to strengthen the rule of law on energy issues, by creating a level field of rules to be observed by all participating governments, thereby mitigating risks associated with energy-related investments and trade. There are hopes that the spirit expressed in the ECT which was first initiated in Europe, could be a guideline for an international policy of energy cooperation. The ECT

> assists by offering binding protection for foreign energy investors against key non-commercial risks, such as discriminatory treatment, direct or indirect expropriation, or breach of individual investment contracts. Another priority for the treaty is to promote reliable international trade and transit flows… Under the Treaty, member countries are under an obligation to facilitate energy transit in accordance with the

[25] Craig Bamberger, Jan Linehan and Thomas Waelde, "The Energy Charter Treaty in 2000: In a New Phase," available at http://iisdb.stanford.edu/evnts/3917/Charter.pdf (accessed May 15, 2008).

> principle of freedom of transit and not to interrupt or reduce established energy transit flows.[26]

The principles have helped EU countries to establish a legal framework for the flow of energy in Europe. It also has wider international relevance for its aim to establish an international legal energy regime. Russia signed the Energy Charter Treaty but has yet to ratify it. China and the U.S. have observer status, Japan is a full member, while India is not even an observer.[27] In 2000, the existing member countries made a review of the functioning of the charter process, and drew the following conclusions with regard to its expansion:

> The Energy Charter process has a natural focus on the evolving Eurasian energy market, including the Mediterranean, the Middle East and Asia. We welcome the interest shown in the Charter by several non-member states and acknowledge in particular the growing Asian Dimension of the Charter process.[28]

Asia

According to the International Energy Agency (IEA),[29] primary energy demand in the world will increase by 66 per cent from the year 2002 to 2030. Asia's share will increase from 28 per cent to 35 per cent. The share increase will be especially significant for oil demand. Asian developing countries will take the largest share, at 38 per cent in 2030. China will take 16 per cent and India 8 per cent. India's demand will more than double

---

[26] Cited from the *Frequently Asked Question* webpage of the Energy Charter Secretariat, available at http://www.encharter.org/index.php?id=18 (accessed May 15, 2008).

[27] Refer to the *Members and Observers* webpage at the Energy Charter Secretariat website, available at http://www.encharter.org/index.php?id=61 (accessed May 15, 2008).

[28] From the *Frequently Asked Question* webpage of the Energy Charter Secretariat, available at http://www.encharter.org/index.php?id=18 (accessed May 15, 2008).

[29] *IEA-India Workshop on Emergency Oil Stock Issues, Opening Remarks by Ambassador William Ramsey, Deputy Executive Director of the IEA*, January 21, 2003, available at http://www.iea.org/ (accessed February 9, 2005).

during that period.[30] Imported oil will become a greater part of Asia's consumption profile, increasing from 42 per cent in 2002 to 83 per cent in 2030 in the share of total consumption.

China in the Race for Energy

As a consequence of very strong uninterrupted economic growth for more than a decade, China became the world's second largest energy consuming country after the U.S. in 2006. It is the biggest energy consuming country in Asia – and the third largest importer of oil in the world.[31] In 1990, the share of Middle Eastern oil in China's oil import was 40 per cent, and the share from countries in Asia and Oceania, which used to be regarded as trustworthy and secure sources of supply, was 60 per cent.

By 2001, the share from the Middle East increased to 56 per cent. The share of Asia and Oceania had gone down to 14 per cent, and Africa now supplies 23 per cent of the import. China suddenly became dependent on a number of more distant countries with low political stability thus worsening its security of supply.[32] Several patterns can be noted from China's international energy behavior:

Tendency #1 - Owning Oil and Gas When Loaded: In order to compensate for the instability factor, China has tried to "own the oil when loaded." This has caused strong criticisms from the U.S. as deviations from economic liberal principles. This behavior was initially quite damaging for China. It had just joined the World Trade Organization in 2000 and had to be seen acting according to its rules.[33]

Tendency #2 - Avoiding Transportation Risks: The security of the Sea Lanes of Communication (SLOCs) is being discussed seriously in China. Some Chinese have suggested that tanker ships should be built in sufficient quantities to carry 50 per cent of China's imported oil. Convoys should be arranged and military vessels should protect them. This idea also has its

---

[30] Ibid.

[31] International Energy Agency, *Key World Statistics 2006* (Paris: IEA, 2006) www.iea.org/Textbase/nppdf/free/2006/Key2006.pdf (accessed May 15, 2008).

[32] Ingolf Kiesow, *China's Quest for Energy: Impact on Foreign and Security Policy*, FOI-R—1371—SE (Stockholm, Swedish Defence Research Agency, November 2004), p. 13.

[33] Ibid., p. 40.

share of critics among Chinese economists and it remains to be seen if anything will come out of these discussions.[34]

There is a belief among some military analysts outside China that Beijing is harbouring the ambition to expand its naval force projection (1) over its energy arteries, most notably the SLOCs from the Persian Gulf onwards, including the Strait of Malacca maritime chock-point; and (2) over the hydrocarbon reserves in the South and East China Seas. There are concerns that the development of a Chinese tanker fleet could possibly lead the PLA Navy to serve as escort. This would lead to unfriendly competition with U.S., Indian and other naval units.

China is also trying to reduce the risks for transportation of oil at sea through diversification. It is building a harbor in Gwadar on the Pakistani coast and is discussing a Pakistani plan for a possible pipeline for oil from Gwadar into China. Another similar idea has been discussed with South Korean and Thai business groups to construct an oil pipeline across the Malay Peninsula bypassing the Strait of Malacca, so that oil can be pumped from the Andaman Sea to the Gulf of Thailand and then be taken by ship to China.[35] However, this idea has yet to be discussed seriously between the countries concerned.

At the time of writing, the Chinese have also been considering an oil pipeline from Burma to China in order to reduce the country's dependence on oil imports shipped through the Strait of Malacca (at present about 60 per cent of China's total oil import). According to media reports, Chinese Premier Wen Jiabao and the then Burmese Prime Minister Khin Nyunt discussed plans for an oil pipeline when they met in June 2004 in Beijing.

Tendency #3 - Trying to Establish Energy Partnerships but Ending Up in Geostrategic Power Games: The Indian ambition to increase the share of oil that is imported from Indian-owned fields abroad has led to many situations, when Indian companies find themselves in competition with their Chinese

---

[34] Philip Andrews-Speed, Xuanli Liao and Roland Dannreuther, *The Strategic Implications of China's Energy Needs,* Adelphi Paper, No. 346 (London: The International Institute for Strategic Studies, 2002), p. 78.

[35] "Oil pipeline may transform maritime order in Straits of Malacca," *Alexander's Gas & Oil Connections*, June 20, 2007, http://www.gasandoil.com/goc/news/nts72839.htm (accessed May 15, 2008).

counterparts. Former Oil Minister Mani Shankar Ayer has even accused China of using unfair methods of competition, when, for instance, Indian companies lost out on oil-fields in Kazakhstan.[36] Chinese companies also won over their Indian competitors in bidding for oil fields in Angola, Nigeria and Sudan.[37] The increasing competition on the small international market for oil fields forced the two governments to consider the advantages of cooperating on oil projects.[38] India's Ayar even proposed to China that a pipeline should be constructed from the Middle East through India to China. However, since Ayar left his ministerial post at the beginning of 2006, not much more has been heard about these plans.[39]

Meanwhile, the U.S. is hoping to engage India as a counterweight against Russia and China. It has offered India an agreement about military cooperation, which has been accepted, and technology for civilian nuclear power, which has also been accepted, albeit with strong opposition from communist and Hindu Nationalist circles in India.[40]

The U.S. has offered India access to civilian nuclear technology and a solution to its problems with the Nuclear Suppliers Group (NSG) – but not to

---

[36] "India's energy security," *Alexander's Gas & Oil Connections*, January 12, 2006, http://www.gasandoil.com/goc/news/nts60225.htm (accessed May 15, 2008).

[37] "China and India in oil investment race," *Alexander's Gas & Oil Connections*, http://www.gasandoil.com/goc/news/nts (accessed May 15, 2008); "Regeringen sänker indisk oljesatsning," [The Government Disrupts Indian Oil exploration], *Svenska Dagbladet*, December 19, 2005.

[38] "*China/India:Energy cooperation will not come easily," Oxford Analytica*, January 16, 2006, http://www.oxan.com/Display.aspx?S=EES&SD=20060116&PC=OADB&SN=3&S (accessed May 15, 2008).

[39] "India and China begin to see more value in cooperation than competition," *Alexander's Gas & Oil Connections*, January 12, 2006, http://www.gasandoil.com/goc/news/nts52796.htm (accessed December 27, 2006); Erich Marquardt, "China's Energy Acquisitions," *PINR Dispatch*, September 2, 2005, http://www.pinr.com/report.php?ac=view_report&report_id=359&language_id=1 (accessed December 27, 2006); "India eyes alliance with China and Uzbekistan for oil assets," *Alexander's Gas & Oil Connections*, December 8, 2005, http://www.gasandoil.com/GOC/news/ntr54914.htm (accessed December 27, 2006); "Indo-Iran pipeline can be pulled to Southern China via Burma," *Alexander's Gas & Oil Connections*, March 10, 2005, http://www.gasandoil.com/goc/news/nts51008.htm (accessed December 27, 2006).

[40] "BJP asks govt to reject US-nuke deal," *Kashmir Times*, December 12, 2006, http://www.kashmirtimes.com/front.htm (accessed December 12, 2006).

Pakistan. This policy is likely to cause problems with Islamabad. If the U.S. is now trying to make an ally of India, it is likely that Pakistan will become even closer to China and two competing power blocs might emerge raising tension in the Indian Ocean because of China's strategic stakes in Gwadar. China is also participating in common military exercises with Pakistan in the Indian Ocean.

So, at the same time as India has been negotiating about cooperation in the field of energy with China, there is the Pakistani-China factor, which together with the Indo-American rapprochement constitutes the beginning of a complicated power game in Asia; and it all circles around energy in the form of oil, gas and access to nuclear technology.

Tendency #4 - Mending Fences Where Territorial Issues Put Energy Supplies at Risk: Relations with Japan seem to show that invitations to talks about energy and territorial disputes should be taken seriously. However, relations with some other countries in the region seem to indicate an opposite trend.

Starting with the Sino-Japanese case, gas fields on the bottom of the sea between China and Japan have been under dispute for many years. They are situated in the East China Sea near the so-called median line, a concept defined in Article 15 of the 1982 United Nations Convention on the Law of the Sea (UNCLOS).[41] That line has been drawn by Japan as an implementation of the new rules of the convention about 200-nautical-mile exclusive economic zones (EEZs), but China has never recognized Japan's claims.

A group of disputed islands south of Japan is called the Senkaku Islands in Japanese and the Diaoyutai Islands in Chinese. Giving the right to these islands to China would cut away a great part of the EEZ from Japan and give the rights to gas exploitation to China.[42] There are two disputes here,

---

[41] For the text, refer to the *United Nations Convention on the Law of the Sea,* http://www.un.org/Depts/los/convention_agreements/convention_overview_convention.htm (accessed January 15, 2008).

[42] Another chain of small islands, called Okinotori is giving Japan an even larger claim for an EEZ, larger than the land area of Japan itself, but that area has a greater importance from a military perspective than as a potential gas field. See Simon Tinsdall, "Pacific power play puts Japan and China between a rock and a hard place," *The Guardian*, April 5, 2005, available at http://www.guardian.co.uk/world/2005/apr/05/japan.china (accessed May 15, 2008).

one about whether to apply the principle of the median line, as claimed by Japan, or to apply the principle about the continental shelf as advocated by China. The question of whether to apply the principles about the median line or about the continental shelf means a difference for the borderline between the economic zones from near the strait between Japan and Korea and southwards until near the Ryukyu Islands. The issue of the Diaoyutai/Senkaku islands means a difference for drawing the border from the Ryukyus almost down to Taiwan. There is natural gas on the bottom of the sea in both these areas.

Energy issues are but one element in the complicated pattern of the Sino-Japanese relations, which goes back two thousand years. The seriousness of the problem was demonstrated when a Chinese submarine intruded into Japanese waters in 2005. It caused the Japanese Self-Defense Forces to go on alert for the second time since the Second World War. The incident caused an obvious consternation in Beijing and Japan was given an official apology – it had been "a mistake."[43]

The visits by then Prime Minister Shinzo Abe to Beijing in 2006 and by Prime Minister Wen Jiabao in Tokyo in 2007 should be seen as serious efforts by the leaders to stop an otherwise ongoing escalation of dangerous actions and reactions between the two countries. An act of traditionally great symbolic value was made during Wen's visit to Tokyo: The two Prime Ministers decided to set up a 24 hour hotline between their armed forces to prevent incidents in the waters between them.[44]

Nevertheless, Japan and China continue to have conflicting interests of major importance. Japan has been lobbying hard in Moscow to make Russia give priority to building an oil pipeline from Tashet in eastern Siberia near Lake Baikal, to a harbour on the Sea of Japan. Russia has only agreed to start building a pipeline for export of oil via the halfway point of Skorovodino, which is situated near the border to China. China, on the other hand, has been lobbying for a continuation from Skorovodino to the

---

[43] Reiji Yoshida, "Beijing says tech glitch led to sub intrusion," *The Japan Times*, November 17, 2004, http://search.japantimes.co.jp/member/member.html?nn20041117a1.htm (accessed May 15, 2008).

[44] "Japan, China to set up military hotline," *Reuters*, April 21, 2007, available at http://www.chinadaily.com.cn/china/2007-04/18/content_853136.htm (accessed January 15, 2008).

oil fields in Daqing in Northeast China, where it would connect to the existing nation-wide web of oil pipelines. Japan's former Prime Minister Junichiro Koizumi succeeded during a visit to Moscow in 2006 to have then President Putin sign an agreement to accelerate talks on the so-called Pacific route to Nakhoda, which means the continuation from Skorovodino to the coast, but there is no further commitment on the Russian side. The pipeline monopoly Transneft will begin with building the stage to Skorovodino – during 2008. At the time of writing this chapter, decision on the continuation of the pipeline has yet to be confirmed. The nationalistic elements in both China and Japan have engaged themselves in the debate. Energy is at the same time seen as a potential source of conflict in the relations between China and Japan and also as a confidence building measure of great importance.

A pattern of controversy has repeated itself between China and some Southeast Asian countries with overlapping territorial claims in the South China Sea. This area is rich in fisheries, is recognized as an important East Asia SLOC, and is believed to have viable amounts of gas deposits though it remains underexplored. This problem has temporarily abated with a 2002 agreement between China and the ASEAN-countries called the Code of Conduct of the Parties in the South China Sea, to apply internationally agreed rules for peaceful resolution of conflicts. However, it should be noted that China has not withdrawn any of its territorial claims in the disputed areas in the South China Sea.[45]

Tendency #5 - Playing the Developing Country Status Card: A foreign policy commentator in Beijing has made the following statement:

> Western monopoly capital, with the support and assistance of their governments, has scrambled and seized the main oil and gas resource markets in all parts of the world. Almost all good resources markets have been occupied and possessed by them. There is intense competition among different groups of

---

[45] Ingolf Kiesow, ed., *From Taiwan to Taliban: Two Danger Zones in Asia,* FOI-R—0393---SE (Stockholm: Swedish Defence Research Agency, 2002); The South China Sea Region, United States Energy Information Administration, available at http://www.eia.doe.gov (accessed August 21, 2001).

> monopoly capital. All of them will certainly try even harder to impede Chinese companies from obtaining these resources.[46]

This statement reflects a mindset derived from reading Peak Production literature. However, in the international context, the present Chinese leaders prefer to talk about cooperation and they hopefully still also think in that way. Whether they will continue to do so will depend very much on the responses from America and the EU – and here we may have a problem. As more and more articles appear in the press about the approaching peak in oil production, increasing political instability in most oil producing nations and the need to cut down on carbon emissions, the Chinese leaders may feel "contained" by other nations, who only think of continuing their present life-style without being willing to accommodate the Asian's wish for a similar quality of life.

India

The fast population growth, high density of its population and agricultural character of its economy has strained India's limited domestic supply of energy resources. Increasingly problematic air pollution and serious shortages of electricity necessitate greater imports of cleaner forms of energy, mainly natural gas. A substantial part of energy consumption is in the form of burning of so-called non-commercial fuels like fuel-wood, dung and crop residue and cause indoor pollution.[47] The 1999-2000 55th round of the National Sample Survey (NSS) indicated that 86 per cent of rural households use firewood, woodchips and dung cakes as the primary source of cooking. 20 percent of the population in urban areas relied on firewood and chips.[48]

---

[46] Amy Myers Jaffe and Steven W. Lewis, "Beijing's Oil Diplomacy," *Survival,* Vol. 44, No. 1 (2002), p. 127.

[47] *Integrated Energy Policy: Report of the Expert Committee* (New Delhi: Government of India Planning Commission, August 2006), http://planningcommission.nic.in/-reports/genrep/rep_intengy.pdf (accessed March 1, 2008).

[48] *Integrated Energy Policy: Report of the Expert Committee* (New Delhi: Government of India Planning Commission, August 2006), p. 40, http://planningcommission.nic.in/reports/genrep/rep_intengy.pdf (accessed March 1, 2008).

According to the United State's Energy Information Administration data on India's energy profile for 2006, coal is by far the most important primary fuel, constituting some estimated 53 per cent of the supply. Crude oil is the second most important contributor to the energy supply, making up 31 per cent of the total. Natural gas only commands 8 per cent of the total share in 2006.[49]

It is expected that oil cannot increase its share of the total, since there is a great gap between domestic demand and domestic supply and that gap is set to widen. Consumption of petroleum products is growing faster than domestic production. Consequently, the import of oil increased by 6.3 times during the years 1970-2002, while domestic production could only increase by 4.5 times, making import dependency as high as 73.3 per cent in 2002. The problem has been accentuated by a slow-down in investments in refinery capacity and pipelines due to a certain recession in Asian economies toward the end of the last millennium, which also affected the Indian economy. IEA is calculating that, with unchanging conditions, India will be dependent on oil import for as much as 94 per cent of the total demand in 2030.[50]

India's oil industry is still almost entirely state-owned and comes under the Ministry of Petroleum and Natural Gas. Under pressure to increase the oil import, the state-owned ONGC has acquired exploration blocks abroad in Burma, Sudan, Iraq, Russia, Vietnam, Venezuela and Libya. It has also begun a deep-water drilling program in the Bay of Bengal. The private sector company Reliance Industries Ltd is pursuing a plan for equity and acquisition of oil fields in Sudan, Iraq, Madagascar and Libya and has a stake in an exploration block in Yemen.

However, the Indian energy policy has not been very clearly defined. A report on India's energy profile by the Brookings Institution noted that:[51]

---

[49] India, United States Energy Information Administration, March 2009, http://www.eia.doe.gov/emeu/cabs/India/Background.html (accessed May 8, 2009).

[50] *IEA-India Workshop on Emergency Oil Stock Issues*.

[51] Tanvi Madan, *The Brookings Foreign Policy Studies, Energy Security Series, India* (Washington, D.C.: The Brookings Institution, November 2006), http://www.brookings.edu/reports/2006/11india.aspx (accessed March 5, 2008).

> There is a sense that in an oil crisis, relationships will count for more than ownership of assets. For the time being, oil diplomacy is intended to help on a number of fronts: aiding Indian companies to win deals, ensuring secure supply, laying the groundwork for cooperation, attracting investment and technology, and encouraging investment from producer countries in India's downstream sector to ensure that they have a vested interest. ….A former diplomat described successful oil diplomacy as "getting in first with exploration contracts, negotiating bilateral, trilateral and multilateral agreements, and ensuring that our future energy security is safeguarded through all this.

The Indian Junior Minister for Petroleum and Natural Gas, Dinsha Patel, announced on February 29, 2008, that in the last three years, government-controlled companies have acquired participating interests in 35 oil and gas projects in 20 countries. Especially interesting is his comment that "while in normal circumstances, the oil/gas could be sold on commercial consideration, in times of national requirement, the same can be brought to India irrespective of commercial considerations."[52]

The Indian state-owned oil companies carry out a security policy for the nation and this is not going to be changed. In other words, India is not going to accept the principles of the Energy Charter in the foreseeable future. That is also an impression that is reconfirmed in this author's conversations with Indian researchers. They point to the uncompromising attitudes towards the effects of globalisation from the trade unions and communist parties, whose support is necessary for the Congress Party-led government in Parliament.

---

[52] "Indian firms buy 35 oil, gas assets abroad," *United Press International*, February 28, 2008, available at http://www.upi.com/Energy_Resources/2008/02/28/Indian_firms_buy_35_oil_gas_assets_abroad/UPI-78791204251222/ (accessed March 6, 2008).

Japan

Towards the end of the 20th Century, Japan's energy demand almost stopped growing, mainly due to the slower economic activity, and has since been "hovering" around the same level. It is projected to grow slowly or even to decrease until 2030 and since the population is decreasing, economic growth is not predicted to pick up much speed.[53]

Japan is still the third largest consumer of oil in the world behind the U.S. and China, and will remain so for a long time. There is especially hard competition with China over oil- and gas fields within reach by sea transport. SLOC security is a common matter of concern and possible point of contention for these two countries in particular.

Oil has been reduced as an energy source, from 65 to 47 per cent between 1980 and 2005, and its share is projected to continue to decrease until it reaches 37 per cent in 2030. There is almost no domestic oil available. Like China and India, Japan relies heavily on imported oil from the Middle East – 89 per cent of its imported oil comes from this region. Government restrictions and regulations have historically limited the role of international oil companies in Japan. Since May 2006, Japan has a "New Energy Policy." This new policy is to provide more government support in supplying risk money for overseas exploration and development activities by Japanese oil companies, to expand measures to streamline and upgrade multi-and complex refineries, and to advance Research and Development of innovative technologies to make use of non-conventional oil.[54]

In sum, the government is subsidising oil and gas companies in their efforts to purchase oil and gas fields abroad and to increase their refining capacity at home in order to compete with Chinese and Indian companies. On the other hand, Japan is a member of the Energy Charter thus making it the most energy market friendly player in Asia.

---

[53] There is general consensus about Japan's energy demand trends among the Japan's Agency for Natural Resources and Energy, the International Energy Agency and the Institute of Energy and Economy, Japan. For an overview of Japan's profile, refer to Tsutomu Toichi, *Oil Market of Today and Tomorrow, speech held in Kuala Lumpur*, July 2006, http://eneken.ieej.or.jp/en/data/pdf/345.pdf (accessed March 5, 2008).

[54] Ibid.

Northeast Asia's Energy Problems and EU "National Interest"

The remaining section of this chapter focuses on the possible role of the EU, as well as the Energy Charter in addressing Asia's energy problems. China and some of its neighbours – especially India – may wish to appear as "responsible partners to the EU," but not without the EU accepting that they have special problems. The EU does not need to address its own energy security policy problems the way China and India are forced to, with their dramatic increases in energy consumption. Unlike the EU, China and India, with close to forty per cent of the world's population are confronted with difficult energy policy questions as they seek to secure their own energy supplies from abroad:

- Is owning the oil and gas when loaded a wise policy?
- Does it make sense to spend enormous sums to avoid transportation risks?
- Is it realistic to try to establish partnerships with producers with an exclusive character – and how to react, when energy supply becomes involved in strategic game playing?
- Should developing countries be given a special handicap in the race for energy resources?

Owning oil and gas when loaded is a principle that does not constitute a breach of any explicit WTO rule, but could perhaps be said to be against the spirit of the GATT charter, although that interpretation is also far-fetched. Concerning the ECT on the other hand, it is quite clear that its spirit is against any measure that restricts the free flow and access for all buyers. The Chinese and Indian practices are not compatible with the views of the Europeans, the Americans and the Japanese.

There may be one situation approaching, where it would seem natural for the ECT members to reconsider the way the principles of the ECT are supposed to be implemented by emerging economies. It could be in connection with some success for the Six-Party talks in Beijing concerning the North Korean nuclear crisis. Here, it seems necessary to recall some details about the history of North Korea's nuclear ambitions.

North Korean Domestic Energy Challenges: Events Prior to the Six-Party Talks in Beijing

Energy supply is a burning problem for North Korea. Already in 1975 North Korea had become increasingly dependent upon thermo-electric power. When oil deliveries dried up, the transportation system suffered. Ox-carts began to re-appear on the highways instead of tractors, trucks began to use wood-gas instead of gasoline and many factories stood still for long periods. It was clear that North Korea was undergoing an energy-crisis. Weapon-deliveries and deliveries of ammunition were made to Iran during the war with Iraq, in exchange for Iranian oil, and was a sign of how desperate North Korea was. North Korea was already beginning to feel structural strains during the 1980s in two obvious respects, namely food and energy. In both cases, the situation deteriorated.[55]

The ensuing lack of electricity caused the degradation of industrial facilities, a significant reduction of electricity in most parts of the country, and damage to operating industrial electric motors from poor supplies of electricity. Industrial activity has been hurt to the extent that eyewitnesses report of industrial facilities being dismantled for scrap. The problems had serious spiraling effects: the lack of electricity led to mine flooding and difficulties in coal production, this further reduced the available amounts of energy, which in turn, led to decline in cement and steel production, etc.

During the 1994 so-called Non-Proliferation Treaty (NPT) withdrawal crisis, North Korea actually withdrew from the NPT. U.S. President Bill Clinton was seriously discussing plans for a military attack on North Korea's nuclear assets. However, such plans were interrupted by a phone call from ex-U.S. president Jimmy Carter, who had been invited by Kim Il Sung to visit Pyongyang. Carter reported over the telephone from Pyongyang that he had an offer by Kim Il Sung whereby North Korea would remain in the NPT and would freeze its nuclear weapons program in exchange for a package of benefits similar to what had already been offered

[55] Ingolf Kiesow, *Perspectives on North Korea's nuclear and missile programs*, FOI—R—12009—SE (Stockholm: Swedish National Defence Research Agency, 2004), p. 25.

in different separate contexts.[56] In October 1994, an "Agreed framework" between the U.S. and North Korea was signed in Geneva by the two delegations.[57] The main elements of the agreement are as follows:[58]

- The United States would organise an international consortium to provide Light-Water Reactors (LWR), with a total generating capacity of 2,000 megawatts, by a target date of 2003. In return, North Korea would freeze all activity on its existing nuclear reactors and related facilities, and permit them to be continuously monitored by IAEA inspectors. The eight thousand fuel rods unloaded from the first reactor would be shipped out of the country;
- North Korea would come into full compliance with the IAEA – which meant accepting the "special inspections" – before the delivery of key nuclear components of the LWR project, estimated to be within five years. The DPRK's existing nuclear facilities would be completely dismantled by the time the LWR project was completed, estimated in ten years;
- The United States would arrange to supply 500,000 tons of heavy fuel annually to make up for energy forgone by North Korea before the LWRs came into operation;
- The two states would reduce existing barriers to trade and investment and open diplomatic liaison offices in each other's capitals as initial steps toward full normalisation of relations. The United States would provide formal assurances against the threat or use of nuclear weapons against North Korea;
- North Korea would implement the 1991 North-South joint declaration on the demilitarisation of the Korean peninsula and reengage in the North-South dialogue.

However, by August 2003, most of these had not happened. A consortium called the Korean Peninsula Energy Development Organization (KEDO) was formed between the United States, Japan and South Korea to provide North Korea with Light Water Reactors, but North Korea refused – as it

---

[56] Michael J. Mazarr, *North Korea and the Bomb: Case Study in Nonproliferation* (London: Macmillan Press, 1997), p. 163.
[57] Ibid., p. 173.
[58] Ibid., p. 357.

had said it would – to accept that the reactors explicitly were specified to be of South Korean design and production. The target date for delivery has already passed long ago. North Korea has not allowed full inspections – citing non-fulfillment of the agreement by the U.S. side. The fuel rods have been canned, but they have not been shipped out of North Korea, since no LWR has been delivered. For the same reason, North Korea's nuclear facilities were not dismantled (until the Six-Party talks in Beijing had resulted in a new basic agreement in 2007). Due to "financial difficulties" the KEDO failed in annual delivery of 500,000 tons of heavy fuel oil, some years only delivering a minor fraction of that commitment and, in 2003, no oil at all. The U.S. neither reduced the trade barriers with North Korea nor issued any formal assurance against the use of nuclear weapons against North Korea. There were no diplomatic liaison offices set up between Washington and Pyongyang. No demilitarisation on the Korean peninsula took place.

North Korea's nuclear ambitions not only have roots in its energy poverty but also that the solution is to be found by addressing this problem. Subsequently, the Six-Party-talks in Beijing resulted in a deal in February 2007 with the following elements:

- North Korea is to "shut down and seal" the Yongbyon reactor, then disable all nuclear facilities (once more);
- In return, it will be given 1 million tonnes of heavy fuel oil (once more);
- Under an earlier 2005 deal, North Korea agreed to end its nuclear program and return to the Non-Proliferation Treaty (once more);
- North Korea's demand for a light water reactor is to be discussed at an "appropriate time"(once more).

North Korea has fulfilled most of its promises, but at the time this chapter is being written, it has yet to give any clarifications about its supposed uranium enrichment program, and there is a standstill on the entire Six-Party process.[59]

---

[59] "N Korea abductions hamper," Japan, *BBC News*, March 4, 2008, http://news.bbc.co.uk/1/hi/world/asia-pacific/7252484.stm (accessed March 4, 2008).

The Regional Context

There is an important regional context for the energy problem in North Korea. South Korea could use gas and oil from the Russian Sakhalin projects, as could Japan, but the pipelines would have to pass through North Korea. The same is true about electricity that can be produced by existing power plants in eastern Siberia and sold to Japan and South Korea. Also the northeastern parts of China can be supplied with Russian electricity, as they already are supplied to some extent. If this regional network of pipelines and electricity power transmission lines is to become reality, North Korea would have to open up and permit the construction of these facilities – in return for deliveries of oil and electricity.

For this to happen there is a whole series of regional energy negotiations to be carried out. It seems very natural to propagate the basic principles of the ECT, of which almost all the participants are already members or at least observers. It would benefit all if the parties in Northeast Asia could agree as soon as possible the following:

- to strengthen the rule of law on energy issues;
- to create a level field of rules to be observed by all participating governments, thereby mitigating risks associated with energy-related investments and trade;
- to offer binding protection for foreign energy investors against key non-commercial risks, such as discriminatory treatment, direct or indirect expropriation, or breach of individual investment contracts;
- to promote reliable international trade and transit flows;
- to facilitate energy transit in accordance with the principle of freedom of transit and not to interrupt or reduce established energy transit flows.

These are all principles in the ECT and have served the interests of its European members well. The EU is not an active participant to the North Korean nuclear crisis, but has been called upon to contribute to the solution, politically and financially, for instance when KEDO was created. Northeast Asia has a situation in which the ECT principles ought to be applicable and the EU should be more proactive in advocating this to the parties involved.

15. Is there a Solution? Obstacles to and Prospects for Multilateral Energy Cooperation in Asia

Shoichi Itoh*

Introduction

The current trend in rising oil prices has sparked worldwide concern about energy security. Given the fact that Asia is projected to become the largest energy-consuming region in the near future, the nature of the confidence-building mechanism (CBM) that will be established with regard to energy security will have extra-regional implications.

That China's energy demand is soaring (and with India's following it) has intensified the impression that tighter energy markets are around the corner. Some supplying countries have jumped on the bandwagon of the current concern about energy security and exploited the situation by driving out foreign investors' participation in energy development or suggesting a possible cut in energy supplies, all for the purpose of enhancing their prestige in an international arena with resource nationalism lurking in the background.

Is future global energy security as threatened as generally reported in the mass media wherever you look? Will we be unable to avoid more critical circumstances regarding energy sources? Will the consuming countries enter a downward spiral of competition over limited resources? Will energy-producing countries enjoy driving wedges between consuming nations in a situation of windfall energy prices? Will energy security remain the major source of distrust between nations?

First, this chapter revisits the term "energy security." Energy security is a very powerful concept that, politically, can justify all sorts of means, given that it is key to national security. The twentieth century underwent various wars, conflicts and skirmishes in the name of securing or protecting

* Shoichi Itoh is Senior Research Associate at the Economic Research Institute for Northeast Asia (ERINA), Japan.

access to energy resources, whereas human society is still gripped by fears about the possible shortage of those energy supplies satisfying all the players' demands today. Energy security, however, remains a considerably ambiguous concept. It can be said that energy security is conventionally (or traditionally) regarded as virtually a synonym of "oil security." This is shown by the fact that rising concern about energy security is triggered by higher oil prices. While "oil shock syndrome" has persisted to date, it is not necessarily the case that energy security can be ensured only by building access to increased amounts of this particular energy product. Various kinds of other interpretations and methods are available to achieve what can be called "energy security." The author addresses Japan's experiences of overcoming its vulnerability to energy supplies, which may present a heuristic model for reinforcing energy security in the contemporary world.

Second, some challenges we should bear in mind in ensuring energy security are addressed. The negative effects of politicizing energy security matters are highlighted.

Third, the author factorizes the fundamental energy policies and strategies in two major energy consumers in Asia: China and Japan. The prevailing notion has been that Tokyo and Beijing are "bound" to intensify competition over resources, as witnessed by their scramble over gaining access to a crude oil pipeline from Russia and the dispute over natural gas fields in the East China Sea. This author will shed light, however, on the multifarious factors for collaboration in their independent national strategies, based on which one can hypothesize that concerns over energy security will paradoxically become the locomotive for the reduction of Sino-Japanese rivalry.

Fourth, contemporary developments of intra-regional energy cooperation frameworks at the bilateral and multilateral levels are reviewed. The "common denominators" of consuming nations are placed within ongoing regional contexts.[1]

---

[1] The fourth and fifth sections are reproduced from some parts of the author's previous publication: Shoichi Itoh, "Japan's Energy Strategy and Development of Energy Cooperation in the Asia-Pacific," *ERINA Report*, Vol. 77 (September 2007), pp. 35–48.

Fifth, the significance of, and the implications resulting from, two extra-regional countries, the United States and Russia, which will have both a direct and indirect impact on the trajectories of Asian energy security, are explored.

Finally, conceptual frameworks with regard to assessing development of international cooperation are provided to explore the current state of multinational efforts to ensure energy security.

What is Energy Security?

The term "energy security" has once again sent the mass media into frenzy at a time of skyrocketing oil prices. Indeed, the crude oil price (WTI) set a record high in the NYMEX futures market and rose above US$78 per barrel at the beginning of August 2007, approximately three times higher than the 2003 level. The rising trend in oil prices has entailed anxiety about the future among policymakers and the populace at large all over the world. French Prime Minister Clemenceau once noted during the First World War that "one drop of oil is worth one drop of blood of our soldiers."[2] Our perception of energy security is still tied to the current availability of oil, whereas we can point out, among others, the following ways of interpreting this concept. While not all of the following need be realized simultaneously, they enable us to understand the broader meaning of this oft-used term.

- To satisfy national energy demands now and in the future;
- To raise the level of energy self-sufficiency;
- To secure access to resources abroad, if necessary;
- To maintain sufficient stockpiles of key energy products;
- To diversify energy sources with an aim of avoiding excessive reliance on a limited number of energy alternatives;
- To reduce energy consumption by promoting efficient use of energy;
- To procure energy at reasonable prices for the maintenance of a sustainable economy.

---

[2] Cited in Hans J. Morgenthau, *Politics Among Nations: The Struggle for Power and Peace*, 6th ed. (New York: Knopf, 1985), p. 133.

Historically speaking, the mindset concerning the "finite availability" of hydrocarbon resources – oil, among others – is likely to cause policymakers to securitize (or politicize) energy issues and call for their own people to rally to the national flag. In this traditional scenario, competition over resources with other countries is justified, since the accompanying perception of energy security entails a zero-sum game: the geopolitical interpretation of the situation prevails over all others, even to the point of disregarding the fundamentals of energy markets.

Meanwhile, rivalries between consuming nations over securing access to resources give every opportunity for energy-producing countries to exploit the situation. At the same time, however, supplying countries will not necessarily continue to benefit from windfall oil prices. Not only do oil prices tend to fluctuate in the long term, the high prices may also trigger new opportunities for tackling energy security issues in diverse ways. In other words, notwithstanding our obsession with oil supplies, there will emerge an increasing number of alternative methods to satisfy energy demand.

Japan's Model

Despite the fact that Japan is a resource-poor country and its self-sufficiency in energy is a mere 4 per cent (and only 18 per cent with nuclear power) today, it has put up various countermeasures to overcome its high degree of vulnerability to energy crises over the three decades since the first oil shock in the 1970s. The crude oil (Arabian Light) price climbed by a factor of 3.9, from US$3.00 per barrel (bbl) in September 1973 to US$11.70 per bbl in January 1974, when the first oil shock occurred. It increased by a factor of 2.7, from US$12.10 per bbl in December 1978 to US$34.00 per bbl in October 1981, at the time of the second oil shock. In recent years, it rose by a factor of 2.8 from US$25.20 per bbl in July 2002 to US$69.90 per bbl in July 2006.[3] The average real economic growth rate declined from 6.6 per cent (the three fiscal years 1971–1973) to 2.5 per cent (the three fiscal years 1974–1976) with the first oil shock and from 5.0 per cent (the three fiscal years 1977–1979) to 2.6 per cent (the three fiscal years

[3] *2007 Energy White Paper* (Tokyo: Japan Agency for Natural Resources and Energy, 2007), p. 4 (in Japanese).

1980–1982) with the second oil shock. In contrast, it grew from 0.9 per cent (the three fiscal years 2001–2003) to 1.6 per cent (the two fiscal years 2004–2005.)[4]

As regards to the ratio of the increased value of crude oil imports to gross domestic product (GDP), this was 2.8 per cent (fiscal 1974) and 1.8 per cent (fiscal 1980) for the first and second oil shocks, respectively, whereas it rose to just 0.7 per cent in fiscal 2005.[5] Japan improved its energy intensity by about 35 per cent and decreased its oil dependency by 28 points from fiscal 1973 to fiscal 2005.

Japan has also successfully achieved the world's most advanced oil stockpiles. It had 168 days' equivalent of oil stockpiles, of which the government's share accounted for 90 days and that of private oil companies for 78 days as of 2006.[6]

Moreover, Japan accomplished the highest level of energy saving in the world. Its economy has achieved an energy conservation efficiency of over 30 per cent since the oil shocks of 1970s. Due to different levels of energy efficiency, China requires about eight times as much energy as Japan per unit of GDP, while the United States needs about twice as much (Table 1).

Table 1: Primary Energy Consumption per GDP (toe / Million US$ C.Y. 2000 price)

	1971	1973	1980	1985	1990	1995	2000	2003	2004
Japan	142	146	123	112	108	113	111	107	108
China	2,218	2,215	2,288	1,661	1,498	1,067	758	746	810
South Korea	258	280	337	302	327	358	373	352	347
Russia	N.A.	N.A.	N.A.	N.A.	N.A.	2,586	2,337	2,064	1,930
United States	414	403	353	296	273	262	236	221	216
EU 25	N.A.	N.A.	N.A.	N.A.	234	221	200	200	198
APEC 20	N.A.	N.A.	N.A.	N.A.	N.A.	308	282	281	285
ASEAN 7	351	358	370	367	417	451	485	499	507
World	380	376	360	340	322	304	280	278	280

Source: Handbook of Energy & Economics Statistics in Japan '07 (The Energy Data and Modelling Center, The Institute of Energy Economics, Japan).

[4] Ibid., p. 8.
[5] Ibid., p. 11.
[6] Ibid., pp. 345–6.

Challenges for Energy Security

Perception or Misperception?

As a rule, international relations can be interpreted as a hybrid of multi-dimensional games of misperceptions, just as historians keep rewriting the *prima facie* same incident over centuries. As noted by a scholar of international relations in his seminal work of introducing psychological analysis into political science, "given the complexity and ambiguity of information about international relations, perceptual and other decision-making errors will always be common."[7] Due to the acute importance of energy security for any single nation for its survival in the ultimate sense, this particular question is likely to be manipulated and justified for political reasons and used as a diplomatic cause.

Exemplary Lessons from Politicizing Energy Security

The U.S.-China Dispute: The China National Offshore Oil Corporation (CNOOC) was obliged to withdraw its bid for the U.S. oil company UNOCAL, accounting for less than 1 per cent of the U.S. oil production, in June 2005, against the backdrop of the fact that it inflamed the threat of foreign acquisition in U.S. Congress sentiments. It can be posited, however, that there exists no concrete method of proving that to what degree the Chinese company's otherwise acquisition of stakes in the U.S. company could have seriously threatened U.S. energy security (or national security). In other words, a "crisis image" seemed to pre-exist market-based calculations.

Sino-Japanese Dispute: We can draw another lesson from the Sino-Japanese futile scramble over the "imaginary fruit" of the crude oil pipeline from east Siberia, while Moscow has attempted to drive a wedge between Beijing and Tokyo despite all sorts of ambiguous and unreliable information about the economic feasibility of the project. The geopolitical interpreta-

[7] Robert Jervis, *Perception and Misperception in International Politics* (Princeton, NJ: Princeton University Press, 1976), p .10.

tion of these two big consuming countries once fell right into Russia's tactics, though this essence has been gradually debunked.[8]

Energy Security and Financial Games

It has been pointed out among energy experts that the contemporary rapid rise in oil prices is not directly driven by a tightened balance of energy supply and demand. Instead, the emergence of open conjecture about the geopolitical risks in securing oil supplies has galvanized speculators in commodity futures.

The detailed information about the fundamentals of oil markets, including production capacity, geological data and investment risks, is not available to non-experts, whereas the widespread crisis scenarios, inflamed, for instance, by the turmoil in Iraq and China's rising consumption, have only led to an accelerating financial commoditization of oil. At the same time, however, we have had insufficient evidence to predict likely shortages of oil supplies in the near future. This "game" of raising the level of oil prices to enjoy profit margins, played by hedge funds, has increasingly become a serious obstacle to maintaining rational calculations of market conditions.

Who is to Benefit from "Resource Diplomacy"?

"Resource diplomacy" has become one of the key terms for understanding the international relations of the early twenty-first century. However, its meaning differs completely on the supply and consuming sides. For a supplying country, resource diplomacy means attempting to expand markets for its own energy products and sell them at the highest possible prices, given the tight balance of demand and supply in the global energy markets. Some supplying countries are even trying to enhance their political clout by brandishing the "resource card."

On the other hand, for a consuming country, the goal of "resource diplomacy" is to secure access to stable supply routes of physically limited resources. However, the implications fundamentally differ, depending on

---

[8] Shoichi Itoh, "Russia's Energy Diplomacy toward the Asia-Pacific: Is Moscow's Ambition Dashed?" in Shinichiro Tabata, ed., *Energy and Environment in Slavic Eurasia: Toward the Establishment of the Network of Environmental Studies in Pan-Okhotsk Region* (Sapporo: Slavic Research Center, Hokkaido University, 2008), pp. 33-65.

whether or not energy security is achieved by economically rational means. A country may make a political decision to increase its energy equities by leaving business profitability out of considerations. An economically rational approach to energy security entails the promotion of dialogues among consuming countries on the one hand, and between consuming and supplying sides on the other. A frantic competition over energy resources will only lead the supplying countries to roar with laughter.

The Factorization of National Energy Interests

It should not be overlooked that we can potentially find a high degree of common strategic interest between Chinese and Japanese national energy policies, even if they do not necessarily share the same ultimate goals.

First, energy conservation has become a target of prime importance for both China and Japan. On the one hand, Beijing has no alternative but to alleviate the unstoppable rise in energy demand in the immediate future, especially under conditions of increasing oil imports. Today, energy conservation is regarded as "a resource" in Chinese energy policies.[9] A working group on the revision of the Energy Conservation Law was established in March 2006, the results of which were submitted to the National People's Congress for adoption in March 2007.[10] The draft of the revision was subsequently passed by the standing committee of National People's Congress in October 28, 2007 and the revised law became effective in April 2008.

The "Decision on Strengthening Energy Conservation by the State Council" was issued in August 2006, including in its agenda such items as the speeding up of the construction of resource-saving industrial systems, the reinforcing of energy in key fields, the advancement of energy-saving technology, and the strengthening of supervision and the monitoring of energy saving.

---

[9] "The Current Situation of Energy Supply and Demand and Policy in China," presented by Dai Yande, Deputy Director of the National Development and Reform Commissions of the PRC, at an energy seminar on prospects for Sino-Japanese energy cooperation by the Institute of Energy Economics, Tokyo, Japan, on February 9, 2007.

[10] Ibid.

Tokyo would benefit from a further acceleration of energy conservation, considering Japan's low level of self-sufficiency and lack of underground hydrocarbon resources, although Japan has achieved an improvement in energy efficiency of about 37 per cent over the past three decades. The maintenance and advancement of Japan's position as an energy-saving country by sustained improvement of energy efficiency, development of innovative energy technology and encouragement of investment are targeted in the New National Energy Strategy.

Second, both governments are starting to accelerate diversification of energy resources in view of reducing oil dependence, among other things, to the greatest possible degree. The wider use of renewable, including solar, wind power and biomass fuels, has been increasingly encouraged. In China, the "Law on Renewable Energy," for instance, was adopted and promulgated in February 2007 with the goal of diversifying energy supplies, alleviating air pollution and greenhouse gas emissions (GHG), and so on[11]. The National Development and Reform Commission (NDRC) put forward the Medium and Long-term Development Plan for Renewable Energy in China, specifying the guiding principles, objectives and targets, priority sectors, and policies and measures for the development of renewable energy in China up to 2020. The objective is to raise the share of renewable energy in total primary energy consumption to 10 percent in 2010 and 15 percent by 2020.[12]

Meanwhile, the Japanese government has hammered out a strategy to reduce the costs of renewable technologies and raise the level of energy self-sufficiency. The General Resources Energy Investigation Committee, a

---

[11] 中华人民共和国可再生能源法（全文）[People's Republic of China's Rene- wable Energy Law (Full Text)], February 28, 2005, www.people.com.cn/GB/14576/14957/3208744.html (accessed April 30, 2008); 落实科学发展观依法促进可再生能源开发利用 [A Practical Scientific Development Perspective, Legal means to Promote Renewable Energy], December 28, 2004, www.people.com.cn/GB/14576/28320/42412/42417/3084098.html (accessed April 30, 2008).

[12] National Development and Reform Commission, "Medium and Long-Term Development Plan for Renewable Energy in China," *China Development Gateway*, September 4, 2007, http://www.chinagate.cn/reports/2007-09/13/content_8872839.htm (accessed April 30, 2008).

consultative body under the Japanese Ministry of Economy, Trade and Industry, has announced a plan to increase the share of renewables in power generation by more than three times by fiscal 2014.[13]

The development of renewables would create new business opportunities for both sides, considering their asymmetry in technological advancement, rather than bringing them into energy competition.

Third, the promotion of the utilizing of environmentally friendly energy is an indispensable target Beijing and Tokyo share in common. It has increasingly become a matter of serious domestic and global concern that the growth of the Chinese economy is leading to environmental catastrophe there at a rapid pace. The Eleventh Five-Year Plan devoted five chapters to constructing an energy saving and environmentally friendly society with an aim to provide measures for both the efficient use of energy resources and environmental protection.[14]

Besides simply further advancing energy conservation technologies, Japan has been under serious pressure to fulfil its international obligations under the Kyoto Protocol. It must reduce GHG emissions by 6 per cent on the base-year level of 1990 during the first commitment period (2008–2012). As of 2004, however, Japan's emissions had increased by 7.4 per cent on its 1990 level. It was anticipated that even if Japan implemented the maximum possible domestic measures, there would be a shortfall of 1.6 per cent when the Kyoto Protocol Target Achievement Plan was formulated in 2005.[15] By way of full-scale implementation of the Kyoto Mechanisms, especially the Clean Development Mechanism (CDM), China provides potentially the biggest market for prospective energy-environmental projects reducing GHG emissions.

---

[13] *Nihon Keizai Shimbun*, January 30, 2007.

[14] 中华人民共和国国民经济和社会发展第十一个五年规划纲要 [China's Eleventh Five Year Plan], March 16, 2006, www.gov.cn/ztzl/2006-03/16/content_228841.htm (accessed April 30, 2008).

[15] For details on Japan's environmental policy and countermeasures against Global Warming, see the Japan section of "Enhancing the Environmental Cooperation in Northeast Asia in a New Dimension: Regional Cooperation on the Kyoto Mechanisms (CDM / JI)," *ERINA Booklet*, Vol. 5 (February 2007), co-edited by the author.

Developments of Multilayered Frameworks for Energy Cooperation

While consuming countries are intensifying their competition over resources, they are also beginning to gradually create frameworks for cooperation. This signifies that consuming nations have increasingly realized that excessive competition among them will only lead to benefits for the supplying nations.

The Bilateral Level

Japan-China Energy Cooperation:[16] Even between the two big East Asian powers, Japan and China, notwithstanding the unsolved issues regarding sovereignty and demarcation of national boundaries in the East China Sea and the disagreements over interpretations of history, energy dialogues and practical projects have gathered momentum since the arrival in office of Shinzo Abe in autumn 2006.

In December 2006 when Akira Amari, Japan's Minister of Economy, Industry and Trade, visited Beijing to attend the First Five-Country Energy Ministers' Meeting (see below), he and Ma Kai, Chairman of the People's Republic of China's National Development and Reform Commission (NDRC), had a bilateral summit and signed a memorandum on implementing an energy conservation and environmental business model project in order to facilitate reciprocal cooperation between Japan and China in the energy conservation and environmental fields.[17]

---

[16] "A Joint Statement by the Japanese Ministry of Economy, Trade and Industry and the People's Republic of China's National Development and Reform Commission on Enhancement of Cooperation between Japan and the People's Republic of China in the Energy Field, Signed on the 11th April, 2007." Document is available at www.enecho.meti.go.jp/policy/international-affairs/data/Joint%20Statement.pdf (accessed April 30, 2008).

[17] As early as May 2006, the first China-Japan Comprehensive Energy Conservation and Environment Forum was held in Tokyo, in which about 850 people, including the ministers of both countries and businesspeople, participated for the purpose of promoting an exchange of opinions on policy measures, past experiences and technologies in the energy conservation and environment fields. The second forum is planned to be held in Beijing in September 2007.

In April 2007, the first policy dialogue between Japanese and Chinese energy ministers was held in Tokyo, and Japan's METI and China's NDRC announced a joint statement on "Enhancement of Cooperation between Japan and the People's Republic of China in the Energy Field." The statement advocated a shared awareness that the promotion of bilateral energy cooperation by public and private bodies in both countries would contribute to the energy security of not only their two countries but also to that of East Asia and the world. It was indicated that Japan had the most advanced energy conservation technology and the highest level of efficiency in energy use in the world, whereas China stipulated energy conservation as a policy fundamental to its national security, economic development and preservation of its environment. Japan's will to help the Chinese effort for energy conservation was emphasized. They agreed to promote cooperation on the utilization of clean-coal technology, the construction and safe operation of nuclear power plants, and the development of new and renewable energy sources. The promotion of energy security and efficient energy use within a multilateral framework was also stipulated.

Japan-India Energy Cooperation:[18] Both governments agreed to set up a dialogue on oil and natural gas at the Japan-India Summit of April 2005 in New Delhi. In September of the same year, Shoichi Nakagawa, Japan's Minister of Economy, Industry and Trade, and Mani Shankar Ayar, India's Petroleum and Natural Gas Minister, issued a joint statement, stipulating that both countries would promote dialogue on cooperation in six areas, including exploration and development in third countries, oil stockpiling, joint research on Asian oil markets, methane hydrate (methane clathrate), energy conservation and hydrogen fuel.

During Indian Prime Minister Manmohan Singh's visit to Japan in December 2006, he and the Japanese premier Shinzo Abe agreed on the launch of a "Japan-India energy dialogue" at the cabinet level, and announced the "Joint Statement Towards Japan-India Strategic and Global

[18] "Joint Statement between The Ministry of Economy, Trade and Industry of Japan and The Planning Commission of India on the launch of the Japan-India Energy Dialogue," April 23, 2007. The document is available at www.enecho.meti.go.jp/policy/internationalaffairs/data/Japan%20Ver._Final%20draft-Energy%20Dialogue.pdf (accessed April 30, 2008).

Partnership," advocating comprehensive cooperation in energy, including in energy conservation.

In April 2007, the first meeting of the regular cabinet-level energy policy dialogue was held in Tokyo. Both sides acknowledged the importance of developing energy infrastructure, the promotion of energy conservation and collaboration on energy security within a multilateral framework. Working groups on six areas of cooperation – electricity, power generation, energy conservation, coal, renewables, and oil and natural gas – were established.

Japan-United States Cooperation:[19] At the meeting of METI minister Amari with Samuel W. Bodman, Secretary of Energy, in Washington in January 2007, they published the "United States-Japan Cooperation on Energy Security" agreement. The document stipulated that both sides recognized, for the purposes of ensuring the mutual energy security of the United States and Japan, and of addressing global climate change, that it would be essential to improve energy efficiency, to diversify the energy mix – making wider use of clean and alternative energy, such as clean use of coal, nuclear energy and renewables – to improve the investment climate in energy-producing countries, and to engage emerging economies.

As areas for Japan-U.S. policy coordination in building international cooperation, with regard to improving the investment climate in energy-producing countries, both countries agreed on the need to enhance the producing countries' understanding of the importance of foreign investment in upstream sectors that are beneficial for both energy-producing and energy-consuming countries alike. Concerning the engagement of emerging economies, Washington and Tokyo also agreed on strengthening cooperation with China and India both bilaterally and multilaterally, and encouraging the latter two to improve their energy efficiency and build strategic oil stockpiles in collaboration with the IEA.

---

[19] Ministry of Economy, Trade and Industry of Japan, "United States-Japan Cooperation on Energy Security," Undated, www.enecho.meti.go.jp/policy/international-affairs/data/US-J_Cooperation.pdf (accessed April 30, 2008).

The Multilateral Level

Five-Country Energy Ministers' Meeting: The leaders of five countries –the United States, China, Japan, India and South Korea, all of which account for about the half of the world's energy consumption – gathered in Beijing for the first time in December 2006 and issued a "Joint Statement of the Five-Country Energy Ministers' Meeting," which advocated global energy security via the following measures:[20]

- Open, transparent, efficient and competitive energy markets to encourage investment in the whole energy supply chain, especially in oil and gas exploration and production, including transparent and effective legal and regulatory frameworks;
- Diversification of energy demand and supply, and of energy sources;
- Promotion of energy conservation and energy efficiency measures as well as development and deployment of environmentally sustainable energy technologies;
- Cooperative energy emergency response through strategic oil stocks
- Safeguarding critical energy infrastructure and sea-route security for transportation of oil and gas;
- Improved quality and timeliness of energy data made available to the market.

East Asia Summit: The Second East Asia Summit was held in Cebu, Philippines, in January 2007.[21] The heads of the member countries of the Association of Southeast Asian Nations (ASEAN), China, India, Japan, South Korea, Australia and New Zealand published the "Cebu Declaration on East Asian Energy Security," articulating the following policy measures:[22]

---

[20] Chinese Government's Official Web Portal, "Joint Statement of Energy Ministers, of China, India, Japan, Republic of Korea and the United States, Beijing, China on December 16, 2006," December 16, 2006, www.gov.cn/misc/2006-12/16/content_471001.htm (accessed April 30, 2008).

[21] It can be said that the necessity of cooperation in the energy field, articulated in the "Kuala Lumpur Declaration" and announced at the First East Asia Summit of December 2005, is being addressed increasingly in ever more concrete forms.

[22] The following points are cited with some modification, where necessary, from: Ministry of Economy, Trade and Industry of Japan, "Cebu Declaration on East

- Promotion of cleaner and lower emission technologies that allow for the continued economic use of fossil fuels while addressing air pollution and GHG emissions;
- Taking concrete action towards improving efficiency and conservation, while enhancing international cooperation through intensified energy efficiency and conservation programs;
- Setting individual goals and formulation of action plans voluntarily for improving energy efficiency;
- Encouraging collective efforts in intensifying the search for new and renewable energy resources and technologies, including research and development in biofuels;
- Ensuring availability of stable energy supplies through investment in regional energy infrastructure such as the ASEAN Power Grid and the Trans-ASEAN Gas Pipeline;
- Exploration of possible modes of strategic fuel stockpiling such as individual programs, multi-country and/or regional voluntary and commercial arrangements;
- Promotion of the clean use of coal and development of clean coal technologies and international environmental cooperation towards mitigating global climate change.

Asia-Pacific Partnership on Clean Development and Climate (APP): The first ministerial meeting of the member countries (the United States, Japan, China, India, South Korea and Australia) of the APP, which was originally instigated by a U.S. initiative as early as July 2005, was held in Sydney in January 2006, and adopted the Charter for the APP.

It is stipulated in the charter that one of the APP's purposes is to provide a forum for exploring the partners' respective policy approaches related to addressing the interlinked development, energy, environmental and climate change issues within the context of clean development goals, and for sharing their experiences in developing and implementing respective na-

---

Asian Energy Security," January 15, 2007, www.enecho.meti.go.jp/policy/internationalaffairs/data/CEBU%20DECLARATION.pdf (accessed April 30, 2008).

tional development and energy strategies.[23] The APP is considered as complementary to the United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol and other relevant international instruments. It can be interpreted, however, that the APP is a methodology to promote energy cooperation with an aim of promoting efficient energy use and energy conservation by addressing the issues from the standpoint of "clean development and climate."

Implications of Extra-Regional Powers' Engagement

Importance of the United States' Engagement

The development of cooperation between Japan as a "major energy-conserving power" and China as a "major energy-consuming power" will be one of the keys for ensuring energy security in the Asia-Pacific. It would be a misunderstanding if one assumed that cooperation between these two great East Asian powers will develop in a straightforward manner, however much their economic interdependence deepens.

It is important, however, that the United States has proactively developed its engagement in regional energy issues through establishing new international frameworks, and is increasingly playing the role of "shock absorber" between Japan and China. In other words, it can be assumed that the United States has realized that excessive aggravation of Sino-Japanese relations will ultimately undermine its own energy security.

For Tokyo and Beijing, the importance of Washington's engagement in regional energy security goes beyond the fact that the United States is not only the biggest energy consumer in the world but also has the capability of acting as a mediator between Japan and China. Given that, it would be impossible to concentrate merely on economic issues when implementing full-scale policy measures to ensure energy security. If one considers, as two examples, marine transportation, including through the Strait of Ma-

[23] Cited with some modification from: Asia-Pacific Partnership on Clean Development and Climate, "Asia-Pacific Partnership on Clean Development and Climate Charter, Adopted, Inaugural Ministerial Meeting, Sydney, 11-13 January 2006, Amended, Second Ministerial Meeting, New Delhi, 14-15 October 2007," www.asiapacificpartnership.org/pdf/resources/charter.pdf (accessed April 30, 2008).

lacca and the Taiwan Strait, and the international dissemination of nuclear technology, it would be unrealistic to solve such issues without the United States' proactive engagement in addition to Japan and China.

As a prelude for these three powers' cooperation, the exigency of energy cooperation was increasingly emphasized within the framework of ASEAN Plus Three (Japan, China and South Korea), leading to contemporary policy coordination within the framework of the East Asia Summit. Meanwhile, the launch and institutionalization of the Five-Country Energy Ministers' Meeting, which includes the United States, makes possible the bolstering of ASEAN-led efforts in energy cooperation.

It should also be noted as a positive trend that India, whose growth rate in energy consumption is second to China, has also been integrated into the policy coordination frameworks of Japan, the United States and China.

Russia as a Catalyst for Collaboration by Consuming Countries

Today, Russia is attempting to propel its advance into the energy markets of the Asia-Pacific. According to *Russia's Energy Strategy toward 2020*, published in August 2003, Moscow aims to increase the Asia-Pacific's share of its oil and natural gas exports to 30 per cent and 15 per cent, respectively, by 2020 (from a 3 per cent share for oil at the beginning of the twenty-first century.)

Russia uses the expansion of its crude oil and natural gas exports to the Asia-Pacific as a "negotiation card" to brandish at Europe for the purpose of both strengthening its position in price negotiations and enhancing its diplomatic presence.

However, there remains a high degree of uncertainty at present as to the scale of Russia's advance and the timing of its assumption of the role of a stable supplier despite its great potential for advancing into the Asia-Pacific energy markets. Rising resource nationalism and a tendency to drive away as much foreign investment as possible have cast a dark shadow on the prospects of securing a sufficient volume from the proven

reserves and stable levels of crude oil and natural gas production and exports.[24]

With regard to Russia's energy cooperation at the bilateral level in Asia, it has neither established a mature relationship with China nor Japan. Both Sino-Russian and Russo-Japanese energy relations are, in practical terms, continuing to seesaw. It can be said that the Sino-Japanese "scramble" over the Pacific pipeline project has also gradually abated, given that the development of the east Siberian oil fields has seriously fallen behind the original plan.

As for a multilateral framework with Russia's participation, the Energy Ministers' Meeting within the framework of the Asia-Pacific Economic Cooperation forum (APEC) has demonstrated virtually no active role or concrete function when compared with the earlier-mentioned international frameworks. Since the range of issues addressed by APEC is too wide and diverse, the question of promoting energy dialogue with Russia remains too specific an issue. The Asia-Pacific lacks a multilateral framework like the EU-Russia Dialogue to promote a producer-consumer dialogue with Russia at the governmental level.

Of course, it is evident that EU countries are not unanimous in energy policy towards Russia today. For example, Germany's independent effort to consolidate energy ties with Russia at the bilateral level is well-known. Against such a background, the physical constraints of oil and natural gas export via pipeline from Russia to Europe cannot be ignored. As of 2007, the EU's total dependence on Russia as a source of oil and natural gas imports is approximately 30 per cent for oil and 50 per cent for gas. The figures in Germany's case are 20 per cent and 35 per cent, respectively.[25]

In contrast, if the Asia-Pacific countries attempt to promote policy coordination with a view to institutionalizing a producer-consumer dialogue with Russia, they are basically free of the physical constraints that the EU must bear, and can virtually start from scratch. Russia's export of energy

---

[24] For more details, see Shoichi Itoh, "The Pacific Pipeline at a Crossroads: Dream Project or Pipe Dream?" *ERINA Report*, Vol. 73 (2007), pp .42–62.

[25] Judy Dempsey, "Oil dispute highlights need for Europe to diversify energy resource, analysts say," *International Herald Tribune*, January 9, 2007, http://www.iht.com/articles/2007/01/08/business/secure.php (accessed April 30, 2008).

products to the Asia-Pacific region is only now beginning. For example, the scale of the Sakhalin project's planned exports of natural gas to Japan and the volume of West Siberian crude oil to be exported to China have not been major enough to threaten the present energy security of both countries.[26] Therefore, Asia-Pacific countries can design their future policy coordination – with Russia in the role of supplier to the region – with a long-term perspective. It will be beneficial for the producer as well, if the consuming side can engage Russia as one, with the aim of stabilizing the energy consumption markets in the Asia-Pacific and enhancing predictability.

Meanwhile, Russia needs to speed-up the development of its east Siberian resources, bearing in mind that West Siberia's production growth rate for crude oil and natural gas is projected to peak in the near future. It means that the importance for Russia of promoting cooperation with the countries of the Asia-Pacific will be enhanced, and can never be reversed. It is estimated that the cost of developing oil and gas fields in east Siberia is several times higher than in West Siberia, considering the huge risks in developing the vast permafrost terrain where geological survey work is possible for no more than half a year. Russia's actual situation cannot help but lure a huge amount of foreign investment to set forward oil and natural gas development in Eastern Siberia on a commercial basis.

Asia-Pacific countries should in tandem request Russia to improve the transparency of data on reserves and the clarification of legal frameworks for protecting foreign investments. These points correspond to the principles and goals of "increasing transparency, predictability and stability of global energy markets" and "improving the investment climate in the energy sector," as stipulated by the St. Petersburg Plan of Action Global Energy Security, published as a result of the St. Petersburg G8 Summit hosted by Russia itself in July 2006.[27] However, it is hard to say that the investment climate and transparency in the energy sector of Russia have

---

[26] For a discussion about Russia's failure to use energy as a "weapon" in the Asia-Pacific, see Shoichi Itoh, "Russia's Energy Diplomacy toward the Asia-Pacific: Is Moscow's Ambition Dashed?"

[27] St. Petersburg Plan of Action Global Energy Security, July 16, 2006, *G8/2006 Russia website*, http://en.g8russia.ru/docs/11-print.html (accessed April 30, 2008).

improved since then. Russia is even turning its clock back in some respects.

To the extent that the development of oil and gas fields entails huge potential and risks as two sides of the same coin, it is necessary to establish a negotiation framework of frank discussions among the consuming countries on the one hand, between the producing side and the consuming side, and with an aim to distribute the associated investment risks rationally, on the other.

It should be noted that the number of collaboration cases among the Asian consuming nations in view of distributing the risks in developing upstream is increasing these days. China National Petroleum Corporation (CNPC) and Oil and Natural Gas Corporation (ONGC) reached an agreement of promoting cooperation with regard to exploration and development of oil and gas fields in January 2006. China National Offshore Oil Corporation (CNOOC) and Korea Gas Corporation (Kogas) signed a memorandum of cooperation in developing natural gas in November of the same year.

In March 2007, CNPC and Korea National Oil Company (KNOC) arrived at a basic agreement regarding exploration and development of oil fields. When Chinese Premier Wen Jiabao and Ma Kai, Chairman of NDRC, visited Tokyo in April of the same year, CNPC and Nippon Oil Corporation (ENEOS) concluded a memorandum of long-term cooperation, including the development of resources. Likewise, Japan and India have also reached a basic agreement on the development of resources.

The Second Asian Ministerial Energy Roundtable Meeting was held in Riyadh in May 2007 through Saudi Arabia's initiative, and Japan co-hosted it. The following points in its Joint Statement provide ideas for the way in which we can develop a multilateral dialogue of energy producers and consumers with Russia:[28]

---

[28] Ministry of Economy, Trade and Industry of Japan, 第２回アジア・エネルギー大臣円卓会議・共同声明 サウジアラビア–日本共催 [Joint Statement of the 2nd Asian Energy Ministers' Roundtable Co-hosted by Saudi Arabia and Japan], May 2, 2007, www.enecho.meti.go.jp/policy/international-affairs/data/Energy%20Roundtable_J.pdf (accessed April 30, 2008).

- Calling for greater cooperation and coordination among and between Asian energy exporters and importers within the bilateral, regional and global context, and encouraging the participation of international bodies, such as IEA, IEF, the Organization of Petroleum Exporting Countries (OPEC), in the promotion of the dialogue and cooperation;
- Continuing to work for the stability and predictability of energy market, and encouraging maintaining spare capacity of both producers and consumers and in the whole energy value chain: upstream, midstream and downstream;
- Working towards open, competitive and transparent oil and gas markets in order to reduce uncertainty and volatility in these markets;
- Recognizing that free and economically based global markets should be the basis for energy sources, and making efforts to maintain such markets in the interest of increased stability and transparency;
- Endeavouring to insulate energy markets from unwarranted political influences wherever they may occur.

It is stipulated in the very first paragraph of *Russia's Energy Strategy toward 2020* that:[29]

> Russia has a considerable amount of energy resources and fuel-energy complex's capability, which is a basis for economic development and implementation of domestic and foreign policies. *The country's role in the global energy markets determines its geopolitical influence*" (italics by the author).

The fact that Russia virtually attempts to build relationships with consuming countries by publicly disclosing its intention of using energy as a "diplomatic weapon" should not be overlooked.

If Asian nations wish to promote energy cooperation with Russia in the form of meeting each player's interest, the reckless bearing of more-than-necessary risks in developing Russia's upstream must be avoided. Instead,

---

[29] *Энергетическая стратегия Россиина период до 2020 года* [The Energy Strategy of Russia up to 2020], www.minprom.gov.ru/docs/strateg/1 (accessed April 30, 2008).

they should make the best of the contemporary positive trend in promoting collaboration among the consuming countries and explore more possibilities.

Conceptual Exploration of the Current Situation

Beyond the common notion of "energy security" fomenting critical perceptions with regard to interstate relations, this chapter has highlighted positive trends in the convergence of the national interests of Asian countries. It appears that agenda and policy recommendations that can be widely agreed upon have already been worked out. Energy security, in spite of its tendency to entail interstate conflicts in the past, has become a catalyst for cooperation. Given that multilayered frameworks have been in the making, it can be hypothesized that there has gradually emerged fertile ground for establishing what is called "regime" or "security community" as regards energy security in Asia.

A classical interpretation of regimes defined by Stephen Krasner is "implicit or explicit principles, norms, rules and decision-making procedures around which actors' expectations converge in a given area of international relations."[30] Hasenclever, Mayer and Rittberger provided a typology for distinguishing approaches to international regimes in three categories: power-based, interest-based and cognitive approaches.[31] The power-based approach, mainly associated with realism, assumes that hegemons create regimes that will serve their own interests according to the distribution of power. The interest-based approach, often associated with liberal institutionalism, assumes that rational actors will cooperate to form regimes in order to achieve joint gains regardless of the distribution of power. The cognitive approach highlights the role of ideas for the creation of regimes in the process of states pursuing their own interests and values.

In modern-day Asia, it is clear that the asymmetric distribution of capabilities in the energy field does not allow any single state to play a hege-

---

[30] Stephen D. Krasner, "Structural Causes and Regime Consequences: Regimes as Intervening Variables," in Stephen D. Krasner, ed., *International Regimes* (Ithaca: Cornell University Press, 1983), p. 2.

[31] Andreas Hasenclever, Peter Mayer, and Volker Rittberger, eds., *Theories of International Regimes* (Cambridge, UK: Cambridge University Press, 1997).

monic role and dictate the national policies of other states. It can be noted that the emergence of multilayered international frameworks shows policymakers' understanding of having no alternative but to promote strategic cooperation on impending energy issues. Besides the ideas on the values and virtues of cooperation in international society per se, it seems that more tangible matters associated with energy and environmental security have increasingly led policymakers to make rational calculations in a given situation.

A "security community" can be broadly defined as "a group of people that [became] integrated to the point that there is a 'real assurance that the members of that community will not fight each other physically, but will settle their disputes in some other way'."[32] Theorists of international relations have further divided this term into two categories: loosely-coupled security communities and tightly-coupled communities. The former assumes "a transnational region comprising sovereign states whose people maintain dependable expectations of peaceful change." The latter, in the first place, has a "'mutual aid' society in which they construct collective system arrangements" and, in the second place, possesses "a system of rule that lies somewhere between a sovereign state and a regional, centralized government."[33] Additionally, security communities can be classified into three "tiers" in their development towards "dependable expectations of peaceful change," as follows:[34]

- Tier One: the precipitating conditions entailing change in technology, demography, economics and the environment; the development of new interpretations of social reality; and external threats;
- Tier Two: the factors conducive to mutual trust and collective identity, with power and knowledge as structure, and transactions, organizations and social learning as process;

---

[32] Emanuel Adler and Michael Barnett, eds., *Security Communities* (Cambridge, UK: Cambridge University Press, 1998), p. 6. The "security community" concept is originally from Karl Deutsch, et al., *Political Community and the North Atlantic Area* (Princeton, NJ: Princeton University Press, 1957), p. 6.
[33] Adler and Barnett, eds., *Security Communities*, p. 30.
[34] Ibid., p. 38.

- Tier Three: the necessary conditions for dependable expectations of peaceful change, built by mutual trust and collective identity.

In light of the current state of emerging cooperation frameworks concerning Asian energy security, we can readily say that it is much too premature to expect Asian countries to reach the stage of Tier Three and that they are a long way off from a variety of tightly-coupled energy security communities. It can be said, however, that Asian players have at least entered Tier One and an embryonic stage of loosely-coupled energy security communities, which might gradually lead towards Tier Two.

About the Editors

Christopher Len is Project Coordinator at the Institute for Security and Development Policy, Sweden, and Associate Managing Editor of the China and Eurasia Forum Quarterly journal. He is also Visiting Associate at the Institute of Southeast Asian Studies (ISEAS) in Singapore. He is presently doing research at the Centre for Energy, Petroleum and Mineral Law and Policy (CEPMLP) of the University of Dundee, Scotland, UK. His current research interests focus on energy and security issues in Asia, and the growing political and economic linkages between the various Asian sub-regions.

Alvin Chew is a Research Fellow at the S. Rajaratnam School of International Studies (RSIS), of the Nanyang Technological University (NTU) and a coordinator of the Science, Technology and Security Programme. He has written articles on security issues related to military as well as the energy sectors, and works closely with the Centre for Non-Traditional Security Studies in the school. He also teaches *Technology and Strategic Policy* at the school's graduate programmes.