Nuclear Power in Vietnam: International Responses and Future Prospects

Tanya Ogilvie-White

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Cover image: Russia's Rosatom group General Director Sergei Kiriyenko (front left) and Vietnam's Trade and Industry Minister Vu Huy Hoang (front right) sign documents at the Presidential Palace in Hanoi as Russia's President Dmitry Medvedev (second left) and Vietnam's President Nguyen Minh Triet (second right) stand during a signing ceremony of the agreement on building a nuclear power plant in Vietnam, October 31, 2010.
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Please direct inquiries to:
American Academy of Arts and Sciences
136 Irving Street
Cambridge, MA 02138-1996
Telephone: 617-576-5000
Fax: 617-576-5050
Email: aaas@amacad.org
Web: www.amacad.org

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Preface

In 2006, with the adoption of the document "Strategy for Peaceful Uses of Atomic Energy up to 2020," Vietnam's government officially announced its long-term plan to meet rising domestic energy consumption by including nuclear energy in its energy portfolio. The following year, another document, "Strategy Implementation Master Plan," was released to provide further details on the roadmap that the Vietnamese government intended to follow to develop a nuclear energy program. According to the latter document, Vietnam's nuclear program would include the construction of two 1,000 megawatt of electrical power (MWe) reactors in Phuoc Dinh in the southern Ninh Thuan province by 2015, originally scheduled to be in operation by 2020. Following this, another 2,000 MWe nuclear power plant (with two reactors) is set to be built in Vinh Hai, a seaside community 40 kilometers from Phuoc Vinh, and scheduled to come online by 2021.

Despite recent obstacles that have forced the government to delay construction on the first two nuclear plants, Vietnam is thus poised to become the first state to operate nuclear plants in Southeast Asia, outpacing countries such as Indonesia and Malaysia, which have long been interested in nuclear energy.

The peaceful intentions of Vietnam's nuclear program are not in question today. But lessons from past proliferation outbreaks teach us two simple lessons. First, peaceful intentions may change over time, and thus the international community is justifiably interested in creating strong regulatory regimes and safeguards systems that can enhance transparency and confidence. Second, denying that the creation of new states with civilian nuclear power poses new security and safety challenges ultimately increases proliferation and safety risks and impairs the capacities of the international community to act in advance to reduce future risks and promptly to respond and manage risks if they nonetheless emerge.

In this paper, Tanya Ogilvie-White explores the nature of Vietnam's nuclear program. Through a thoughtful, deeply analytical, and empirically rich analysis, she demonstrates that thus far Vietnam is indeed operating on the international scene as a responsible nuclear power, demonstrating its full adherence to international treaties and maintaining an impeccable nonproliferation record. Nevertheless, the changing structure of the regional order in Southeast Asia, coupled with growing insecurity, territorial disputes, and an evident weakness of the chief regional organization, the Association of Southeast Asian Nations (ASEAN), to respond to such crises could create more powerful proliferation risks in the future. Ogilvie-White encourages stronger bilateral and multilateral engagement with the region and with Vietnam, in particular, in order to respond to and improve current strategic insecurities. She urges nuclear

weapons-states to successfully conclude the ratification process of the Protocol of the Southeast Asia Nuclear Weapons Free Zone Treaty. This would allow for a significant de-escalation of tension, particularly among external powers operating in the region, and would offer a privileged platform for confidence and trust building inside the region and with key external players.

For more than five decades, the American Academy of Arts and Sciences has played a pivotal role in nonproliferation studies, beginning with a special issue of *Daedalus* on arms control published in 1960. The Academy continues this focus today with its Global Nuclear Future (GNF) Initiative, which is working to prevent nuclear risks by identifying and promoting measures that will limit the security, safety, and proliferation risks created by the apparent growing global appetite for nuclear energy. The GNF Initiative has created an interdisciplinary and international network of experts that is working together to devise and implement nuclear policy for the twenty-first century.

To help reduce the risks that could result from the global expansion of nuclear energy, the GNF Initiative addresses a number of key policy areas, including the international nonproliferation regime, the entirety of the fuel cycle, the physical protection of nuclear facilities and materials, and the interaction of the nuclear industry with the nonproliferation community. Each of these areas has specific challenges and opportunities, but informed and thoughtful policies for all of them are required for a comprehensive approach to reduce the risks inherent in the spread of nuclear technology.

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Steven E. Miller, Codirector of the GNF Initiative
Harvard Kennedy School

Scott D. Sagan, Codirector of the GNF Initiative
Stanford University

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Tanya Ogilvie-White

For nearly a decade, Vietnam has been leading the field among states planning to introduce nuclear energy in Southeast Asia. Although the Communist Party of Vietnam (VCP) is cooperating fully with the International Atomic Energy Agency (IAEA), and has stated that it has no plans to develop the sensitive parts of the fuel cycle, it is keeping its options open, raising the question of whether a deterioration of the strategic environment in East Asia, combined with certain domestic developments, might tempt future Vietnamese leaders to develop a nuclear weapons capability. Within Southeast Asia, this possibility is not taken seriously. The widely held view among regional scholars and practitioners is that ASEAN (Association of Southeast Asian Nations) norms and institutions, especially the Southeast Asia Nuclear Weapon-Free Zone (SEANWFZ), will constrain intraregional proliferation dynamics.[1] This optimism is shared by some observers outside the region, who contrast what they see as Southeast Asia's benign strategic environment and proactive security community-building efforts with the fractious and conflict-prone international relations of the Middle East and Northeast Asia.[2] But some of this optimism is misplaced: proliferation pressures are growing in Southeast Asia, particularly in Vietnam, and ASEAN's

1. This view was regularly expressed during a series of workshops on nuclear energy development in Southeast Asia, which was attended by scholars and practitioners from Australia, India, Indonesia, Malaysia, Myanmar, New Zealand, Philippines, Singapore, Thailand, the United States, and Vietnam. The workshops, which were co-convened by the U.S. Naval Postgraduate School and University of Canterbury, were held in Christchurch, New Zealand, in 2009 and 2011, and in Kuala Lumpur, Malaysia, in 2012. It was notable that during these meetings, only scholars from outside Southeast Asia questioned whether ASEAN norms and institutions—SEANWFZ, in particular—would constrain regional proliferation dynamics over the long term. Michael S. Malley and Tanya Ogilvie-White, *Nuclear Challenges in Southeast Asia: Promoting Cooperation and Consensus*, U.S. Naval Postgraduate School Center on Contemporary Conflict, PASCC Report No. 2012 010 (August 2012).

2. See, for example, Helle Winge Laursen, "An Introduction to the Issue of Nuclear Weapons in Southeast Asia," International Law and Policy Institute, Nuclear Weapons Project Background Paper No. 3, June 2013, http://nwp.ilpi.org/wp-content/uploads/2013/06/BP03-13_ASEAN_WEB.pdf.

security institutions currently demonstrate limited capacity to address them. This paper discusses these dynamics, explaining Vietnam's peaceful nuclear power ambitions and regional and international responses to them; identifying potential future nuclear proliferation triggers; and examining regional proposals for reducing and managing proliferation pressures in Vietnam and in Southeast Asia more generally.

VIETNAM'S NUCLEAR ENERGY PLANS

The details of Vietnam's nuclear energy plan were first set out in two official documents: "Strategy for Peaceful Uses of Atomic Energy up to 2020," signed by Vietnam's former Prime Minister, Phan Van Khai, in 2006; and "Strategy Implementation Master Plan," signed by Vietnam's current Prime Minister, Nguyen Tan Dung, in 2007. The first document established the VCP's long-term plan to diversify Vietnam's energy sources by bringing its first nuclear power plant online by 2020 and gradually raising the ratio of nuclear power in the national electricity mix to 25 to 30 percent by the period 2040 to 2050. It called for a complete exploration of uranium reserves,[3] as well as the development of both the technical and personnel infrastructure in nuclear science and technology. The second document elucidated Vietnam's nuclear-energy plan in more detail, including milestones. The initial stage includes the construction of two 1,000 megawatt of electrical power (MWe) reactors in Phuoc Dinh, southern Ninh Thuan province, originally scheduled to begin in 2015, with an expectation that they would come into operation in 2020. Following this, another 2,000 MWe nuclear power plant (with two reactors) is planned for Vinh Hai, a seaside community 40 kilometers from Phuoc Vinh, originally scheduled to come online in 2021, with a further 6,000 MWe by 2030.[4]

The plan was approved by Vietnam's National Assembly in June 2008 in a "Law on Nuclear Energy," and so far has faced little public opposition. The nature of the Vietnamese state helps account for this: the one-party system is run by a collective leadership comprising VCP General Secretary Nguyễn Phú

3. The Ministry of Natural Resources and Environment's Department of Geology and Minerals is evaluating a uranium deposit in Quang Nam province. Canadian company NWT Uranium Corp has been asked to help assess prospects. An October 2011 nuclear cooperation agreement between Vietnam and Japan also includes the exploration and mining of uranium resources. Vietnam has concluded an additional agreement with India, which includes a uranium-ore processing technology study. However, current plans call for importing all of the uranium required for Vietnam's planned reactors. "Nuclear Power in Vietnam," World Nuclear Association, http://www.world-nuclear.org/info/Country-Profiles/Countries-T-Z/Vietnam/ (updated September 2013); "Vietnam," NTI Country Profiles, http://www.nti.org/country-profiles/vietnam/ (updated November 2013).

4. Tran Huu Phat, "The Status of the Vietnam Nuclear Power Program," presentation to the 16th Pacific Basin Nuclear Conference, Aomori, Japan, October 13–18, 2008, http://www.pbnc2008.org/documents/Publish/16PBNC_Plenary_2-3_(9).pdf.

Trọng, Prime Minister Nguyen Tan Dung, and President Trương Tấn Sang, who are all strongly in favor of developing nuclear energy. Since 2011, the National Assembly—a five hundred–member body, which is Vietnam's highest organ of state power—has become more active and influential in setting national priorities, and nuclear power has become a subject of scrutiny and debate. However, dissenting voices are few, and in any case, the VCP has a virtual monopoly on decision-making. More widely, although media coverage of nuclear issues is increasing, there is still very limited civil society debate over the country's nuclear future. This is in stark contrast to the lively debates among Southeast Asia's other nuclear energy aspirants—particularly Indonesia, where key politicians, environmentalist NGOs, and civil-society leaders have loudly and consistently opposed the government's nuclear-energy plans, and have significantly slowed momentum. The closed nature of Vietnamese politics and the constraints on freedom of expression help explain these differences. In Vietnam, public criticism of the state is often quickly punished, as demonstrated on numerous occasions when prominent journalists, who have questioned official policy or exposed cases of government corruption, have found themselves either without a job or imprisoned on charges of abusing democratic freedoms.[5] Social media is also carefully controlled. As a result, public criticism of VCP nuclear policy has been mild and low key, and easily countered by the government's powerful propaganda machine.[6]

Contrary to some expectations, the Fukushima nuclear disaster has failed to quell Vietnam's nuclear ambitions. Despite some second thoughts over the wisdom of pursuing nuclear energy elsewhere in Southeast Asia, the Vietnamese government and nuclear industry have firmly stated their determination to continue implementing the nuclear energy plan, but with a strong focus on safety, drawing on lessons from Japan's experience.[7] In May 2011, Vuong Huu Tan, Chairman of the Vietnam Atomic Energy Commission (VAEC), stated, "[W]e understand the nature of the problem in Japan. They use the old type of reactor, built 40 years ago."[8] He asserted that the new generation of reactors, which Vietnam will develop, were safer and that potential threats from earthquakes, tsunamis, and climate change would be factored into the reactor designs. Soon after, Deputy Prime Minister Hoang Trung Hai stated that there are no alternative energy sources that could be used to replace nuclear power in Vietnam by the year 2050. He explained that following events in Japan, the government had

5. "Vietnam Ponders Its Future," *The Nation*, January 12, 2009; "Background Note: Vietnam," U.S. Department of State, Bureau of East Asian and Pacific Affairs, March 2009, http://www.state.gov/r/pa/ei/bgn/4130.htm. It is worth noting, however, that the level of freedom and tolerance in Vietnam has increased, as evidenced, for example, by the strong domestic opposition that emerged on environmental grounds against a government plan to mine bauxite in the central highlands.

6. Andrew Symon, "Southeast Asia's Nuclear Power Thrust: Putting ASEAN's Effectiveness to the Test?" *Contemporary Southeast Asia* 30 (1) (April 2008).

7. "Fukushima Forces Rethink on Nuclear Across Asia," *Nuclear Energy Insider*, April 28, 2011.

8. M. Goonan, "Vietnam Stays the Nuclear Course," *Asia Times Online*, May 12, 2011.

discussed alternatives, such as importing electricity and the further development of hydropower plants, but decided that both faced too many difficulties; nuclear power could not be avoided.[9] This pledge was echoed by Le Dinh Tien, Deputy Minister of Science and Technology, who stated: "[W]e will still go ahead with our plans [for building nuclear power plants]. . . . After the breakdown of the nuclear plant in Japan, the international community has discussed and taken steps to raise safety standards. . . . In Vietnam, safety will also be one of the most important factors during construction."[10]

Although political commitment to the nuclear power plan remains strong, questions over safety have led the VCP's originally ambitious implementation targets to be put back by about three years. Two independent studies dating from 2011, both of which identified potential problems over siting, have contributed to these delays and could cause them to increase.[11] The first study claimed to have found evidence that southern Ninh Thuan province could be seismically unsafe. This claim was made by a group of scientists from the Vietnam Institute of Geosciences and Mineral Resources, based on their discovery of two previously unknown fault lines, at Suoi Mia and Vinh Hai.[12] According to the scientists, the faults have the potential to cause earthquakes that could rupture any proposed structures nearby. The second study, undertaken by scientists from Italian research institutions, argued that Vietnam's coastline is vulnerable to earthquake-generated tsunamis originating farther east in the South China Sea.[13] According to their analysis and simulation map, Ninh Thuan and a few nearby provinces are among the most vulnerable to wave impact. The findings prompted the Ministry of Science and Technology to fund further research, which is yet to be completed. When the follow-on studies were launched, the VAEC's Vuong Huu Tan stated: "If it is found that these fault lines threaten the safety of the planned nuclear power plants, they will be moved to other places"—an outcome that would cause significant delays.[14]

In addition to the safety-related challenges, Vietnam faces a number of capacity-related problems that are slowing progress; but most of these can be overcome with the help of external assistance. In fact, Vietnam has found no shortage of cooperation partners keen to get a toehold in its nuclear industry, which offers the second largest market for nuclear power in East Asia (after China), and is estimated to be worth $50 billion by 2020. The most recent

9. "No Alternatives for Nuclear Power by 2050: Deputy PM," *Eco-Business*, August 7, 2011.

10. "Tien Says Vietnam Will Ensure Safety at Nuclear Power Plants," *Bloomberg News*, August 15, 2011.

11. "EVN Pushes Forward on Ninh Thuan 2," *Nuclear Intelligence Weekly*, October 3, 2011.

12. "Seismic Study Finds Fault with Vietnam Nuclear Plants," *VIIPIP News*, August 29, 2011, http://viipip.com/homeen/?module=newsdetail&newscode=4121.

13. Mike Ives, "Vietnam's Nuclear Energy Plan Stepped up Despite Safety Concerns," *Associated Press*, October 17, 2013.

14. "Seismic Study Finds Fault with Vietnam Nuclear Plants."

agreement (known as a "123 agreement") was signed by U.S. Secretary of State John Kerry and Vietnam's Foreign Minister Pham Binh Minh on October 10, 2013, and approved by U.S. President Barack Obama on February 24, 2014. If ratified by the U.S. Congress, this agreement will allow U.S. companies to export nuclear equipment to Vietnam. This follows nuclear cooperation agreements with a large number of other countries, the most advanced of which are with Russia and Japan. Signed in October 2010, the Russian agreement was with Atomstroyexport, which agreed to build the Ninh Thuan 1 nuclear power plant. Rosatom has confirmed that it will supply the fuel, and also claims that it will take back the used fuel for the life of the plant (although Vietnamese experts have questioned the legal status of spent fuel arrangements, as discussed in the next section). In August 2011, state media announced that Vietnam was negotiating with Russia to borrow about $7.7 billion toward the cost of building the plant, and was seeking to raise $48.8 billion overall for power projects in 2011 to 2020.[15] It also announced that Vietnam and Russia had agreed to speed up their cooperation, especially in the fields of trade, education and training, and nuclear power.[16] The other advanced agreement, signed with the Japan Atomic Power Company in November 2010, commits Japan to build two reactors at the second plant site in Ninh Thuan province and to cooperate in a number of other areas, including the exploration and mining of uranium resources.[17] In July 2013, Japan and Vietnam agreed to accelerate this cooperation, but no firm dates for construction have yet been set for either the Russian or the Japanese projects. The most recent reports suggest that construction may not begin until 2017–2018 (two to three years later than originally planned).[18]

VIETNAM'S NUCLEAR INTENTIONS

Mounting energy demands and the desire for energy diversification are the primary motivators behind Vietnam's decision to develop nuclear power.[19] The country has relatively rich energy resources; it exports up to 40 percent of the

15. "Vietnam Plans to Raise $48.8 Billion for Power Projects in 2011–2020," *Viet Nam Business News*, August 5, 2011.

16. "Vietnam, Russia Agree to Boost Cooperation," SGGP English Edition, August 28, 2011.

17. "Japan and Vietnam Sign Cooperation Deal," *World Nuclear News*, January 21, 2011.

18. "Impetus for Japan-Vietnam Reactor Deal," *World Nuclear News*, July 5, 2013; "The Latest News About Vietnam's Nuclear Power Plants," *VietnamNet*, November 6, 2013; "Vietnamese Delay Confirmed," *World Nuclear News*, January 28, 2014.

19. For further background material on Vietnam's peaceful nuclear intentions, see Tanya Ogilvie-White's chapter on Vietnam in Mark Fitzpatrick, ed., *Preventing Nuclear Dangers in Southeast Asia and Australasia* (London: International Institute for Strategic Studies, 2009), 151–164; and Tanya Ogilvie-White and Michael S. Malley, "Nuclear Energy and the Prospects for Nuclear Proliferation in Southeast Asia," in James J. Wirtz and Peter R. Lavoy, eds., *Over the Horizon Proliferation Threats* (Stanford, Calif.: Stanford University Press, 2012), 85–113.

energy it produces, but domestic demand is exceptionally high. When the 2006 nuclear energy strategy was approved, the Ministry of Industry forecast that the country's electricity demand would double in just over four years, and then continue to rise by 17 to 22 percent annually over the 2010–2015 period.[20] Experts in the ministry argued that this growth in energy consumption could not be satisfied if Vietnam were to rely solely on its current mix of hydropower (42 percent), natural gas (37 percent), coal (17 percent), and oil (4 percent). They were also concerned about the unreliability of hydropower and the potential impact that power outages could have on foreign direct investment. They predicted that a shortage of electricity supply could occur by 2015, leaving Vietnam more dependent on electricity imports from China and Laos, which would need to be increased. Vietnamese officials worry that this dependence on foreign suppliers could compromise energy security, a situation that is politically complicated by disputes in the South China Sea, where Vietnam, China, and a number of other countries in Southeast Asia have competing claims over oil- and gas-rich territory.

Vietnam has consistently reassured its neighbors and the international community that its nuclear intentions are peaceful, and has taken concrete steps to demonstrate this commitment. Three developments are key in this regard. The first is the Law on Atomic Energy of June 2008, which sets out the legal framework for the development of the nuclear energy sector in Vietnam. The law, which was drafted with assistance of experts from the IAEA and officials from Australia, China, Russia, South Korea, and the United States, explicitly forbids the development of nuclear weapons and all forms of nuclear proliferation. (Article 12 of the law prohibits Vietnam from "researching, developing, manufacturing, trading in, transporting, transferring, storing, using, or threatening to use nuclear or radiation weapons.")[21] The second is Vietnam's ratification of the IAEA Additional Protocol on September 13, 2012; this agreement grants international inspectors expanded rights of access to Vietnam's nuclear and related facilities. If it is fully implemented (a complex process that is by no means guaranteed), this step should provide the international community with stronger assurances that Vietnam's declared nuclear activities are peaceful and that potential undeclared activities are not taking place.[22] The third important development is the IAEA's declaration, on July 3, 2013, that Vietnam is free of weapons-grade uranium, following a final shipment of 16 kilograms of highly enriched uranium (HEU) from Vietnam's Dalat national research center

20. "Vietnam Government Approves Ambitious Power Plan," *Thanh Nien News*, September 7, 2007.

21. The Law on Atomic Energy entered into force on January 1, 2009. The National Assembly of Vietnam, Law on Atomic Energy, Order No. 13/2008/L-CTN, Law No. 18/2008/QH12, June 12, 2008. See "Vietnam Legalizes Use of Civilian Nuclear Energy," *Thomson Financial News*, June 3, 2008.

22. Statement by H.E. Dr. Nguyen Quan, Minister of the Ministry of Science and Technology, at the 56th Annual Regular Session of the IAEA General Conference, Vienna, Austria, September 17–21, 2012.

to Russia, where it will be down-blended into low-enriched uranium to fuel power reactors.[23] This step has positive nuclear security and nonproliferation implications. Vietnam's leadership also fully supported the initiative to establish the recently launched ASEAN Network of Regulatory Bodies on Atomic Energy (ASEANTOM), which aims to promote cooperation and transparency in nuclear safety, security, and safeguards in Southeast Asia.[24]

These actions show that Vietnam wants to be seen by the international community as a responsible nuclear energy aspirant, both to quell potential concerns over the dual use nature of nuclear technologies and to attract the nuclear cooperation agreements and assistance that it desperately needs. This partly explains the increasingly proactive nonproliferation diplomacy that Vietnam's leadership has pursued in regional forums, as it has sought to deepen Vietnam's already solid nonproliferation credentials. Examples of these activities have multiplied year on year since Vietnam held the ASEAN Chair in 2010, which it used as an opportunity to launch a high-profile diplomatic campaign to strengthen the SEANWFZ. Since then, Vietnam has sustained its nonproliferation leadership, a role that has been enhanced by the appointment of Le Luong Minh, Vietnam's former ambassador to the United Nations in New York, as Secretary General of ASEAN from 2013 to 2017, as well as the election of Vietnam's Ambassador to Austria and Slovenia, Thiep Nguyen, as Chairman of the IAEA Board of Governors for a one-year mandate from 2013 to 2014.

Le Luong Minh's leadership was clearly on display during the regional seminar on maintaining a Southeast Asia region free of nuclear weapons, held in Jakarta in February 2013. In a powerful keynote address, he called the IAEA safeguards system an "indispensable instrument in nuclear nonproliferation," and he highlighted the Additional Protocol as a critical mechanism for "enhancing nuclear transparency and strategic trust among states."[25] In the same speech, he called the Bangkok Treaty a "strategic instrument for peace and security" in Southeast Asia, and emphasized that the IAEA safeguards system should be a key component of the control system that is to be established to verify compliance with the nonproliferation provisions of the Bangkok Treaty. He ended by warning his audience that the introduction of nuclear energy into Southeast Asia could trigger the future emergence of clandestine nuclear weapons programs, despite the existence of SEANWFZ. "There should be no room for complacency," he urged. Le Luong Minh's successor in New York, Le Hoai Trung, reinforced this forceful nonproliferation advocacy during the UN First Committee on October 15, 2013, calling for the world's highest priority to be

23. Sandor Tozser and Greg Webb, "Vietnam Removed Highly Enriched Uranium Research Reactor Fuel," IAEA Division of Public Information, July 3, 2013, http://www.iaea.org/newscenter/news/2013/vietnamheu.html.

24. Statement by H.E. Dr. Nguyen Quan at the 56th Annual Regular Session of the IAEA General Conference.

25. Speech by H.E. Le Luong Minh, Secretary General of ASEAN, at the Regional Seminar on Maintaining a Southeast Asia Region Free of Nuclear Weapons, Jakarta, February 12, 2013.

given to nuclear disarmament and nonproliferation, and for countries to "work harder together to create an environment of strategic trust."[26]

Despite Vietnam's peaceful nuclear intentions and proactive nonproliferation diplomacy, uneasiness exists among some U.S. nonproliferation experts and legislators over how the new nuclear power program could be misused in the future.[27] The development of nuclear energy is not necessarily a stepping-stone to nuclear weapons acquisition, but history shows that it can be, especially if the sensitive nuclear technologies of uranium enrichment or plutonium reprocessing are pursued either openly or secretly. Vietnam has made it clear that it is not currently planning to introduce these sensitive technologies; rather, it is planning to purchase nuclear fuel on the global market, which is normal for states in the early stages of nuclear energy development. Indeed, it is not logical from an economic perspective to develop enrichment and reprocessing capabilities to serve a modest nuclear energy program (which is one of the reasons why Iran's nuclear activities have long been considered suspect).

Official Vietnamese statements on the subject of nuclear fuel first appeared back in 2005, when VAEC Chairman Vuong Huu Tan said that Vietnam had not considered studying uranium enrichment or spent fuel reprocessing.[28] Of course, this was a statement about the past and not the future, but since then a number of official statements have confirmed that Vietnam has no plans to pursue enrichment or reprocessing. Most recently, during negotiations over the U.S.-Vietnam 123 agreement in October 2013, Vietnamese officials reportedly made a commitment to rely on international fuel markets for nuclear fuel rather than acquiring enrichment or reprocessing technology. The text of this agreement is not publicly available, but according to insider accounts, the commitment is political rather than legal, and thus non-binding, and applies to Vietnam's current plans rather than future ambitions. In other words, it could be characterized as a promise from the Vietnamese to refrain from doing something they are not currently intending to do anyway.[29] Vietnam could change its mind at any time and reverse this agreement, even if the text does not include

26. "Vietnam Strongly Supports Disarmament," *Voice of Vietnam*, October 16, 2013.

27. Due to these concerns, in December 2013, a group of U.S. lawmakers, including Edward Markey (D-Mass.), Ileana Ros-Lehtinen (R-Fla.), and Brad Sherman (D-Calif.), announced that they plan to introduce a measure that would make it tougher for the White House to win congressional approval for new nuclear cooperation agreements. Under the measure, any nuclear trade pact that leaves open the possibility that a new trading partner will develop domestic enrichment or reprocessing would require a majority vote by the House and Senate before going forward to implementation. See Elaine M. Grossman, "Lawmakers' Retort to Obama's 'Flexible' Nuclear Trade Policy: Potential New Limits," *National Journal*, December 12, 2013. Also see Henry Sokolski, "Obama's Nuclear Vietnam," *National Review Online*, June 4, 2013; and Matthew Fuhrmann, "Spreading Temptation: Proliferation and Peaceful Nuclear Cooperation Agreements," *International Security* 34 (1) (Summer 2009): 7–41.

28. Vuong Huu Tan, "Vietnam Atomic Energy Commission and the National Nuclear Power Development Program," *Journal of Nuclear Science and Technology* 5 (2005), http://www.vaec.gov.vn/News/baiviet.php?EV=1&iddomain=7&idbv=360.

29. Daniel Horner, "US, Vietnam Initial Civil Nuclear Pact," *Arms Control Today*, November 2013.

specific language confirming that Vietnam maintains its right to pursue sensitive nuclear activities at a later date.[30] However, it is significant nonetheless, signalling a high degree of confidence among U.S. negotiators that Vietnam's stated nuclear goals are sincere. Indeed, in approving the deal, President Obama stated, "I have determined that the performance of the agreement will promote, and will not constitute an unreasonable risk to, the common defense and security."[31]

These developments, while generally regarded as positive, are unlikely to erase the concerns of the most cautious nonproliferation stalwarts, and to be fair, there are good reasons to question Vietnam's willingness to rely on external suppliers over the longer term. On the one hand, Vietnam's leaders have been open to different fuel supplier arrangements, having also entered into an agreement with Rosatom to purchase Russian fuel for the life of the Ninh Thuan 1 nuclear power plant; discussed possible fuel supplier arrangements with Kazakhstan's President Nursultan Nazarbayev during his official visit in October 2011; and shown interest in the Russian-led International Uranium Enrichment Centre (IUEC), which was launched under the aegis of the IAEA in 2010.[32] On the other hand, it is still unclear whether Vietnam's officials and nuclear experts support external fuel supply arrangements in principle or if they consider them a short- to medium-term stop-gap. Serious reservations do appear to exist, including questions over the reliability of supplier countries, which might subject customers to unfair demands, and over the capacity of the IAEA to remain independent in any supplier dispute.[33] This might help explain why debate among elites has quietly begun over the possibility of developing the sensitive parts of the fuel cycle after 2030.[34]

If, in the future, Vietnam does opt to develop the sensitive parts of the fuel cycle to reduce reliance on suppliers, proliferation risks would grow. With this in mind, the spent fuel that will be generated by Vietnam's nuclear power

30. Under the 123 agreement, Vietnam could not enrich or reprocess U.S.-obligated materials (those transferred from the United States, as well as special nuclear material produced overseas through the use of U.S.-supplied nuclear material or reactors) without "specific future U.S. consent." Mary Beth D. Nikitin, Mark Holt, and Mark E. Manyin, "U.S.-Vietnam Nuclear Cooperation Agreement: Issues for Congress," *Congressional Research Service Report*, March 24, 2014.

31. Presidential Determination–Proposed Nuclear Agreement with Vietnam, The White House, Office of the Press Secretary, February 24, 2014, http://www.whitehouse.gov/the-press-office/2014/02/24/presidential-determination-proposed-nuclear-agreement-vietnam.

32. The first IUEC fuel bank, which is located in Siberia, has been operational since 2012, containing a reserve of enough low-enriched uranium for two full reloads of a 1 MW reactor. Fuel must be made available, within prescribed time limits, to any country designated by the IAEA Director General. E. Kosolalova, "Kazakhstan interested in nuclear fuel exports to Vietnam," *Trend*, October 31, 2011; and Keith Campbell, "International Uranium Enrichment Facility Attracts Interest as it Starts Delivering," *Engineering News*, November 16, 2012.

33. Ta Minh Tuan, "National Decisions, National Interest," *Bulletin of the Atomic Scientists*, October 9, 2012.

34. Author's discussion with Vietnamese official, November 2010.

plants, which is to be stored on-site,[35] could become a significant security issue. (If reprocessing technology is developed, used fuel can be recycled into fresh fuel, a process that can produce weapons-usable plutonium.) Much depends on how the spent fuel is managed, a highly complex and politically sensitive challenge confronting all countries that have chosen to develop nuclear energy, and a challenge that calls for multinational cooperation.[36] Vietnamese experts assert that the Russia-Vietnam nuclear cooperation agreement covering Ninh Thuan 1 does not include a clear legal obligation from Vietnam to return spent fuel and other radioactive waste to Russia, although it does commit Russia to cooperate with Vietnam to seek "reasonable solutions related to back-end fuel cycle services."[37] The same is true of the Japan-Vietnam agreement, which includes a vague provision to cooperate in the management of spent fuel, but does not include a clear legal commitment to return spent fuel to Japan.[38] It is also worth noting that Vietnam possesses natural uranium deposits, and is exploring the possibilities for mining them, and with India's help, is developing uranium ore processing technologies.[39] This adds weight to the argument that Vietnam could choose to end its reliance on external fuel supplies once an alternative, independent path becomes viable. Its leaders could conceivably decide that it is in Vietnam's national interest to pursue a higher degree of energy self-sufficiency.

ASEAN RESPONSES

Vietnam's nuclear program is not regarded as a potential proliferation danger by countries in Southeast Asia; concerns about the development of nuclear energy in the region focus on the safety implications rather than the proliferation risks,

35. Hoang Van Khanh (Institute for Nuclear Science and Technology, Vietnam Atomic Energy Institute), "Nuclear Power Development Orientation in Vietnam," presentation at the Technical Meeting on Technology Assessment for Embarking Countries, Vienna, Austria, June 24–28, 2013.

36. For an in-depth discussion of the challenges associated with the back-end of the fuel cycle, and multinational approaches and proposals that address them, see Charles McCombie and Thomas Isaacs, Noramly Bin Muslim, Tariq Rauf, Atsuyuki Suzuki, Frank von Hippel, and Ellen Tauscher, *Multinational Approaches to the Nuclear Fuel Cycle* (Cambridge, Mass.: American Academy of Arts and Sciences, 2010).

37. Le Doan Phac (Deputy Director General, Vietnam Atomic Energy Agency), "Drivers and Impediments for Regional Cooperation on the Way to Sustainable Nuclear Energy System," presentation to the IAEA, Vienna, Austria, August 1, 2012. See, in particular, slide no. 15, "Vision of back-end fuel cycle services for national nuclear power program," http://www.iaea.org/INPRO/4th_Dialogue_Forum/DAY_3_01_August-ready/4._-_2012-08-01_Vietnam_Presentation_LDPhac.pdf.

38. Akira Izumo (Deputy Director, Nuclear Energy Policy Division, Ministry of Economy, Trade and Industry of Japan), "International Cooperation for Establishment of Nuclear Infrastructure in the Socialist Republic of Vietnam," presentation to the IAEA, Vienna, Austria, February 2011.

39. See note 3, above.

a tendency that has been reinforced by the Fukushima disaster. When the proliferation risks associated with nuclear energy development are raised in public forums, officials stress the point that states in the region enjoy good relations through their membership in ASEAN and argue that the ASEAN Charter and SEANWFZ—both of which are intended to prevent the development of nuclear weapons in the region and enjoy strong regional support—prove their strong commitment to nonproliferation.[40] In this context, the emergence of an Iran- or North Korea-type scenario seems far-fetched. Moreover, although they are taken more seriously now due to a growing acknowledgment of the international obligations set out in UN Security Council Resolution 1540, nuclear terrorism risks are also generally seen as exaggerated, overshadowed by other, more pressing economic and development concerns, as well as fears over the potential for nuclear accidents as the region's nuclear infrastructure grows.[41]

Safety fears have been exacerbated by the bleak reports surrounding Japan's struggle to deal with the Fukushima crisis, which has prompted states in the region to look much more carefully at their nuclear energy plans.[42] Up to that point, there had been strong competitive dynamics among Southeast Asia's nuclear energy aspirants: nuclear energy was widely regarded by political leaders and officials as an opportunity to prove national technical prowess, consolidate regional leadership credentials, and carve a faster path toward developed-state status. In response to these dynamics, scholars from the region expressed concern that a race to become the first in the region to develop nuclear power could have dire consequences for public safety; they worried that too many officials, politicians, and technicians from the nuclear industry seemed to be more interested in competing in a game of ASEAN "one-upmanship" than in public safety.[43] Fukushima changed this.[44] As former ASEAN Secretary-General Surin Pitsuwan correctly predicted, Japan's struggle to prevent nuclear catastrophe had a major psychological impact on ASEAN members: "They will continue to explore [nuclear energy options]," he stated. "But I think the sense of urgency

40. Malley and Ogilvie-White, *Nuclear Challenges in Southeast Asia*, 3.

41. Ibid., 7. This emphasis continues, as demonstrated during the recent meeting of the Council for Security Cooperation in the Asia Pacific Nuclear Energy Experts Group (CSCAP NEEG), held in Dal Lat, Vietnam, on November 11–12, 2013. See the official conference report from that meeting: David Santoro and Carl Baker, "Institutionalizing Nuclear Governance in the Asia Pacific," *Issues and Insights* 13 (16) (November 2013): 1–14.

42. Sahara Piang Brahim, "Southeast Asia Not Ready to Go Nuclear," *East Asia Forum*, March 20, 2013; and Sofiah Jamil and Lina Gong, "Nuclear Energy Development in Southeast Asia: Implications for Singapore," *NTS Insight*, March 2013.

43. Malley and Ogilvie-White, *Nuclear Challenges in Southeast Asia*, 12–13.

44. For a global assessment of the impact of the Fukushima crisis on the nuclear renaissance (and other potential nuclear energy game changers in the future), see Kate Marvel and Michael May, *Game Changers for Nuclear Energy* (Cambridge, Mass.: American Academy of Arts and Sciences, 2011).

will certainly be contained. . . . They will look more deeply, they will look more carefully, and they will explore other alternative sources."[45]

More than three years on from Fukushima, the race for nuclear energy development in Southeast Asia has not resumed. Despite its own problems with delays, Vietnam is now leading the field by leaps and bounds, but there are no indications that its ASEAN partners see any benefit in trying to keep up. Indonesia, Malaysia, the Philippines, and Thailand are continuing with their own nuclear energy plans, but at a slower pace than before Fukushima. They appear much less concerned about trailing Vietnam and more concerned that Vietnam implements its ambitious nuclear plan safely, avoiding cutting any corners that could have negative social and economic consequences for the region. Increasingly, at meetings held under the auspices of ASEAN and other organizations, officials and analysts from Southeast Asia are directing pointed questions to their Vietnamese counterparts, asking for confirmation and clarity regarding the steps they are taking to mitigate safety risks.[46] While some have argued that these Fukushima-triggered safety concerns will diminish and competitive momentum will resume (spurred on by encouragement from the nuclear industry and the pro-nuclear policies of Japan's Shinzo Abe government[47]), the horrors of Super-Typhoon Haiyan might help keep safety issues in the spotlight. In particular, Haiyan's deadly impact on the Philippines could serve as a reminder of the region's vulnerability to catastrophic natural disasters, and of ASEAN's inability to respond, despite its recent focus on developing humanitarian assistance and disaster relief cooperation.[48]

45. "ASEAN More Cautious After Japan Nuclear Crisis," AFP, March 22, 2011. At a meeting of the Forum for Nuclear Cooperation in Asia (FNCA), held in Jakarta in July 2011, the impact of and lessons from the Fukushima disaster were the main topics of discussion. Representatives from all FCNA countries (there are twelve, including Indonesia, Malaysia, Singapore, Thailand, and Vietnam) said they had observed decreased support for nuclear power to varying degrees, due to public unease over safety. In Malaysia, while the government position on nuclear energy remained unchanged, public support for nuclear power was estimated to have declined from 60 percent to 34 percent in the aftermath of the Fukushima accident. The technical experts themselves, however, continued to advocate the "unique role of nuclear power as low carbon energy and as a tool for enhancing security of supply." They also expressed concern that worried publics do not fully understand "that converting [the] nuclear [energy] option to renewable [energy options] would lead to a significant increase in electricity tariff[s]." Like Surin Pitsuwan, they accurately predicted that the impact of Fukushima would be to delay nuclear energy development in Southeast Asia, and that the delays would mostly stem from the challenges of public acceptance and the need to ensure the highest possible safety standards. See Summary Report of the 3rd Panel Meeting, "Study Panel on the Approaches toward Infrastructure Development for Nuclear Power," Sari Pan Pacific Hotel, Jakarta, Indonesia, July 5–6, 2011, http://www.fnca.mext.go.jp/english/panel/e_panel3_03.html.

46. This has been evident during numerous regional meetings focusing on nuclear energy development in Southeast Asia, including one hosted by the National University of Malaysia (UKM) and co-convened by the U.S. Naval Postgraduate School and the University of Canterbury, New Zealand, in Kuala Lumpur, Malaysia, in May 2012. This pointed questioning was also observed at the CSCAP NEEG in DaLat, Vietnam, on November 11–12, 2013.

47. Jamil and Gong, "Nuclear Energy Development in Southeast Asia," 4.

48. Euan Graham, "Super-Typhoon Haiyan: ASEAN's Katrina Moment?" *PacNet* No. 82, November 20, 2013.

Beyond the safety and economic realms, there seems to be little public interest in Vietnam's nuclear program and no indication of any concern over the potential for future proliferation.[49] Certainly, there are good reasons to avoid over-hyping proliferation risks and threats, especially in a region like Southeast Asia, which in many ways deserves its reputation as a nonproliferation stronghold. But the lack of debate on these issues within ASEAN's many institutions is surprising nonetheless, especially given that the region has not been free of proliferation dramas, even after the SEANWFZ entered into force in 1997. Regional responses to Myanmar's nuclear activities illustrate this point, as very little concern was openly expressed by ASEAN members in regional debates, even at the height of international attention on Myanmar's nuclear program from 2009 to 2012.[50] During this period, frank discussion of the subject was so rare in Southeast Asia that it was considered newsworthy and surprising when it did occur. For example, during the ASEAN foreign ministerial meeting in Hanoi in April 2010, Thailand sought assurance from Myanmar that any future use of nuclear technology would be strictly for civilian uses and would be monitored by the IAEA. Outside Southeast Asia, this would have been considered a standard and predictable request. But this was not the case among ASEAN foreign ministers, who expressed their surprise that the issue had been raised in such a forthright manner.[51] They were also taken aback by the two-page memorandum that the Thai foreign minister distributed, which urged all ASEAN members to be more transparent with their nuclear programs. This failure to properly address the issue of nuclear ambiguity is troubling, especially given that an established regional mechanism for raising such concerns already exists in the form of the Bangkok Treaty Executive Committee, but ASEAN members were unwilling to use it for this purpose.[52]

Scholars offer different explanations of the reticence among ASEAN members to discuss nuclear proliferation.[53] One suggestion is that developing countries in general (not only in Southeast Asia) do not fully appreciate the proliferation dangers associated with nuclear technology, especially the corrosive effects of nuclear ambiguity. Others highlight what is often seen by those outside the region as an unrealistic belief among states party to the Bangkok Treaty that the SEANWFZ will constrain proliferation pressures, simply by virtue of its existence. Discussions that have taken place in academic workshops and informal diplomatic dialogues (known in East Asia as "Track Two" forums)

49. Malley and Ogilvie-White, *Nuclear Challenges in Southeast Asia*, 1–35, esp. 33.

50. Tanya Ogilvie-White, *The Nuclearisation of Southeast Asia*, report prepared by Arundel House, London (December 2011); extracts available from tanya.ogilviewhite@gmail.com.

51. Kavi Chongkittavorn, "ASEAN: Rethinking Nuclear Energy Use," *The Nation*, March 28, 2011.

52. States are entitled to request the Executive Committee to launch a fact-finding mission whenever serious doubts emerge about a state's compliance with the Bangkok Treaty.

53. For insight into these different perspectives, see Malley and Ogilvie-White, *Nuclear Challenges in Southeast Asia*, 1–35.

indicate that there is some truth in both of these arguments, but that they give an incomplete picture of the situation. Another factor, which might be less obvious to extraregional observers, is the concern among some regional officials that the ASEAN security architecture is still at an early stage of development, and that outside the "comfort zone" of economic and transnational security cooperation, ASEAN faces immense challenges when it comes to dealing with difficult security issues. This makes a more proactive regional stand on nonproliferation complicated and risky, particularly for those who fear it could backfire, weakening and even destroying regional security mechanisms before they have had a chance to mature. Others seem to worry that if proliferation risks are emphasized too much, they could become a self-fulfilling prophecy. These concerns help account for the "softly, softly" approach that ASEAN members have taken in response to suspicions over Myanmar's nuclear activities. They also help explain the reliance by countries in Southeast Asia on external powers—especially the United States—to help confront the harder security challenges.

In contrast to the majority of its ASEAN partners, Vietnam has been an outspoken critic of ASEAN's failure to address hard security issues, and has voiced its impatience with the widespread assumption within ASEAN that the Bangkok Treaty can be relied upon, come what may, to dispel proliferation pressures. ASEAN Secretary General Le Luong Minh's comments at the February 2013 SEANWFZ seminar in Jakarta were the most frank and robust comments that any Southeast Asian leader has made on the subject of regional nuclear weapons proliferation since the Bangkok Treaty entered into force in 1997. His remarks follow years of increasingly proactive Vietnamese nonproliferation diplomacy, which the country has pursued at the UN and the IAEA, as well as via the ASEAN Regional Forum, the Council for Security Cooperation in the Asia Pacific (CSCAP), and a number of U.S.-led plurilateral nonproliferation initiatives.[54] Vietnam stands out in the ASEAN crowd in this regard, even though it also puts its weight behind Non-Aligned Movement (NAM) and ASEAN positions, which, especially in the case of the former, tend to focus more strongly on disarmament and "inalienable rights" associated with the peaceful uses of nuclear energy and to criticize strengthened nonproliferation measures as disproportionately burdensome.[55]

A number of interesting questions emerge from this observation. First, why does Vietnam sometimes break with ASEAN diplomacy and speak out about proliferation risks, including the potential for breakout in its own region? To what extent is Vietnam's agenda driven by a desire to prove its nonproliferation credentials to the IAEA and potential bilateral nuclear cooperation partners, upon which the country's civil nuclear dreams and future develop-

54. Speech by H.E. Le Luong Minh at the Regional Seminar on Maintaining a Southeast Asia Region Free of Nuclear Weapons.

55. For insight into NAM positions on nonproliferation and disarmament, see Statement by Mr. H. E. Desra Percaya, Permanent Representative of the Republic of Indonesia on Behalf of the Non-Aligned Movement, at the General Debate of the First Committee on All Disarmament and International Security Agenda Items, New York, October 7, 2013, http://www.reachingcriticalwill.org/images/documents/Disarmament-fora/1com/1com13/statements/7Oct_NAM.pdf.

ment depend, and to what extent are other drivers also in play? For example, Vietnam's leaders might be genuinely concerned that the Bangkok Treaty will be unable to withstand strategic pressures in the years ahead, especially once Southeast Asia's nuclear infrastructure expands. They might also have calculated that under certain conditions, proliferation dynamics in Northeast Asia could begin to have a more profound impact on ASEAN members, increasing the appeal of extraregional alliances and/or indigenous nuclear weapons programs, especially in the absence of robust regional security mechanisms. These concerns might sound far-fetched and speculative in the context of today's relatively benign strategic environment in Southeast Asia, but as explained in more detail below, Vietnam is a special case within ASEAN. It considers itself to be more directly impacted by China's rise than any of its ASEAN partners, and thus to be in Southeast Asia's strategic "hot seat."[56] Whether Vietnam's Southeast Asian neighbors recognize this, or its possible implications, is currently unclear. Their apparent lack of concern over Vietnam's nuclear future, beyond their legitimate safety concerns, might indicate that they do not, or if they do, they do not believe any good can come from discussing the situation in public forums.

EXTRAREGIONAL RESPONSES

Outside Southeast Asia, international responses to Vietnam's nuclear energy plan have been overwhelmingly supportive. Indeed, Vietnam's experience exposes the inaccuracy of claims—common among NAM members—that developing states are at the mercy of a U.S.-dominated regime of technology denial. Although there are a couple of notable exceptions, the U.S. approach is to assess the merits and negotiate the specifics of nuclear cooperation on a case-by-case basis: where states are in good standing with the nuclear nonproliferation regime, as Vietnam is, the economic and strategic arguments in favor of bilateral nuclear cooperation agreements trump the concerns of those who highlight potential safety, security, and proliferation risks.[57] Thus, far from being constrained by international concerns about the dual-use nature of nuclear technology and the potential for future proliferation, nuclear momentum in Vietnam is being helped along by economic and strategic maneuvering among the nuclear supplier states, including the United States.[58]

56. Author's discussions with Vietnamese scholars and defense officials, Hanoi, Vietnam, March 2013.

57. Occasionally, even when a state is not in good standing with the regime, economic and strategic arguments have trumped nonproliferation arguments in the United States, but this is the exception. For example, the United States has pursued a controversial nuclear cooperation agreement with India, despite the fact that India is an NPT "holdout" and is involved in a dangerous nuclear-armed relationship with Pakistan.

58. The most recent report for U.S. Congress on the U.S.-Vietnam 123 agreement reflects this approach. See Nikitin, Holt, and Manyin, "U.S.-Vietnam Nuclear Cooperation Agreement."

Nuclear energy cooperation is widely seen as a benign form of engagement for cementing allegiances and balancing threats. This is as true of Vietnam as it is of its nuclear cooperation partners. According to reports, Hanoi originally favored European reactor technology as its preferred option, but chose to pursue nuclear energy partnerships with regional powers, Russia and Japan, based on strategic calculations.[59] Elsewhere in Southeast Asia, this dimension of nuclear cooperation has been a topic of discussion among scholars and practitioners for the past few years. According to Lee Mei Yi, the Singaporean author of an article in *Pointer* (Journal of the Singapore Armed Forces), nuclear energy expansion in Southeast Asia should be regarded as a prime opportunity to maintain U.S. influence in the region and to counter the dominance of Chinese soft power.[60] She wrote:

> Today, the rising enthusiasm for nuclear energy in Southeast Asia coincides with another reshuffling of the international order. Unquestioned American hegemony is a thing of the past. As the American "unipolar moment" draws to an end, its influence in Asia is increasingly challenged by China's soft power. . . . Set against the backdrop of U.S.-China rivalry, Southeast Asia's need for nuclear assistance and the American struggle to maintain its influence will bring both together in close collaboration on nuclear projects. . . . [T]he collaboration between Southeast Asia and the United States—both in the public and private sectors—is the lynch pin for continued American dominance in Asia.[61]

All of Vietnam's nuclear cooperation partners are conscious of these dynamics, and have been using nuclear cooperation agreements as part of their broader foreign policy goal of boosting their influence in Southeast Asia. In this, Japan, China, and South Korea have been able to use the ASEAN Plus Three meetings to their advantage, especially the Ministers on Energy Meeting, which has promoted an exchange of information on nuclear energy development between Northeast Asia and Southeast Asia. In the future, Japan's firm foothold in Vietnam's nuclear energy program could be matched by South Korea and China, which are both also energetically pursuing nuclear cooperation agreements: South Korea signed an agreement in March 2012, and in June 2013 launched a preliminary feasibility study to examine Vietnam-South Korea cooperation on two nuclear reactor projects.[62] China is also pursuing a nuclear cooperation deal and may offer Vietnam an export version of the CPR-1000 reactor.[63]

59. Author's discussion with Vietnamese official, November 2010.

60. Lee Mei Yi, "From Tightrope to a Balance Beam–What Southeast Asia's Nuclear Aspirations May Mean for the US-China Rivalry," *Pointer (*Journal of the Singapore Armed Forces) 37 (1) (July 2011): 32–41.

61. Ibid., 32–33.

62. "Premiers Agree Ongoing Korea-Vietnam Cooperation," *World Nuclear News*, September 10, 2013.

63. Steve Kidd, "Nuclear in Southeast Asia–Where and When?" *Nuclear Engineering International*, August 12, 2011.

There has also been plenty of interest in Vietnam's nuclear program outside Northeast Asia. Russia has a long-standing agreement to build the Ninh Thuan 1 nuclear power plant using two Russian reactors, and has recently ramped up other areas of bilateral energy cooperation.[64] India also has several nuclear cooperation agreements in place with Hanoi, including one involving the joint exploration of uranium-ore processing technology.[65] As India's "Look East Policy" matures further and the economic and strategic benefits of nuclear cooperation become more attractive, this bilateral relationship might well expand.[66] Additional agreements have been signed with France, Canada, and, as mentioned above, most recently with the United States, which had been pursuing a comprehensive nuclear cooperation agreement since initial deals were signed in 2007 and 2010.

In all of these negotiations, reservations about the wisdom of providing international assistance to facilitate Vietnam's nuclear energy development have rarely been expressed. There are many reasons for this, including positive assessments of Vietnam's benign intentions, discussed above; the economic and strategic arguments in favor of cooperation; the legal underpinnings of peaceful nuclear energy cooperation, as set out in Article IV of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT); and the relative lack of interest in international civil nuclear cooperation among civil societies in East Asia, beyond the contention that international cooperation is facilitating nuclear energy programs that pose a risk to public safety. Reservations over Vietnam's nuclear ambitions have also been quite muted and limited in the United States, although sophisticated debate on all aspects of U.S. nonproliferation policy has meant that there has inevitably been some criticism of U.S.-Vietnam nuclear cooperation. In particular, the U.S.-Vietnam 123 agreement has caused consternation among those who hoped that the Obama administration would insist Vietnam legally renounce uranium enrichment and reprocessing technologies.[67] Critics argue that the economic and alliance benefits associated with nuclear supplier relationships should not be allowed to trump proliferation concerns, however benign a nuclear aspirant's intentions appear to be, in part because nuclear cooperation facilitates the expansion of nuclear capabilities that can be extremely difficult to reverse if the strategic environment changes. These concerns have been expressed forcefully by U.S. nonproliferation expert Henry Sokolski, who has argued that the United States should negotiate United Arab Emirates-type cradle-to-grave supplier arrangements as an international gold standard and should not com-

64. Roberto Tofani, "Russia Rebuilds Ties with Vietnam," *Asia Times*, November 20, 2013.

65. "New Uranium Mining Projects–Asia," http://www.wise-uranium.org/upasi.html (last updated November 19, 2013).

66. Tanvi Pate, "Vietnam Forges Ahead on Nuclear Energy: Options for India," *Eurasia Review*, July 29, 2011.

67. Victor Gilinsky and Henry Sokolski, "The US-Vietnam Nuclear Deal," *National Review Online*, October 22, 2013.

promise.[68] Others have raised the same concerns, and have also noted the strong correlation between nuclear energy cooperation and conventional arms deals.[69] Concerns focus not on current U.S. and Vietnamese intentions, which are seen as legitimate, but on the possible unintended consequences of nuclear cooperation agreements: that is, even when both parties intend for them to boost security and stability by strengthening bilateral alliances and partnerships, they could have the opposite effect, increasing insecurities among neighbors, accelerating competitive dynamics among extraregional powers, and exacerbating proliferation challenges over the longer term.

These criticisms are occurring among a handful of the staunchest U.S. nonproliferation advocates. Outside this group, most U.S. officials, legislators, and analysts believe the approach they advocate is unnecessarily inflexible, unrealistic, and even unfair: why would or should Vietnam be strong-armed into signing away its rights; why should the United States insist upon this, especially when Vietnam is in good standing with its NPT commitments, and even has the Additional Protocol in force; and why would any country adopt a policy that would reinforce divisions in the nuclear nonproliferation regime, exacerbating long-standing sensitivities over the balance of rights and obligations?[70] The United States, in common with Vietnam's other negotiating partners, has shown that it is willing to accept Vietnam's voluntary commitments, to be led by the VCP's solid nonproliferation record, and to accept that Hanoi is unlikely to develop the sensitive parts of the fuel cycle, given the huge costs involved and the availability of foreign fuel supplies.

POSSIBLE FUTURE PROLIFERATION TRIGGERS

Even though the regional and international consensus is that Vietnam is very unlikely to use its peaceful nuclear energy program to develop a nuclear weapons capability, it is still worth considering the triggers that might alter Vietnam's nuclear intentions. It should be emphasized that Vietnam has never shown any interest in developing or acquiring any weapons of mass destruction (WMD) of any kind—unlike Indonesia, which showed interest at the elite level in developing an indigenous nuclear weapons capability in the mid-1960s.[71] Besides the probable stocks of Soviet-supplied chemical weapons and toxins left over from

68. Henry Sokolski, "The Post-Fukushima Arms Race?" *Foreign Policy*, July 29, 2011.

69. Charles D. Ferguson, "Potential Strategic Consequences of the Nuclear Energy Revival," *Proliferation Papers* (Summer 2010): 31–37.

70. For a discussion of these questions in relation to the nonproliferation regime more generally, see Steven E. Miller, *Nuclear Collisions: Discord, Reform & the Nuclear Nonproliferation Regime* (Cambridge, Mass.: American Academy of Arts and Sciences, 2012).

71. Michael S. Malley, "Prospects for Nuclear Proliferation in Southeast Asia, 2006–2016," *Nonproliferation Review* 13 (3) (Fall 2006): 605–615; Ogilvie-White and Malley, "Nuclear Energy and the Prospects for Nuclear Proliferation in Southeast Asia," 98–101.

the 1980s, there is no information in the open literature that suggests Vietnam has ever had any significant capabilities in this area. Nor are there currently any major indicators that Vietnam harbors nuclear aspirations beyond the peaceful uses of nuclear energy. However, this benign picture does not signal a complete lack of potential proliferation drivers. In fact, the combination of factors that have been identified as sparking proliferation decisions elsewhere has been historically present in Vietnam, and yet Vietnam's leaders have forgone the nuclear-weapons option. But there is no guarantee that this nuclear abstinence will not come under pressure in the future, especially once expanded civil nuclear capabilities enter into the equation.

Most proliferation experts agree that strategic calculations, based on the desire to balance real or perceived external threats, are the most important driver of nuclear weapons proliferation, but that a number of other considerations are also significant, such as the nature of the regime, leadership characteristics, and the role of influential pro-nuclear or anti-nuclear constituencies in nuclear decision-making.[72] Scott Sagan has also highlighted the correlation between autocracy, corruption, and proliferation. During a presentation exploring the implications of nuclear energy development in Southeast Asia, given in Singapore on November 3, 2010, he explained that the high levels of corruption and poor record of democracy in Southeast Asia should be regarded as red flags: the potential for nuclear energy programs to lead to nuclear weapons proliferation need to be taken seriously, particularly if security and stability in the region deteriorate at a future date.[73] These arguments go to the heart of the proliferation debate, raising questions about Vietnam's nuclear future: a combination of Vietnam's one-party political system, very high levels of corruption,[74] and the potential for a serious deterioration in its relationship with China place Vietnam firmly in a category of states that should legitimately be attracting the attention of proliferation analysts, irrespective of its current benign intentions and its disarmament and nonproliferation advocacy and credentials.

To build a comprehensive picture of Vietnam's proliferation profile, it is worth exploring the dynamics that have shaped its past nuclear decision-making and consider those that might have an impact on its future. The historical record shows that potential proliferation triggers were strong in the late 1970s and 1980s, when the Vietnamese leadership pursued an ambitious plan to cre-

72. Scott D. Sagan, "The Causes of Nuclear Weapons Proliferation," *Annual Review of Political Science* 14 (March 2011): 225–244.

73. For details of the meeting, see https://www.amacad.org/content/news/pressReleases.aspx?i=123. This theme is also addressed in Scott D. Sagan and Steven E. Miller, "Nuclear Power Without Nuclear Proliferation?" *Daedalus* 138 (4) (2009): 7–18.

74. Vietnam ranks equal 123rd (with Mozambique and Sierra Leone) in Transparency International's 2012 Corruption Perceptions Index. Denmark, Finland, and New Zealand ranked equal first as the least corrupt, and Afghanistan, North Korea, and Somalia ranked 174th as the most corrupt. Vietnam's position is currently the worst it has ever been, declining from a rank of 112 in 2011, 85 in 2002, and 74 in 1998. See http://cpi.transparency.org/cpi2012/results/.

ate an Indochinese federation under its control.[75] With the help of military and financial assistance from the Soviet Union, Vietnam established hegemony over Cambodia and Laos. This ambitious drive for subregional hegemony, combined with Vietnam's growing nuclear expertise, its proximity to China (a nuclear-capable adversary), and recent experience of chemical warfare and threat of nuclear attack by the United States, created strong pressures on Hanoi to develop a nuclear-weapons capability.[76] The fact that the regime did not do so can partly be explained by the then-close Soviet-Vietnamese alliance, a long-standing political, economic, and military relationship that provided Vietnam with sophisticated conventional weaponry and equipment right up until the late 1980s. Given the mutual interest among Soviet and Vietnamese leaders in limiting China's influence in Indochina, it is also possible that Moscow provided nuclear guarantees to Hanoi. It is impossible to confirm through available open sources that this nuclear dimension existed; and even if it did, it failed to prevent China from invading Vietnam's northern frontier provinces in 1979 in response to Vietnam's invasion of Beijing's ally, Cambodia.

At the end of the Cold War, Vietnam's disinclination to develop nuclear weapons persisted, despite its still-uneasy relationship with nuclear-armed and increasingly militarily powerful China and the lack of any formal allies or security guarantees. Along with Vietnam's continued military might (its total military manpower of 5.5 million, including 5 million reserves, makes Vietnam's military manpower on paper the second largest in the world), its rapid economic expansion, and its potential to become a subregional hegemon, these circumstances might have given Vietnam reason to seek dual-use nuclear capabilities. Instead, Vietnam attempted to balance Beijing's influence through a policy of regional engagement, with the wider foreign policy aim of ensuring that Vietnam is "friends with all countries."[77] As part of this strategy, Vietnam became increasingly embedded in a network of regional institutions, including the Asia Pacific Economic Cooperation forum, the World Trade Organization, ASEAN, ASEAN Plus Three, and the ASEAN Regional Forum, which constrained its national ambitions and provided Vietnam with a security net. It also sought to engage Beijing directly, through a series of bilateral discussions to resolve or at least manage ongoing sources of strategic tension.

Today, through these same methods of diplomatic engagement and efforts at economic "enmeshment," Vietnam is continuing to try to protect its national

75. Ralf Emmers, "Regional Hegemonies and the Exercise of Power in Southeast Asia: A Study of Indonesia and Vietnam," *Asian Survey* 45 (4) (July/August 2005): 645–665; and Ogilvie-White and Malley, "Nuclear Energy and the Prospects for Nuclear Proliferation in Southeast Asia," 91.

76. Ogilvie-White and Malley, "Nuclear Energy and the Prospects for Nuclear Proliferation in Southeast Asia," 88–94.

77. Vietnam Ministry of Foreign Affairs, "Vietnam Foreign Policy," extract from *The Political Report of The Central Committee–Vietnam Communist Party, 9th Tenure, at The Party's 10th National Congress*, updated July 28, 2007, http://www.mofa.gov.vn/en/cs_doingoai/.

interests in the increasingly difficult strategic environment of East Asia.[78] But in spite of important diplomatic successes, such as the January 2009 demarcation of the previously contentious mountainous land border with China,[79] there is a growing sense that a policy that served Vietnam well in the relatively benign strategic environment of the 1990s and early 2000s might no longer be sufficient: a combination of problems connected to China's growing regional assertiveness, doubts over the U.S. commitment to and capacity for maintaining its own influence in Asia, and flare-ups in unresolved disputes over strategically important and energy-rich island chains in the East and South China Seas mean that Vietnam's political leaders consider themselves to be in a geostrategic "hot seat" in a way that they have not been since the 1970s.[80] Under these conditions, proliferation pressures are growing, even if they are not acknowledged or necessarily recognized. In particular, the disputes in the South China Sea (which also involve Brunei, Malaysia, the Philippines, and Taiwan) weigh heavily on Vietnam, which under the Exclusive Economic Zone (EEZ) and continental-shelf principle claims a huge expanse of territory, including all the Paracel Islands (which China occupied in 1974) and all the Spratly Islands, where Vietnam occupies twenty-six features, including reefs and banks. Despite ongoing diplomatic efforts, tensions between China and Vietnam over the rights to these territories have been increasing, leading to tense exchanges and sparking large-scale, anti-China protests in Hanoi, some of which have been described as "fiercely patriotic."[81]

A major part of Vietnam's current dilemma is that the regional institutions in which it has invested so heavily since the 1990s are proving too weak to respond to hard security challenges, and the newer regional institutions that are being launched to address those weaknesses, such as the ASEAN Defence Ministers Meeting (ADMM) and ADMM Plus, are at a very early stage in their development and as yet unproven.[82] A major gap has opened up between expectations of what Vietnamese analysts and practitioners hoped would be achievable via regional security cooperation, and what has actually been possible. In an attempt to fill this gap, officials have been working to build new strategic partnerships, including with former foes, to try to peacefully balance great-power influence and maintain Vietnam's independence. This has brought Vietnam closer to the United States, Russia, India, Australia, Japan, and a number of other countries, including China, via expanded trade and investment ties (such as the peaceful nuclear-energy cooperation agreements discussed above),

78. Sadhavi Chauhan, "Vietnam's Role in ASEAN," *East Asia Forum*, October 23, 2013.

79. "China and Vietnam Settle Border Dispute," *The Associated Press*, January 1, 2009.

80. Author's discussions with Vietnamese scholars and defense officials, Hanoi, Vietnam, March 2013.

81. Marianne Brown, "Vietnam Takes Calculated Approach to Public Protests," *VOA News*, August 15, 2011.

82. Author's discussions with Vietnamese scholars and defense officials, Hanoi, Vietnam, March 2013.

as well as deeper bilateral and multilateral counterterrorism and transnational security cooperation, joint training in humanitarian assistance and disaster relief, and even growing military-to-military ties. Vietnam's leaders regard these forms of bilateral and plurilateral cooperation as a tool of peace, helping stabilize a region that they believe could too easily descend into open conflict.[83] Prime Minister Nguyen Tan Dung made this clear in his keynote address at the 2013 Shangri-La Dialogue, when he emphasized the importance of win-win cooperation and warned that "even a small confrontation can break an edifice of peace that has been meticulously built over decades," resurrecting the region's "dark memories of a time when mistrust, loss and animosity reigned."[84]

Vietnam's efforts at building cooperative partnerships should not be misinterpreted as a willingness to relinquish independence. Vietnam shows no interest in "taking sides" between the United States and China: even if the formal alliance arrangements enjoyed by Australia, Japan, and South Korea were on offer, including the provision of a U.S. nuclear umbrella, all the indications are that Vietnam would be extremely unlikely to pursue them. Vietnam prizes its independence far too highly to favor that path. Rather, its leaders view their country as a strategic balancer between the United States and China—able to protect their country's sovereignty and pursue its independent interests as long as great-power relations remain competitive.[85] For Hanoi, the worst possible outcome of the current power shift would be a Sino-U.S. rapprochement, under circumstances in which the United States and China carved up the world into separate spheres of influence, leaving smaller countries at the mercy of Washington or Beijing.[86] Nguyen Tan Dung hinted at this in his keynote address to the 2013 Shangri-La Dialogue when he stated that "smaller states do not want bigger states to negotiate security deals at their expense." Vietnam views its external balancing activities and efforts to expand its national defense capabilities as its best hope of dealing with this challenge, which also helps explain its ambitious program of military modernization, which has been under way since the VCP's eleventh national congress in January 2011. Since then, modernizing Vietnam's military capabilities, armed forces, and defense industry has been a national priority, in an effort to prepare Vietnam for a strategic environment

83. Author's discussions with Vietnamese scholars and defense officials, Hanoi, Vietnam, March 2013.

84. Le Dinh Tinh, "Vietnam's Prime Minister Speaks at Shangri-La 2013," *The Diplomat*, June 5, 2013.

85. Khong Thi Binh, "Vietnamese Perspective of China's Rise," in Lam Peng Er, Narayanan Ganesan, and Colin Durkop, *East Asia's Relations with a Rising China* (Seoul: Konrad Adenauer Stiftung, 2010), 408–440.

86. Ibid. This point is frequently raised by Vietnamese defense officials during discussions with new strategic partners, and is emphasized by scholars of Vietnam's strategic thinking. For some of the best analysis, see the work of Professor Carlyle A. Thayer, including his chapter "Vietnam's Security Outlook," in *Security Outlook of the Asia Pacific Countries and its Implications for the Defense Sector*, The National Institute for Defense Studies (NIDS) Joint Research Series No. 7, 2012, 69–86.

in which external counterweights to China decline (or in India's case, fail to materialize in a way that would be advantageous to Hanoi), and in which disputes over maritime sovereignty pose an even more serious threat to Vietnam's security. Hanoi's purchase of six Kilo-class conventional fast attack submarines, four Dutch Sigma-class corvettes, heavy torpedoes, advanced capability anti-ship cruise missiles, and multi-role jet-fighters are all part of this force modernization program, which should see Vietnam capable of deploying a submarine fleet by 2016–2017.[87]

Few now question the reality that East Asia's difficult and uncertain strategic environment is generating arms race dynamics and nationalist sentiment, and increasing the risk that a minor incident will turn into a full-blown international crisis.[88] Conscious of these dangers, Vietnam and China have boosted bilateral dialogue in an attempt to defuse tensions.[89] But anti-China sentiment is continuing to rise in Vietnam, fuelled by bilateral disputes over territory and resources in the South China Sea, the fertile Mekong River delta (where Vietnamese are worried about the impact of upstream Chinese dam projects on their livelihoods), and Laos (where China has become a major economic player and Vietnam is losing influence).[90] Vietnamese analyst Khong Thi Binh argues that these difficulties trigger Vietnam's collective memory of one thousand years of Chinese rule, during which the Vietnamese people fought against Chinese domination and struggled for independence.[91] This, more than anything else, makes Sino-Vietnam relations distinctive as compared to those of other countries in Southeast Asia, stirring patriotism and national pride, and augmenting fears over China's rise.[92] Indeed, Sino-Vietnam relations share important parallels with the tense and more hostile environment of Northeast Asia, where deeply engrained historical animosity, live territorial disputes, rising nationalism, and uncertainties over strategic power shifts are creating intense insecurity. With this in mind, China's declaration of an air defense identification zone (ADIZ) over disputed territory in the East China Sea will have been followed very closely by

87. Thayer, "Vietnam's Security Outlook," 79–80.

88. Geoffrey Till, "What Arms Race? Why Asia isn't Europe 1913," *The Diplomat*, February 18, 2013; and James R. Holmes, "Vietnam's Undersea Anti-Access Fleet," *The Diplomat*, November 1, 2012.

89. In June 2013, China and Vietnam agreed to establish a hotline to deal with incidents in the South China Sea, and signed a bilateral agreement on Basic Principles Guiding the Settlement of Maritime Issues. Since then, they have established a working group to explore joint sea projects, and are working to deepen their bilateral ties on an "easy-first, difficult-later basis," focusing on promoting cooperation on less sensitive issues of mutual concern, such as marine environmental protection, scientific research, and disaster relief. "China, Vietnam Ink Agreement on Fishery Hotline," *Xinhuanet*, June 21, 2013; and Brendan O'Reilly, "China-Vietnam: More Carrot, Less Stick," *Asia Times*, October 22, 2013.

90. James Bellacqua, "The China Factor in US-Vietnam Relations," CNA China Studies, March 2012.

91. Khong Thi Binh, "Vietnamese Perspective of China's Rise," 413.

92. Ibid. Note that the Vietnamese primary school curriculum celebrates the role of Vietnamese national heroes who resisted Chinese occupation.

Vietnam's political and military leaders, who might well view it as an ominous sign of things to come.[93]

In the context of these rising tensions, the possibility that Vietnam's leaders could be tempted to keep the nuclear option open should not be completely discounted, despite the country's historic record of forgoing the development of WMD capabilities. It is thought-provoking to combine what we know about Vietnam's long-term strategic goals with what we know about proliferation patterns, to foresee scenarios in which developing a nuclear-weapons capability could become a much more attractive option in the future, despite the constraints, including the backlash that could be expected from neighbors and partners.[94] The following events, none of which are far-fetched, and some of which could conceivably occur together, would likely create very powerful proliferation triggers in a country with an expanding nuclear infrastructure, even in a country with strong nonproliferation credentials:

- An escalation of maritime disputes in the East and South China Seas, with China becoming increasingly assertive;
- The continued growth of a powerful groundswell of nationalistic anti-China sentiment in Vietnam;
- Evidence that the asymmetric military relationship between China and Vietnam is rapidly widening, despite Vietnam's efforts to expand its national defense capabilities;
- Domestic unrest in Vietnam, sparked by VCP efforts to implement the major domestic reforms necessary to tackle massive endemic corruption and restructure the debt-laden public sector;
- Strong indications that China and the United States are working toward a rapprochement, leading to a major decline in U.S. influence in East Asia (escalating U.S.-Russia tensions, if a long-term development, could make this more likely);
- Suspicion that Japan and South Korea are developing indigenous nuclear weapons programs, amid entrenched nationalism directed against each other and against China; this trigger would be even stronger if nuclear breakout by Japan and/or South Korea was confirmed;
- Persistent failure of the ADMM and ADMM Plus and other ASEAN institutions to address hard security challenges, and little hope that this will change;

93. Peter Ford, "Southeast Asia Eyes Chinese Air Zone Expansion," *Christian Science Monitor*, December 6, 2013.

94. The analysis presented here expands on the ideas I previously developed in Fitzpatrick, ed., *Preventing Nuclear Dangers in Southeast Asia and Australasia*, 160–162.

- The emergence of a pro-nuclear weapons lobby in Vietnam among political elites and the scientific community; and
- Clear signals from one or more of Hanoi's diplomatic partners that they would not oppose the development of Vietnamese nuclear latency or nuclear weapons, based on the calculation that a nuclear-capable Vietnam could form part of a broader Asian counterweight to China, especially in the context of declining U.S. power and influence.

Under these conditions, a nuclear weapons option might be considered to have high strategic value and relatively low strategic costs for Vietnam, helping maintain Hanoi's independence in an unstable region where the U.S. hub-and-spoke alliance system is falling apart, where there is no effective regional framework to replace it, and where Vietnam's long-standing policy of addressing security challenges by becoming "friends with all countries" is failing. It might also be regarded as having political and prestige value, helping unite political and scientific elites behind the leadership, at a time when efforts to tackle corruption and implement major structural reforms lead to widespread, regime-threatening political discontent.

MITIGATING PROLIFERATION RISKS

While it is unlikely that Vietnam would choose to develop a nuclear weapons program, it cannot be ruled out altogether. Indeed, it seems more credible today than it did just seven years ago, showing how quickly the strategic environment in East Asia is changing.[95] This is a concern, notwithstanding Hanoi's currently peaceful nuclear intentions, because a nuclear-armed Vietnam would present risks to its neighbors and the international community, and would undermine the nuclear nonproliferation regime.

The extent of the risks would depend on the governance of what William Walker and Nicholas J. Wheeler have called the two "nuclear estates" (the scientific/industrial domain and the military/defense establishments), the nature of decision-making among the Vietnamese policy executive, and the internal stability of the state.[96] A nuclear-armed Vietnam would likely fit into a category of states that Walker and Wheeler, among other scholars, consider potentially problematic: states that are authoritarian, usually with high levels of corruption and militarization, with a leadership that is dedicated to the maintenance of

95. Since my original analysis, cited in note 94 (which was conducted in 2007 and published by IISS in 2009), strategic tensions associated with China's rise have increased in East Asia and Sino-Vietnam relations have deteriorated. While proliferation pressures were already observable in 2007, they are more significant today.

96. William Walker and Nicholas J. Wheeler, "The Problem of Weak Nuclear States," *Nonproliferation Review* 20 (3) (December 2013): 411–431.

internal control through fear and coercion.[97] Walker and Wheeler categorize these states as "hard weak states," in that they can superficially appear strong, but their weak civil societies and fragile legal and regulatory systems undermine their legitimacy and capacity for responsible nuclear sovereignty. In particular, a lack of transparency and checks on power can augment nuclear dangers, increasing the possibility of accidents and different forms of criminality, and heightening threat perceptions due to increased uncertainty and anxiety among neighbors.

Whatever the characteristics of Vietnam's future nuclear governance, a Vietnamese nuclear weapons program would have serious consequences for ASEAN. First, it is unlikely that the Bangkok Treaty would survive a case of nuclear breakout, and although its disintegration would not necessarily lead to copycat programs elsewhere in Southeast Asia, the kind of strategic environment that could plausibly lead Vietnam to choose the nuclear path would create strong proliferation pressures among some of its ASEAN partners, particularly the Philippines and Thailand, and possibly also Indonesia and Malaysia. It would also likely have even wider regional repercussions beyond the nuclear realm, putting immense pressure on other regional institutional mechanisms, possibly even leading to the demise of ASEAN. A suspected illicit program (as opposed to a confirmed one) would not have the same dramatic impact; but if the intelligence was credible and the proliferation motives appeared to be strong, the fruits of years of ASEAN confidence-building efforts would be threatened, and depending on how the suspicions were handled, could lead to a more gradual demise of regional frameworks and the reemergence of the zero-sum strategic calculations and instability that dominated pre-ASEAN Southeast Asia.

Mitigating proliferation risks is therefore just as important in Southeast Asia as it is elsewhere: although the risks are low, they do exist, and they are rising due to uncertainties stemming from current power shifts. Of course, in addition to normative constraints, serious domestic and international deterrents confront any state that might be tempted to develop a nuclear weapons program, some of which are already strong, such as the threat of international sanctions and loss of bilateral nuclear cooperation agreements, or the chance that illicit nuclear activities would backfire, increasing insecurity by making the state a target of hostile counterproliferation actions. The fact that nuclear facilities can become military targets, and have been bombed in the past, would surely factor into any state's calculations over whether pursuing a secret nuclear weapons program is worth the potentially very high price.

97. For further discussion of the relationship between state type and proliferation consequences, see Mark Bell and Nicholas Miller, "Questioning the Effect of Nuclear Weapons on Conflict," *Journal of Conflict Resolution*, August 19, 2013; Michael David Cohen, *Nuclear Proliferation and the Use of Force: Nuclear Coercion and Nuclear Learning* (Ph.D. thesis, University of British Columbia, April 2012); and Reid B.C. Pauly and Scott D. Sagan, *The Conundrum of Close Calls: Lessons Learned For Securing Nuclear Weapons* (Carlisle, Penn.: Strategic Studies Institute, U.S. Army War College Press, July 2013).

More important are positive constraints, especially bilateral and multilateral initiatives that have the potential to ameliorate strategic insecurities—the "win-win cooperation" that Prime Minister Nguyen Tan Dung alluded to at the 2013 Shangri-La Dialogue.[98] Most of these mitigation measures are beyond the scope of this paper and require detailed studies in their own right: steps to enhance military transparency and deepen political and defense cooperation within ASEAN, between ASEAN and the wider region, and internationally.[99] There are many possibilities, including parallel trilateral India-Vietnam-Japan, China-Vietnam-Australia, and U.S.-ASEAN-China initiatives, which would provide a platform for Indo-Pacific countries to seek peaceful solutions to issues of mutual concern, particularly in the maritime sphere. A number of these arrangements already exist in the region, including India-Japan-U.S. and Australia-Japan-U.S. trilaterals, but as yet none include Vietnam and most exclude China, which is likely to be counterproductive over the longer term. But if this imbalance can be rectified (a big if), and efforts turn to building genuinely inclusive and cooperative approaches to security, these types of arrangements could have a much more significant impact on nuclear proliferation dynamics than specifically targeted nonproliferation initiatives. This is because the former can help shape the international order as a whole, building strategic trust and reducing tensions, whereas the latter are directed at managing one aspect of a much bigger and more complex problem. Nevertheless, there are some important priorities in the nuclear realm that deserve attention.

A key step is to successfully conclude negotiations between ASEAN members and the nuclear weapons states (NWS) on the thorny issue of the Protocol of the Bangkok Treaty, which many hoped would be possible at the 20th ASEAN Summit in Phnom Penh in July 2012.[100] Unfortunately, at best, the Protocol talks have stalled, and there are even indications of regression in negotiating positions. This is especially true of China, which had previously favored signing the Protocol, but has begun repeating its pre-2004 objections over the Protocol's challenge to its territory, exclusive economic zone, and continental shelves.[101] Reservations are also continuing to be raised by the other NWS, but from Vietnam's perspective, China's newly expressed resistance is likely to be especially troubling due to the difficult nature of Sino-Vietnam relations. Entry

98. Le Dinh Tinh, "Vietnam's Prime Minister Speaks at Shangri-La 2013."

99. For details, see the documentation from ASEAN summit meetings (including the 8th East Asia Summit, and the second ASEAN Defence Ministers' Meeting Plus, held in Brunei Darussalam from August through October 2013). The extent to which these efforts reduce proliferation pressures will depend on the success of the ASEAN project to build a regional security community, and on international efforts to promote cooperative approaches to security. A great deal of activity is under way in these areas, spurred on by growing concerns over the potential for instability and conflict in East Asia.

100. Malley and Ogilvie-White, *Nuclear Challenges in Southeast Asia*; and Peter Crail and Xiaodon Liang, "Southeast Asia Nuclear-Weapon-Free Zone and the Nuclear-Weapon States," *Asia Pacific Bulletin* No. 148, February 7, 2012.

101. Supalak Ganjanakhundee, "Nuclear States Shun ASEAN Treaty," *The Nation*, July 9, 2012.

into force of the Protocol would have tremendous security benefits for Hanoi, given that Article 2 commits signatories to "undertake not to use or threaten to use nuclear weapons against any State party to the [Bangkok] Treaty" and "not to use or threaten to use nuclear weapons within the Southeast Asia Nuclear-Weapon-Free Zone."[102] This might not seem particularly relevant in the context of current Chinese nuclear doctrine, which includes a "no first use" commitment, but reports of China's nuclear expansion and modernization, combined with doubts over the sincerity and durability of Beijing's no-first-use pledge,[103] mean that it is much more significant for Vietnam than many realize. This makes the disappointed expectations of the 2012 negotiations and subsequent backtracking by the NWS all the more significant.

In addition to the negotiations over the Bangkok Treaty Protocol, several important initiatives are under way that specifically address nuclear issues in Southeast Asia, but in common with the Protocol negotiations, their success will largely be determined by much broader strategic imperatives. Specific initiatives, most of which are still at an early stage in their development and require much more focused attention, include:

- The new Plan of Action that will strengthen implementation of the SEANWFZ.[104] The plan outlines several steps to ensure compliance with the undertakings of the Bangkok Treaty, including, most significantly, a commitment to implement a control system to verify treaty compliance, in line with the obligations listed in Articles 10–13. If implemented, this would help ASEAN members dispel suspicions that clandestine nuclear weapons activities are under way.
- The creation of numerous regional networking and capacity-building initiatives, which aim to build assurances among countries in Southeast Asia that nuclear energy plans are peaceful and will be implemented according to best practices in terms of safety, security, and safeguards. Key among these are ASEANTOM, which aims to promote best practices in nuclear safety, and the Asia-Pacific Safeguards Network (APSN), which promotes the sharing of nuclear safeguards information, knowledge, and practical experiences among countries in the region. Southeast Asian members of APSN include Indonesia, the Philippines, Singapore, Thailand, and Vietnam.
- Implementation of the ASEAN Single Window (ASW), a regional security initiative that promises to improve strategic trade management in Southeast Asia. An agreement to establish and implement the ASW was

102. Protocol to the Treaty on the Southeast Asia Nuclear Weapon-Free Zone.

103. Michael Richardson, "China's Nuclear Program Still Shrouded in Secrecy," *The Japan Times*, May 23, 2013.

104. Plan of Action to strengthen the implementation of the Treaty on the Southeast Asia Nuclear Weapon-Free Zone (2013–17), adopted June 30, 2013.

signed on December 9, 2005, in Kuala Lumpur, Malaysia, committing ASEAN members to coordinate and streamline the export control activities of their customs and other relevant agencies, which should make it easier to curtail the trade in proliferation-sensitive materials in Southeast Asia.[105] However, nearly a decade after agreement was reached on its establishment, implementation has only recently begun.

- Annual meetings of the ASEAN Regional Forum Inter-Sessional Meeting (ISM) on Non-Proliferation and Disarmament. These formal discussions bring together officials from across the Asia-Pacific to highlight nuclear challenges, including those posed by the development of nuclear energy in Southeast Asia, and to agree to Work Plans to enhance regional nuclear safety, security, and nonproliferation.[106] A number of useful Track II activities feed into these meetings, including three that are held under the auspices of the Council on Security Cooperation in the Asia Pacific (CSCAP). These are the Study Group on Countering the Proliferation of Weapons of Mass Destruction, the Export Controls Experts Group, and the Nuclear Energy Experts Group, all of which meet twice a year and play important agenda-setting, bench-marking roles in the nuclear sphere.

- Ongoing awareness-raising activities of the Asia Pacific Leadership Network for Non-Proliferation and Disarmament. This is a group of forty-three senior political, diplomatic, and military leaders from fourteen countries around the Asia-Pacific, the objective of which is to inform and energize public opinion, and especially high-level policy-makers, to take seriously the very real threats posed by nuclear weapons. In February 2013, the network published a paper exploring the concept of an Asia-Pacific nuclear energy community, which could enable and encourage high-level consultation on nuclear plans and programs, including collaborative arrangements for fuel cycle management.[107]

All of these regional initiatives have an important role to play in promoting awareness of proliferation challenges in Southeast Asia, and some have led to concrete plans to address them. But there is little sense of urgency and, over the

105. In October 2013, officials from across the region participated in a two-week ASW training course, *Agreement to Establish and Implement the ASEAN Single Window*, Kuala Lumpur, Malaysia, December 9, 2005; "ASEAN Builds Capacity in Strategic Trade Management," October 1, 2013, http://asw.asean.org/news/item/asean-builds-capacity-in-strategic-trade-management.

106. Chairman's reports from these meetings provide interesting insights into Southeast Asian perspectives on nonproliferation, disarmament, and the peaceful uses of nuclear energy. A fifteen-page report from a meeting held in Makati City, Philippines, from June 4–5 2013, is available on the ASEAN Regional Forum website at http://aseanregionalforum.asean.org/library/arf-chairmans-statements-and-reports.html.

107. "The Concept of an Asia-Pacific Nuclear Energy Community," APLN Discussion Paper, February 18, 2013.

longer term, additional measures may be needed if doubts arise over the nuclear activities of Vietnam or other ASEAN members.

History shows that uncertainty and controversy are features of most cases of suspected non-compliance—features that are often exploited by non-compliant states to buy more time to pursue their illicit activities. Breaking this unhealthy cycle is crucial and there are steps that ASEAN members could take to help. One positive step would be to encourage states in Southeast Asia to launch regional discussions on the conditions under which an IAEA special inspection would be considered appropriate. ASEAN members could also progressively extend the nonproliferation function of regional bodies to address potential future proliferation threats, so that they work more closely with the IAEA to increase the transparency and accountability of regional nuclear energy programs. Vietnam's adoption of the Additional Protocol is a very positive step in this regard. However, once nuclear power plants become operational (and especially if the attention turns to the possibility for indigenous enrichment and reprocessing), the time would be ripe for regional dialogue on how the Additional Protocol could be improved. Areas for possible improvement include regular updates of Annex II, which lists equipment and materials specially designed and prepared for nuclear use. The current Annex II list, which was compiled in 1997, is rapidly becoming outdated. Bringing the list into line with the regularly updated Nuclear Suppliers Group (NSG) Trigger List would significantly strengthen the Additional Protocol. Another potential improvement would be to extend Annex II so that it includes information on dual-use items as well as equipment and materials specifically prepared for nuclear use. This would increase the IAEA's ability to seek out and identify indicators of possible undeclared nuclear activities for further investigation by increasing access to information on procurement. Beyond IAEA safeguards, ASEAN members could also discuss innovative regional nuclear arrangements that would offer maximum transparency and efficiency savings, including the concept of shared, multinationally manned facilities.[108]

Currently, these are very sensitive topics for debate in the ASEAN context, not least due to concerns that strengthened nonproliferation mechanisms are associated with the activities of the NSG, which is unpopular among many developing states. Devising strategies for sensitively handling these discussions would be paramount, because they can arouse the suspicions—often expressed by NAM members in global forums—that unfair hurdles are being strewn into the path of nuclear energy aspirants, in contravention of Article IV of the NPT. Vietnamese officials, who are otherwise proactive on proliferation issues, often express these concerns. This is a strong indication that discussions on strengthened safeguards and innovative regional arrangements need to keep in step with nuclear energy development in Southeast Asia, rather than racing ahead of

108. See Michael S. Malley and Tanya Ogilvie-White, "Nuclear Capabilities in Southeast Asia: Building a Preventative Proliferation Firewall," *The Nonproliferation Review* 16 (March 2009).

it.[109] Discussions should especially be encouraged in selective regional forums among ASEAN members, with IAEA representation but without the participation of extraregional states. There are numerous regional forums that would be suitable, including the ASEAN Senior Officials Meeting and the ADMM. The newly established ASEANTOM, which held its first meeting in Thailand in September 2013, could also potentially play a role, helping stimulate ASEAN-wide debate and feed expert advice from national regulatory authorities into elite level discussions. The same forums could be used to stimulate discussion over the potential for the emergence of an A. Q. Khan figure in Southeast Asia, on the need for enhanced regional information-sharing and nuclear forensics expertise to ensure the early identification of such an individual (or group of individuals), and on the need to develop strategies for curtailing their activities.

109. This was one of the main conclusions of the workshops on nuclear energy development in Southeast Asia, co-convened by the U.S. Naval Postgraduate School and University of Canterbury, New Zealand, in 2009, 2011, and 2012. See Malley and Ogilvie-White, *Nuclear Challenges in Southeast Asia*, 35.

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Contributor

Tanya Ogilvie-White is Research Director and Associate Professor at the Centre for Nuclear Non-Proliferation and Disarmament (CNND) at the Australian National University, Canberra. She began her career at the Mountbatten Centre for International Studies, UK, working with one of the world's leading experts on the nuclear nonproliferation regime, Professor John Simpson, OBE. Since then, she has developed expertise across all aspects of nuclear disarmament, nonproliferation, and security. Before joining CNND, she was a senior analyst at the Australian Strategic Policy Institute, Canberra; Stanton Nuclear Security Fellow at the International Institute for Strategic Studies, London; and senior lecturer in international relations at the University of Canterbury, Christchurch, New Zealand. She is an international advisor to the New Zealand Centre for Global Studies, a member of the Council on Security Cooperation in the Asia-Pacific, Associate Editor of the U.S.-based journal *Asian Security*, and Asia-Pacific representative of the Fissile Materials Working Group. She is coeditor of *Slaying the Nuclear Dragon: Disarmament Dynamics in the Twenty-First Century* (with David Santoro; University of Georgia Press, 2012) and author of *On Nuclear Deterrence: The Correspondence of Sir Michael Quinlan* (IISS/Routledge, 2011).

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