

SPRINGER BRIEFS IN ENVIRONMENT,
SECURITY, DEVELOPMENT AND PEACE 1

Mely Caballero-Anthony
Youngho Chang
Nur Azha Putra *Editors*

Energy and Non-Traditional Security (NTS) in Asia

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Development and Peace

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Energy and Non-Traditional Security (NTS) in Asia

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Preface

This volume is a compilation of selected papers presented at a conference on *Energy and Non-Traditional Security*. The conference, held in August 2008 in Singapore, was organised by the Centre for Non-Traditional Security (NTS) Studies at the S. Rajaratnam School of International Studies, Nanyang Technological University, Singapore.

The volume was first conceptualised against the backdrop of the world oil crisis of 2007–2009 and the impacts of the steep price rises on human collectivities. Since the convening of the conference, many significant global events have occurred, reinforcing further the salience of understanding the implications of NTS. The Arab Spring revolutions and the Fukushima nuclear disaster of 2011, for instance, have only increased awareness among the security community and policymakers of the scale of NTS challenges, as well as the multiplicity and cross-cutting implications of the threats, and the pressing need to address them.

Mely Caballero-Anthony and Nur Azha Putra introduce the volume with “Energy and Non-Traditional Security (NTS)—Understanding Security from Below”. This chapter introduces the concept of NTS, and provides the conceptual framework which acts as the theoretical foundation for this volume and its companion, *Rethinking Energy Security: A Non-Traditional View of Human Security*. The NTS framework seeks to expand the notion of energy security, from one anchored to a traditional, state-centric approach, to one based on human security or the security of human collectivities. This chapter unpacks the basic principles of energy security and reconstructs it through the NTS framework. In doing so, the authors open up the space for analyses of energy policies that are informed by various NTS themes and perspectives.

Youngho Chang and Swee Lean Collin Koh in “Rethinking Market Governance and Energy Security” discuss how the market, reinforced with good governance, regulate and normalise the impact of rising global oil prices on the public. For instance, they argue that good market governance, which promotes transparency, accountability and respect for competitive policies, would attract potential investors to fund long-term solutions (such as alternative energy technologies) to energy security problems. Hence, in this chapter, Chang and Koh stretch the notion of energy security to include market governance issues.

In "Energy Security and Climate Change in ASEAN: Implications and Policies", Youngho Chang and Lixia Yao present a quantifiable definition of energy security and illustrate how to measure energy security. The authors apply the quantifiable definition to Association of Southeast Asian Nations (ASEAN) countries, evaluating the policies and activities of these countries as they attempt to ensure energy security. Key policies and activities discussed are infrastructure building and hydropower exploitation in the region. They also discuss current efforts to enhance energy security and mitigate climate change, noting that the latter has profound impacts on the former. The authors also suggest how to address issues related to energy security and climate change in the region.

Maria Nimfa F. Mendoza in "The Socioeconomic Impact of Energy Security in Southeast Asia" examines the impact of rising energy prices in the global market on the various economies and communities in Southeast Asia. She also surveys the energy policies of Southeast Asian states and their attempts to mitigate rising fuel and energy prices, and how various communities have adapted to the higher costs of living. She concludes by arguing that the general tendency among states to aim for energy self-sufficiency and independence (in response to the spike in the global oil prices) may not, in the long run, actually lead to energy security for states in the region. Instead, she observes that energy security for Southeast Asian states may be best achieved through regional cooperation and interdependence.

In "An Environmental Perspective on Energy Development in Indonesia", Fitriani Ardiansyah, Neil Gunningham and Peter Drahos discuss the impact of Indonesia's energy security policy on its environment and economic activities, with particular reference to its shift towards coal and biofuels. For instance, they argue that the development of biofuels, particularly from palm oil, would lead to the rapid clearing of tropical forests, and this would affect forest-dependent people and wildlife. Therefore, they call for a more sustainable approach to the development of biofuels, suggesting, for instance, the harvesting of non-forested and abandoned lands, which can actually mitigate climate change and enhance economic development.

This volume on *Energy and Non-Traditional Security in Asia*, together with its accompanying volume, *Rethinking Energy Security: A Non-Traditional View of Human Security*, aims to widen the debate on energy security beyond the conventional views of what energy security means to the security and well-being of states and societies. We hope that the two volumes would encourage a more robust debate and lead to a more comprehensive approach to dealing with energy security challenges. We also hope that in advancing an NTS perspective to this complex security challenge, we can meaningfully contribute to the promotion of human security in Asia and beyond.

Mely Caballero-Anthony

NTS Non-traditional security
ASEAN Association of Southeast Asian Nations

Editorial

Springer Briefs in Environment, Security, Development and Peace (ESDP)

Hans Günter Brauch¹

This book series was stimulated by a chapter in the *Hexagon Series on Human and Environmental Security and Peace* (HESP) on the "Conceptual Quartet: Security and its Linkages with Peace, Development and the Environment".² This addressed the conceptual history and the context of four key concepts at the centre of four major research programmes in the social and political sciences and in international relations: (a) environmental studies or ecology; (b) international, national and human security studies; (c) development studies; and (d) peace studies or peace research. Six chapters analysed the dyadic conceptual relationship between: (i) peace and security; (ii) peace and environment; (iii) development and security; (iv) environment and development (sustainable development); (v) development and security; and (vi) environment and security.

These four key concepts and the six dyadic conceptual relationships address significant issues in international politics and in international relations but also in many other disciplines in the social and natural sciences. Both the HESP series of major multidisciplinary handbooks and these *SpringerBriefs in Environment, Security, Development and Peace* (ESDP) address the linkages across disciplines.

¹ Hans Günter Brauch (Dr. phil., Heidelberg University; Dr. habil., Free University of Berlin, Germany) has taught as a Privatdozent (Adj. Prof.) at the Otto-Suhr Institute for Political Science of the Free University of Berlin since 1999; since 1987 he has been Chairman of Peace Research European Security Studies (AFES-PRESS), an independent non-governmental and tax-exempt international scientific society in Mosbach in South Germany. He also occasionally teaches at SciencePo in Paris, at the European Peace University (EPU) in Schläining (Austria), and the PhD Programme of the *Centro de Estudios Superiores Navales* (CESNAV) in Mexico. Since 2006 he has been a senior fellow with the *United Nations University's Institute on the Environment and Human Security* (UNU-EHS).

² Hans Günter Brauch, 2008: "Conceptual Quartet: Security and its Linkages with Peace, Development and Environment", in: Brauch, Hans Günter; Oswald Spring, Ursula; Mesjasz, Czeslaw; Grin, John; Dunay, Pal; Behera, Navnita Chadha; Chourou, Béchir; Kameri-Mbote, Patricia; Liotta, P.H. (Eds.): *Globalization and Environmental Challenges: Reconceptualizing Security in the twenty-first Century*. Hexagon Series on Human and Environmental Security and Peace, vol. 3 (Berlin-Heidelberg-New York: Springer): 65-98.

In both the HESP and the ESDP series, the editor welcomes book proposals and completed manuscripts by natural and social scientists, as well as by multidisciplinary teams of authors. The material may address issues of global change and its impacts on humankind, on environmentally induced migration, on crises and conflicts, as well as proposing cooperative strategies to cope with these challenges either locally or in the framework of international organizations and regimes.

While the HESP series offers a platform for scientific communities dealing with global environmental and climate change, disaster reduction, human, environmental and gender security, and peace and conflict research, as well as for humanitarian aid and the policy community in national governments and international organizations, the focus of *SpringerBriefs in Environment, Security, Development and Peace* (ESDP) series is wider.

These *SpringerBriefs* present concise summaries of cutting-edge research and innovative policy perspectives. The series focuses on the interconnection of the new and non-traditional global environmental and development challenges that face humankind and that may pose dangers to peace and security in the Anthropocene era of the Earth's history. *SpringerBriefs in ESDP* publish short monographs and edited volumes of workshops that are peer reviewed by scholars from many disciplines and from all parts of the world. These *SpringerBriefs* will give more 'voice' and 'visibility' to scientists and innovative political thinkers in developing countries. *SpringerBriefs in ESDP* provide multi-, inter- and transdisciplinary knowledge relevant for coping with the numerous projected impacts of global environmental change, political, economic and cultural crises and conflicts. They offer

- Timely state-of-the art analyses (e.g. of earth systems science, geocology) and policy assessments of the global challenges facing humankind in the twenty-first century.
- Bridges between new research results with snapshots of hot and/or emerging topics, literature reviews and in-depth case studies.

As the *SpringerBriefs in ESDP* evolve, several subseries are planned on the four issue areas of environment, security, development and peace. The first will be the journal *Mediterranean Soil Ecosystems* that focuses on interdisciplinary research dealing with land issues of soil, water and environmental management. This journal is edited by Prof. Dr. Selim Kapur (University of Adana, Turkey) with the support of an editorial board that will manage the anonymous peer-review process.

The series editor welcomes brief concept outlines and original manuscripts as proposals. If they are considered of relevance, these proposals will be peer reviewed by experts from the natural and social sciences and from the humanities.

Mosbach, Germany, 21 April 2012

Hans Günter Brauch

Editor, *SpringerBriefs in Environment, Security, Development and Peace* (ESDP)

Editor, *SpringerBriefs on Pioneers in Science and Practice* (PSP)

Editor, *Hexagon Series on Human and Environmental Security and Peace* (HESP)

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Chapter 1

Introduction: Energy and Non-Traditional Security (NTS)—Understanding Security from Below

Mely Caballero-Anthony and Nur Azha Putra

Abstract The pursuit of energy security has long been associated with intense rivalry and competition among states for energy resources that are available in limited amounts outside their borders. More often than not, this competition has been perceived as a zero-sum game where one state's security can only be achieved at the expense of another's. Since the end of the Cold War and with it, the decline of inter-state wars, the idea that security primarily revolves around the sovereignty of the state has been challenged by the emergence of non-traditional security (NTS) scholars who argue that the debate should shift towards human collectivities instead.

Keywords Security · Non-traditional security · Energy security · Energy efficiency · Sustainable development · Renewables · Nuclear energy

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1.1 Introduction

Traditional notions of security are founded on the belief that national security concerns premised on military threats to state security supersede other security threats that could pose grave threats to the state and human security. The traditional security perspective puts the protection of a state's sovereignty from the threat of wars and violence as its sole concern. However, this perspective has been challenged by a number of scholars who have sought to broaden the security discourse by challenging the dominant belief that security revolves mainly around military threats.

Among the security analysts that have challenged the traditional security perspective are those that advanced the field of non-traditional security (NTS). NTS scholars argue that since the end of the Cold War and the collapse of the Soviet Union, threats to national security have been increasingly non-military in nature, with more incidents of internal and cross-border conflicts than inter-state wars occurring on the world stage. For instance, Caballero-Anthony et al. (2006) observe that security threats have in recent times evolved from military confrontations to non-military conflicts such as food security, water security, climate change, human trafficking, pandemics, cross-border conflicts and energy security. They add that most of these challenges are transnational in terms of their origins, conception and effects. Caballero-Anthony et al. (2006) argue that, more importantly, NTS has shifted the focus of security beyond the state to include human collectivities as the primary referent object of security.

Explaining the dynamics between traditional and non-traditional security, Hough (2008) points out that traditional realists regard non-military issues as "low politics". To these scholars, military, and not non-military, issues are what governments must prioritise and accord "national security" status. This perspective was eventually contested as being too narrow. Clearly responding to the observation that states are vulnerable also to non-military threats, an idea that resonates with the United Nations' notion of human security, several security scholars made the case that non-military issues should also be securitised and framed as a matter of national security (Buzan et al. 1998; Caballero-Anthony et al. 2006; Tow et al. 2000). According to Hough (2008), widening the concept of security is not simply a move to reconceptualise the meaning of national interests and reframe "high politics". Rather, it is an attempt to expand the security dimension to include non-military threats to human collectivities.

Therefore, "whose security are we referring to?" becomes the primary question. The answer can no longer be presumed to be the security of the state. Most recently, there is sufficient evidence, drawing on the cases of Tunisia's Jasmine Revolution and the Arab Spring revolutions in the Middle Eastern and North African (MENA) countries in 2011, to reasonably conclude that states can be brought down even in the absence of war and inter-state conflicts. A common thread running through the street protests and demonstrations is human security issues such as social and political freedom, poverty and economic development.

This volume is a valuable addition to the literature on energy security as it aims to examine the implications of energy security from a non-traditional perspective. The chapters and their analyses of energy security go beyond the traditional preoccupation with the security of supply, and concerns such as the security of infrastructure, maritime security, and geopolitical tensions between energy producing, consuming and transit countries. Instead, the volume emphasises the discussion of energy security through a human security lens in order to decipher their implications for the well-being of states and societies. Thus, the themes that are covered in this collection highlight issues such as governance and socioeconomic impacts. The chapters also draw the linkages between energy security, and climate change, health, environmental degradation and energy sustainability. Moreover, in analysing the implications of energy security for inter-state relations, this volume underscores the importance of promoting cooperation instead of competition, and of fostering regional cooperation.

The following sections provide a more detailed discussion of the salient elements of energy security from an NTS perspective.

1.2 NTS Perspectives on Energy Security

Essentially, energy security holds different significance for different nations, with the meanings largely dependent on whether the countries are exporters or importers of energy resources, and on the level of their economic development. Therefore, the notion of energy security varies by nation and region, and by their economic status.

According to the International Energy Agency (IEA), energy security refers to "uninterrupted physical availability at a price which is affordable, while respecting environment concerns".¹ Yergin articulates a definition with an international relations nuance: energy security is "lodged in the larger relations among nations and how they interact with one another".² Others such as Brown et al. (2003, p. 7) define energy security in terms of a resilient energy system which is able to withstand security threats.

Notwithstanding the different definitions and contexts, it could be suggested that, in general, energy security is about access to an adequate, affordable and sustainable supply of energy to meet the needs and aspirations of private and public consumption, and the provision of that supply in a way that is environment-friendly and takes into account the continued availability of energy resources for the consumption of future generations. NTS perspectives build upon this

¹ See IEA (International Energy Agency), 2011, "Energy Security", at: http://www.iea.org/subjectqueries/keyresult.asp?KEYWORD_ID=4103 (1 December 2011).

² Yergin, Daniel, "Ensuring Energy Security", in: *Foreign Affairs* (March/April 2006), at: <http://www.foreignaffairs.com/articles/61510/daniel-yergin/ensuring-energy-security> (1 December 2011).

conception and add that energy security should also enhance the security of human collectivities at all levels. To that end, NTS scholars call for collaboration rather than competition among states. The NTS approach therefore holds that the discussion of energy security must span three interdependent levels: international, national and individual. At the international level, energy security encompasses issues among nations. At the national level, it is about the ability of the state to supply energy affordably, reliably and sustainably. At the individual level, energy security is about the ability to maximise the economic utility of energy sources. Using an NTS framework, there are three elements to achieving energy security: security, stability and sustainability.

1.2.1 Security

From a geopolitics perspective, the energy security policies adopted by countries will have a direct bearing on the relations among nations. NTS scholars argue that the emphasis of such policies has to shift from competition to collaboration. Rather than competing for scarce resources such as oil and gas, they call for greater collaboration among nations within international and regional frameworks.

Nations are also encouraged to work together to manage the security of transnational energy infrastructures. Gas pipelines, and the transportation and storage of oil and gas, typically run across state borders and along international sea routes. The security of these transnational facilities and maritime routes requires collaboration among state security agencies. Inevitably, such frameworks would require greater dialogue, cooperation and information sharing among the stakeholders in the countries involved. Perhaps of greater significance is the potential for these frameworks to have a positive impact on regional stability and international security. It is thus important that a regional or international energy-security paradigm exists as a platform to facilitate greater cooperation and collaboration among the stakeholders.

1.2.2 Stability

Stability in the supply and demand of energy is particularly critical in ensuring that nations are protected from any supply shortages and rise in demand, and the concomitant price increases. Prolonged energy price hikes could lead to social unrest. For instance, in 2008, hundreds of villages in the Central Asian state of Tajikistan faced dire conditions when the price of electricity was raised by 20%, to a level barely affordable to the villagers.³ The situation worsened during winter

³ Najibullah, Farangis, "Tajikistan: Energy Shortages, Extreme Cold Create Crisis Situation", in: *Eurasianet.org* (12 January 2008), at: <http://www.eurasianet.org/departments/insight/articles/pp011308.shtml> (14 June 2009).

when the country had to rely on imported electricity from its neighbouring countries, Kyrgyzstan, Uzbekistan and Turkmenistan who themselves frequently run into energy shortages. Tajikistan's hydroelectric dams could not produce enough energy due to insufficient generating capacity and outdated facilities.⁴

In Europe, the soaring fuel prices of 2007–2008 brought waves of street protests and demonstrations in France, Spain, Portugal and Italy. Workers in industries such as fishing, trucking and agriculture were badly hit by the oil crisis. They went on strike and demanded that their governments reduce the price of fuel. Fishermen in Spain, Portugal and Italy, for instance, demanded that their governments provide subsidies to address the gap between high oil prices and low prices for fish.⁵

In Asia, the Indonesian government removed its subsidies for fuel, which led to a drastic price hike of almost 30 % in May 2008. This move was met by a series of street protests.⁶ Interestingly, this happened a few years after Indonesia became a net importer of crude oil in 2005. Around the same time, in 2008, the Malaysian government, which also provided fuel subsidies, took a different path and imposed limits on fuel sales to Singapore-registered cars. The government felt that its subsidies should not be extended to non-Malaysians.⁷ Meanwhile, several airlines in the United States were forced to reduce the number of flights and had to retrench staff as a way of lowering their operational costs, among them Continental Airlines, American Airlines, Delta Air Lines and United Airlines.⁸ In South Korea, the Transportation Industry Nationwide Labour Union of Korea went on strike and demanded that the government lower diesel prices and increase transportation fees.⁹

1.2.3 Sustainability

Sustainability is another key concept in examining NTS threats. The world's reliance on traditional fossil fuels such as oil, gas and coal has led to fears that those fuels would eventually be depleted. The high consumption of fossil fuels also raises

⁴ Marat, Erica, "Tajikistan Experiences Rolling Blackouts amid Freezing Winter Temperatures", in: *Eurasia Daily Monitor*, 5,14 (24 January 2008), at: http://www.jamestown.org/single/?no_cache=1&tx_ttnews%5Btt_news%5D=33322 (14 June 2009).

⁵ "Europe Fuel Protests Spread Wider", in: *BBC News* (30 May 2008), at: <http://news.bbc.co.uk/2/hi/7426971.stm> (1 December 2011).

⁶ Deutsch, Anthony; Hidayat, Taufan, "Indonesian Parliament Backs Fuel Subsidy Cut", in: *Financial Times* (14 December 2010), at: <http://www.ft.com/cms/s/0/f37cb472-078e-11e0-8d80-00144feabdc0.html#axzz1gyHf5yrT> (18 December 2011).

⁷ "Malaysia to Ban Border Fuel Sales to Foreigners", in: *channelnewsasia.com* (27 May 2008), at: http://www.channelnewsasia.com/stories/afp_asiapacific/view/350252/1.html (14 May 2009).

⁸ "Continental Airlines to Cut 3,000 Jobs, Reduce Flights", in: *St. Louis Business Journal* (5 June 2008), at: <http://www.bizjournals.com/stlouis/stories/2008/06/02/daily47.html> (14 December 2011).

⁹ Myung, Bryan, "Transport Strike in Yeosu Affects Plants", in: *ICIS.com* (12 June 2008), at: <http://www.icis.com/Articles/2008/06/12/9131791/transport-strike-in-yeosu-affects-plants.html> (18 December 2011).

questions of environmental sustainability, particularly as high carbon emissions have been implicated in climate change. To address the potential depletion of traditional energy sources and to mitigate the impact on the environment, countries have turned to various strategies, such as promoting energy efficiency, and pursuing alternative energy sources such as renewables and nuclear energy.

1.2.3.1 Energy Efficiency: The Fifth Fuel

Energy efficiency has, quite rightly, been referred to as the fifth energy fuel. The other four are coal, natural gas, nuclear energy and renewables. The American Council for an Energy-Efficient Economy defines energy efficiency as “a means of using less energy to provide the same (or greater) level of energy services” (Furrey and Black 2009, p. 3). The sectors consuming the most amount of energy are typically buildings, industries, utilities and transportation. Naturally, the call for greater energy efficiency would affect these sectors the most.

There are several ways in which greater energy efficiency can be achieved. One is through encouraging energy conservation. This would require a change in the behaviour and attitude of users of electricity, for instance, they would have to switch off the lights when they leave the office. The second is through the use of products incorporating green technology. This approach is now increasingly employed by the private sector. Measures adopted include using energy-saving office equipment such as air-conditioners, printers and computers. There is still room for improvement in this area. For instance, a 2011 survey by Singapore’s National Environment Agency found that a fifth of air-conditioner models and 9 per cent of refrigerators do not meet the minimum energy-efficiency standards specified under the Environmental Protection and Management Act.¹⁰ In the transportation sector, motorists could be encouraged to opt for electric or hybrid motor vehicles, which use cleaner forms of energy and are thus more environment-friendly.

Singapore is a case in point. It has institutionalised a number of legal frameworks and strategies to encourage industry, homes and the transportation sector to become more energy efficient. In 2010, the Energy Market Authority and the Land Transport Authority initiated the test-bedding of an electric vehicle programme in Singapore.¹¹ The objective is to examine the infrastructure requirements, and to identify business models arising from the use of electric vehicles.¹² Additionally,

¹⁰ Ng, Lian Cheong; Soh, Alvina, “20 % of Air-cons, 9 % of Fridges Don’t Meet Energy Standards: NEA”, in: *channelnewsasia.com* (31 August 2011), at: <http://www.channelnewsasia.com/stories/singaporelocalnews/view/1150310/1.html> (15 December 2011).

¹¹ Singapore Economic Development Board, “Test-bedding of Electric Vehicles in Singapore from 2010”, Press Release (6 May 2009), at: http://www.sedb.com/etc/medialib/downloads/media_release_2009/electric_vehicles.Par.87936.File.tmp/Press%20Release.pdf (21 July 2011).

¹² *Ibid.*

the Building and Construction Authority has implemented the Green Mark Scheme to drive the country’s construction industry towards more environment-friendly buildings.¹³

1.2.3.2 Renewables

Renewables such as solar energy, hydroelectric power, biofuels and wind energy could to some extent be alternatives to fossil fuels. However, they still require extensive investment in research and development before they can be fully commercialised. While renewables have enormous potential, the returns on investment are somewhat uncertain due to a number of economic factors.

Nevertheless, three countries in Southeast Asia look set to pursue at least one renewable-energy source—hydropower. Dore and Yu (2004, p. 4) estimate that the upper Mekong River has the potential to produce about 28,930 MW while the Mekong River Commission (2010) estimates that the lower Mekong River has the potential to produce at least 30,000 MW of electricity. It makes sense then that Laos, Cambodia and Myanmar have announced plans to develop and harness that hydropower potential. Situated along the lower Mekong River, these countries intend, with financing from the Asian Development Bank and other foreign investors, to construct dams and pico-hydropower projects. In particular, Laos aims to be the battery of Southeast Asia (Bounthongvongsaly et al. 2010). The government plans to produce hydroelectricity for commercial purposes; it intends to sell its hydroelectricity to its energy-hungry neighbours, Thailand and Vietnam. Electricity from its numerous pico-hydropower projects will be used to provide power for a large part of its rural population. Some commentators estimate that there could already be as many as 200 dams which are either completed, currently under construction or planned along the Mekong River.¹⁴

1.2.3.3 Nuclear Energy

Nuclear energy has been successfully adopted in many countries over the last five decades, especially in North America, Western Europe, Japan, Korea and China. It thus appears to Southeast Asian states to be a viable option. As such, several countries in the region have, in recent times, expressed interest in developing their own nuclear energy facilities, or have announced plans to do so.

The nuclear disaster in Fukushima, Japan, in March 2011, however, demonstrated the vulnerability of nuclear power reactors to NTS threats. The Fukushima

¹³ Building and Construction Authority of Singapore, 2011, “About BCA Green Mark Scheme”, at: http://www.bca.gov.sg/greenmark/green_mark_buildings.html (21 July 2011).

¹⁴ “Hydropower Development and Mekong River Fisheries: What Can Be Learned from the Columbia River?”, in: *International Water Power & Dam Construction* (5 October 2011), at: <http://www.waterpowermagazine.com/story.asp?storyCode=2060836> (12 October 2011).

Daiichi nuclear power plant's infrastructure and boiling water reactors were designed to withstand earthquakes measuring up to 8.2 on the Richter scale and a 20-foot tsunami; the resulting 9.0-magnitude earthquake and over 30-foot tsunami proved to be too much for the plant's security features (Yeo 2011). Japan's Nuclear and Industrial Safety Agency classified the disaster at level 7 on the International Nuclear and Radiological Event Scale. This puts it on par with the Chernobyl incident in 1986. The 1979 Three Mile Island incident in Pennsylvania, United States, was categorised level 5. Consequently, electricity supply to the north-eastern and eastern regions of Japan was disrupted. Thousands of households were left with rolling blackouts and minimal heat. The transportation network was also severely hit as a result of train service disruptions.

The reactions of Southeast Asian governments were predictable. They were quick to revise their energy security policies and their plans to adopt nuclear energy. President Susilo Bambang Yudhoyono of Indonesia said, "What happened in Japan last March can happen in Indonesia because (the two countries') geography is very much similar."¹⁵ On 27 April 2011, Thailand's Energy Minister, Wannarat Channukul, said that the country has delayed its first nuclear power plant project by 3 years due to public concerns. It had previously planned to start a commercial nuclear power plant in 2020.¹⁶ As for the Philippines, it is unlikely that the government will pursue any nuclear options in the short- to medium-term due to strong domestic opposition. This is despite indications in the Philippine Energy Plan for 2007–2014 that there are plans to revive the Bataan Nuclear Power Plant as well as construct four more nuclear plants between 2015 and 2025. These nuclear power plants had been expected to provide up to about 3,020 MW in generation capacity for the Philippines by 2035 (IAEA 2011, Table 8).

Only one country remained undeterred. While other countries in Southeast Asia rethought their nuclear power plans in the wake of Fukushima, Vietnam stood behind its ambitious plans. Vietnam intends to build at least eight to fourteen nuclear facilities in the next two decades.¹⁷

In the larger scheme of things, the euphoria and apparent rush among Southeast Asian states to adopt nuclear energy, which began sometime in the middle of the last decade, appear to have waned as a consequence of the Fukushima nuclear disaster. This could perhaps have been due to the negative public perception of the safety of nuclear plants, strong lobbying by green activists and the inability of states to allay public concerns about their nuclear ambitions. Another possibility

¹⁵ "Indonesian President Backs Away from Nuclear Power Plant Proposal", in: *Jakarta Globe* (18 June 2011), at: <http://www.thejakartaglobe.com/business/indonesian-president-backs-away-from-nuclear-power-plant-proposal/447676> (19 June 2011).

¹⁶ Jittapong, Khettiya, "Thailand Delays First Nuclear Power Plant to 2023", *Reuters* (27 April 2011), at: <http://uk.reuters.com/article/2011/04/27/thailand-nuclear-idUKL3E7FR2WB20110427> (30 January 2012).

¹⁷ "Japan Firm to Study Vietnam Nuclear Plant", *AsiaOne* (28 September 2011), at: <http://www.asiaone.com/News/Latest+News/Asia/Story/A1Story20110928-302045.html> (29 September 2011).

that is worth pondering is the influence of the Arab Spring revolutions on these decisions. The Fukushima disaster occurred at a time when the Arab Spring revolutions were gaining traction in the MENA region. There was widespread coverage in the mainstream media and on social networking forums. Presumably, states in Southeast Asia found it necessary to appeal to popular public sentiments and thus adopted a cautious stance on the use of nuclear energy. Interestingly, none declared outright that they would abandon their nuclear energy ambitions.

In June 2011, Singapore's Foreign Affairs Minister, K. Shanmugam, speaking at the Asia-Europe Meeting (ASEM) in Hungary, proposed that Singapore host an ASEM seminar on nuclear safety issues in 2012. He felt that the Fukushima disaster had opened up the path for countries aspiring to develop nuclear energy to share expertise and experience on safety issues.¹⁸ Presumably, this suggestion was well-received by Southeast Asian states since in September 2011, Singapore's Ministry of Foreign Affairs confirmed that it will host a regional seminar in 2012 to discuss cooperation, emergency preparedness and response capabilities.¹⁹

Singapore's attempts following the Fukushima disaster to galvanise the region towards a common shared objective in the area of nuclear energy security seem to underscore Caballero-Anthony et al.'s (2006) observations that security threats have in recent times evolved from military confrontations to non-military conflicts such as climate change and energy security, and that the non-military nature of such NTS threats would lead to states being more open about collaboration and cooperation in the area of shared security.

1.2.4 Conclusion

In conclusion, the traditionalists' notion of energy security has come under intense scrutiny and has been broadened by NTS scholars to include other referent objects beyond the state. Through the lens of human security which focuses on the general welfare and well-being of human collectivities, proponents of NTS argue that energy security is not simply about the security and sovereignty of the state, it is also about ensuring the well-being and dignity of its people as they respond to and manage the consequences of energy scarcity. A human-centred approach to energy security allows for a more sustainable approach to meeting energy challenges now and in the future, one which takes into consideration the needs of other peoples across a state's borders. Hence, sustainable development is an important feature of

¹⁸ Chan, Sabrina, "Shanmugam Proposes Singapore Host Nuclear Safety Seminar", *channelnewsasia.com* (7 June 2011), at: <http://www.channelnewsasia.com/stories/singaporelocalnews/view/1133779/1.html> (9 August 2011).

¹⁹ Ministry of Foreign Affairs Singapore, "Minister for Foreign Affairs and Law K Shanmugam at the 66th Session of the United Nations General Assembly, 22 September 2011", Press Release (23 September 2011), at: http://app.mfa.gov.sg/2006/press/view_press.asp?post_id=7272 (2 October 2011).

the NTS approach to energy security. To achieve this requires no less than greater cooperation and collaboration between states and among their peoples.

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Abbreviations

ASEM	Asia-Europe Meeting
ESI	Energy Studies Institute
IEA	International Energy Agency
MENA	Middle Eastern and North African
MRC	Mekong River Commission
MW	Megawatt
NTS	Non-traditional security

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continue to think in local rather than national terms. Control over access to land and the various permit systems create opportunities for rent-seeking behaviour of all kinds. Officials at this level of government might also be risk averse when it comes to embracing opportunities for renewable energy projects, as it would be much easier to behave opportunistically and continue working with Indonesian coal companies that, in the words of one interviewee, are “printing money by selling to China”. Indeed, the coal industry has had many years of experience in identifying relevant regional government mechanisms and officials through which business might be transacted, and of identifying circumstances and individuals where ‘informal’ payments may advance negotiations. Solving such problems may not be easy, but they will have to be solved if Indonesia is ever to drop the word ‘potential’ when it comes to describing its geothermal reserves of energy. Interestingly, all interviewees were acutely aware of the problems facing Indonesia at the local level of government when it came to implementing the strategic vision of its Energy Law of 2007.

Solving these problems will require patience on the part of the central government and negotiation with local governments using whatever financial levers it has at its disposal. One possibility is for the central government to create forums through which multilateral agencies, developers and banks meet with local government officials to explain the scale of funding and investment benefits available to local governments to help make geothermal, or other renewable energy options, a reality for Indonesia. The forum would need to be national in scope, so as to maximise its transparency, and operate under the leadership of the Indonesian President to give it convening power. The basic idea would be to use the forum to trigger a race for renewables, with those who move first at the local government level getting the biggest rewards. Creating such a forum would also help to lower the costs associated with searching for investors. Nationally publicising the success of a local government in, for example, a solar cooker initiative for poor people through the forum would be a good example of the kind of reputational tool that it could potentially be. A forum of ‘carrots’ could help to stimulate a race among local governments for renewable energy development, especially if driven by the stick of pricing reforms for fossil fuel energy.

5.6 Conclusion and the Way Forward

Indonesia’s diminishing oil reserves and declining production capacity are putting pressure on the government to immediately come up with a plan to achieve energy security. We have presented that energy security is just one crucial prong of a policy trilemma facing Indonesia, the other two being climate change obligations and energy poverty. Conceiving the problem as managing a trilemma will encourage a more unified approach to its problem solving. The trilemma offers a basic guide to policy-making—its successful management requires a search for policy complementarities that will allow Indonesia to move forward on energy security, energy poverty and climate change. Managing the trilemma requires a fine-grained and

evidence-based search and assessment of what is possible in the country’s renewable energy sector. Policies that address only one prong of the trilemma will probably end up deepening the adverse consequences for the other prongs. For example, continuing with the use of subsidised oil will only cost the country’s economy and place Indonesia in competition for a scarce resource, which is hardly a recipe for energy security. Similarly, increasing the use of coal for meeting short-term demand will only create long-term lock-in problems on GHG emissions in addition to promoting the adoption of cheap but inefficient coal technology. Coal, at best, can only serve as a partial response to the severe problems of energy poverty facing Indonesia.

While there is no way to easily resolve the trilemma, there are better ways to manage it. The key, we believe, lies in reforming the bureaucracy using the reduction of transaction costs around the implementation of energy policy as a broad criterion for changes that are essential. Increasing networked governance capacity around energy policy, for instance, via the creation of various councils, such as DNPI and DEN, that serve to enhance the capacity of the Indonesian government to create broader networks around these policies is desirable. What is not desirable is to create confusion and uncertainty around the implementation of energy policy decisions. Decisions once taken should not be allowed to drift into bureaucratic cycles of revisitation and renegotiation that smother investors in a smog of uncertainty. Such a vicious cycle can only favour established industries, such as coal and gas, that know the formal and informal paths to tread in order to achieve their desired outcomes. External investors interested in new initiatives in the renewable energy sector will without doubt end up as losers in this contest, and the upshot will be crash-through energy programmes borne of desperate short-term planning that end up deepening Indonesia’s crises. While improving the management of the trilemma is definitely within Indonesia’s reach, a necessary prerequisite for such improvement would be bureaucratic reform that targets its organisational practices around the implementation of energy policy.

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Abbreviations

ADB	Asian Development Bank
ANU	Australian National University
APEC	Asia–Pacific Economic Cooperation
BAPPENAS	Badan Perencanaan Pembangunan Nasional (National Development Planning Agency)
CARR	Centre for the Analysis of Risk and Regulation
CIA	Central Intelligence Agency
CO ₂	Carbon dioxide
DEN	Dewan Energi Nasional (National Energy Council)
DNPI	Dewan Nasional Perubahan Iklim Indonesia (National Council on Climate Change)
EIA	Energy Information Administration
ESDM	Kementerian Energi dan Sumber daya Mineral (Ministry of Energy and Mineral Resources, Republic of Indonesia)
EU	European Union
GDP	Gross domestic product
GHG	Greenhouse gas

GJ	Gigajoules
GW	Gigawatts
GWh	Gigawatts hour
ha	Hectares
HCVF	High conservation value forests
IAEA	International Atomic Energy Agency
IEA	International Energy Agency
IFCA	Indonesia Forest Climate Alliance
JICA	Japan International Cooperation Agency
KW	Kilowatts
LNG	Liquefied natural gas
LPG	Liquefied petroleum gas
mmboe	Millions of barrels of oil equivalent
MtCO ₂ e	Metric tonnes (tons) of carbon dioxide equivalents
mtoe	Million tonnes of oil equivalent
MW	Megawatts
NAEA	National Atomic Energy Agency
OECD	Organisation for Economic Co-operation and Development
OHS	Occupational Health and Safety
PERTAMINA	Perusahaan Tambang dan Minyak Negara (state-owned oil and gas company)
PLN	Perusahaan Listrik Negara (the state-owned electricity company)
PV	Photovoltaic
REDD+	Reducing Emissions from Deforestation and Forest Degradation Plus
REDS	Renewable Energy Development Sector
RSPO	Roundtable on Sustainable Palm Oil
tbd	Thousand barrels per day
tons	Metric tonnes
UK	United Kingdom
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change
US	United States
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
WWF	World Wide Fund for Nature

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