

EPICENTERS OF CLIMATE AND SECURITY: THE NEW GEOSTRATEGIC LANDSCAPE OF THE ANTHROPOCENE

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THE CLIMATE-NUCLEAR-SECURITY NEXUS: A COLLISION COURSE OR A ROAD TO NEW OPPORTUNITIES?

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Today, the international community is facing a range of nuclear challenges. New nations are pursuing civilian but dual-use nuclear capabilities. The threat of non-state actors seeking nuclear materials may be growing. Countries and international organizations are debating proper ways to enhance nuclear safety, security and nonproliferation systems to keep up with the pace of change. At the same time, governments worldwide are having difficulty managing the effects of a rapidly changing climate, such as more damaging natural disasters and resource stress. The relationships among nuclear, climate, and security risks are growing more complex and interconnected, and these issues are likely to begin converging in new ways -- possibly forming new types of geostrategic epicenters within countries, across regions, and globally.

A CONFLUENCE OF CONCERNS

While experts have long spoken of a “nuclear renaissance” in the global energy market, a confluence of recent events related to both nuclear energy and climate change are contributing to heightened concerns about nuclear security and other security problems. The 2015 Iran nuclear agreement raised to a truly global debate the decades-old tensions between allowing peaceful nuclear energy programs to advance and preventing the expansion of nuclear threats and weapons. The International Atomic Energy Agency (IAEA) and Kazakhstan are moving forward on an international fuel bank to hold and supply low-enriched uranium for nuclear reactors, with a goal of reducing the desire of countries to invest in their own fuel enrichment capabilities.²The climate change negotiations concluded in Paris in December 2015 raised yet more questions about the world’s nuclear trajectory.

Climate change, energy needs, regional political balancing, and other drivers have combined to push many countries to pledge increases in their nuclear energy capacity, a trend revealed by the Nationally Determined Contributions (NDCs) submitted by many countries in support of the Paris summit. How these plans are reshaped and implemented will continue to be unveiled through future climate change mitigation pledges, movements regarding nonproliferation treaties and export control mechanisms, investment decisions by individual countries and companies, and other indicators. Trends in Asia and the Middle East, where nuclear dynamics are changing the fastest and carry the starkest strategic and security consequences, are particularly important spaces to watch.

Four key trends have already emerged that animate specific security concerns. These are concerns, however, that if addressed comprehensively can create opportunities for making both climate and nuclear security policies more effective.

1. Clarity on the increasing scale of nuclear ambitions. The scale, scope, and speed of some countries' ambitions have caused perhaps the most concern by those focused on nuclear affairs. China's plans have been a major focal point as the country added public details on the extreme rate of its nuclear energy expansion efforts in late 2015. The country has announced plans to build 6 to 8 new reactors per year through 2020 and increase the rate of production thereafter, becoming the world's top nuclear energy supplier by 2030.³ In April 2016 China publicly revealed plans to develop floating nuclear power stations to increase its electricity availability in disputed areas of the South China Sea.⁴ These plans, if carried out, could be seen as enhancing the country's military capabilities in the region and contributing to already-rising tensions.

2. Detailed intentions on nuclear technologies of high concern. Less noticed are cases such as India, whose NDCs not only state the scale of its nuclear energy expansion goals but also provide details that raise deeper security questions.⁵ India's NDC submission specifically notes its continuing commitment to develop fast breeder reactors -- of higher concern for their rate of plutonium production -- to illustrate the emissions mitigation technologies the country is eyeing. As the media in India reported in early December 2015, the country is planning six additional fast breeder reactors after the prototype that is currently being finished becomes operational.⁶ This is particularly worrisome in light of the "presence of groups interested in and capable of illicitly acquiring nuclear materials" and other factors that recently led the Nuclear Threat Initiative to rank India as one of the countries of highest risk for theft of nuclear materials.⁷

3. Nuclear programs being pursued in absence of climate considerations. In a third category of concern are countries that appear to be reinvigorating their pursuit of nuclear energy *without* linking these ambitions to climate considerations. For the international community, this can exacerbate fears that these countries seek to develop latent nuclear weapons capabilities or challenge the existing balance of power among their neighbors. Saudi Arabia is the most extreme case, having directly tied its nuclear energy ambitions to the Iran nuclear agreement in 2015 while simultaneously omitting its nuclear energy activities from its NDC submission to the Paris negotiations.

The absence of nuclear-climate nexus thinking can be equally dangerous for domestic political and social reasons. Countries such as Jordan, Saudi Arabia, and Bangladesh are pursuing nuclear energy despite the clear indicators that the changing climate coupled with existing population and geographic constraints might limit their future ability to operate water- and land-intensive power stations. Governments pursuing nuclear power in spite of climate pressures risk driving social instability and stoking political opposition, which can raise new security risks within and beyond their borders.

4. A changing export marketplace weakening nuclear norms and standards. The emerging dominance of Russia among nuclear energy exporters is already beginning to reshape how global norms and standards of nuclear safety, security, and nonproliferation are being set. The rising international interest in expanding nuclear power generation may be on a collision course with trends of importing countries signing more extensive deals to work with suppliers with lower standards for nuclear materials tracking and less capital to invest in providing strong verification and monitoring systems. If, as planned, China becomes a prominent nuclear supplier, its actions will play a central role in setting global standards. These increasingly pervasive but little explored changes will necessitate evolution in U.S. and international nuclear security and nonproliferation policies and programs, most of which are grounded in outdated assumptions that countries such as the United States will remain the heavy-hitters in the future international market for nuclear technologies.

The international community must manage these challenges -- and others that may not yet be obvious -- if countries move forward with the nuclear aspects of their climate-change commitments and other recently announced nuclear plans.

SECURITY AND OTHER RISKS

A number of countries are already taking steps toward establishing or expanding nuclear power programs, including Saudi Arabia, Jordan, the United Arab Emirates, South Korea, Vietnam, China, India, Bangladesh, Turkey, Belarus, Poland, Kazakhstan, and Pakistan. The countries exploring nuclear energy but not yet moving forward on concerted paths include Thailand, Indonesia, Italy, Nigeria, Kenya, Laos, Malaysia,

and Morocco.⁸ Some of this growth, if it occurs, will be offset by a significant portion of the world's existing nuclear reactors aging out of the system or ending operations for financial reasons. Still, the nuclear program expansions that do take place among these and other countries in the decades ahead will carry direct and indirect security challenges that must be mitigated.

There are a number of direct safety and security risks of concern. Depending on the dominant players, the resources they are willing to commit, and other factors, nuclear norms and standards may be either weakened or strengthened in the coming decades. If global stocks of nuclear materials increase overall, this will raise concerns that recent progress in reducing the risks of diversion by terrorist organizations and other disruptive non-state actors may be slowed or set back. Of equal or greater concern is the potential for nuclear energy-consuming countries to develop their own domestic enrichment and reprocessing capabilities. Safety and security laws and regulations, human capital, operational acumen, and robust training regimens take time and sustained support to develop. A hastened rate of global nuclear expansion may make it easier for standards to be compromised as countries develop these systems. In areas of heightened risk of terrorist and other sub-national groups targeting critical infrastructure, nuclear reactors may form attractive targets.⁹ This is a growing concern even in countries such as Belgium where, until recent years, that risk seemed relatively low.¹⁰

Indirectly, some of the countries listed above may be challenged by social disruptions or political instability if they move forward as robustly on nuclear energy as they have indicated in recent climate commitments. News reports since 2015 have shown the potential for national-level decisions regarding nuclear energy (whether for climate or other reasons) clashing with local desires.¹¹ Likewise, any countries advancing nuclear energy projects without sufficient consideration of the climate-related risks involved – such as water stress, power generation issues, and other resource challenges – may trigger backlash.

Foreign and security policy concerns abound as well. With increasing nuclear investments will come increasing international demand for transparency that may contribute to rising suspicions or alter threat perceptions among countries. The unending concerns that non-nuclear weapon states such as Japan and South Korea will put their peaceful nuclear capabilities to military use show how pervasive these issues can become, even when countries devote great political capital and resources to promoting non-proliferation. These concerns are perhaps highest for countries that appear to now be moving forward on nuclear power but for which these plans seem detached from their climate-related commitments or actual energy needs.

POTENTIAL OPPORTUNITIES

All these risks can be managed and mitigated – in some cases, more readily than those associated with the production and consumption of other energy resources. The international community may find new opportunities in addressing the challenges outlined above.

Continuing strong international support, including financial resources, for the IAEA will have broad-spectrum benefits. The trends outlined in this brief make nuclear security and safety – and the critical global security responsibilities of the IAEA – as imperative as ever. But the agency’s contributions to these global security issues extend well beyond the nuclear energy realm. IAEA leaders are increasingly touting the utility of nuclear-related technologies in mitigating and adapting to the effects of climate change, including in health, agriculture, and environmental monitoring and detection. The IAEA conducting training for detection of the Zika virus as it spread in 2016 was an example of the agency’s potential future utility as the changing climate contributes to different patterns of vector-borne diseases.¹²

Next, countries, experts, and scholars should explore – not ignore or muffle – the social and political disruptions triggered by nuclear-related decisions whenever they occur. Nuclear-related protests are not new. However, the encroaching effects of a changing climate, the continually expanding access to information, legacy and emerging security dynamics, and other trends are combining in new patterns that may be changing the potency of these disruptions. Luckily, the understanding of complex crises that arise from thorny combinations of modern drivers has advanced significantly in recent years. Because of the interrelated nature of the issues, it will be key to investigate the balance of local concerns across the range of economic, security and safety, environmental, and other issues. Anti-nuclear protests may actually be about nuclear-related concerns, but they may also be predominantly driven by water stress, unemployment, injustice, and other challenges. These distinctions will be necessary to understand for designing effective remedial policies.

Finally, ensuring decision makers connect security, nuclear, climate, and other intertwined topics as they develop new policies and programs can help ensure there are complementary gains across these issue sets. For example, keeping climate and nuclear issues connected may create new diplomatic opportunities. Addressing climate change has created productive avenues of cooperation – notably, between the United States and China – that may be built upon to develop the trust and confidence required for discussions on notoriously thorny issues such as arms control. Multilateral and international mechanisms that originally focus on climate concerns may also be grown or leveraged in the future to further mitigate nuclear risks, and vice versa.¹³ For the United States, any adjustments the next administration makes to the national security strategy and regional cooperative plans must thoroughly account for both the risks and opportunities that will come from whatever trajectory dual nuclear and climate trends take.

CONCLUSION

There exists today a decidedly worrying lack of examination of how nuclear and climate trends may shape one another in the years ahead to alter the geostrategic landscape, and how addressing these trends in tandem could both mitigate risks and create opportunities. It's imperative that conducting this kind of cross-sectoral analysis and identifying related new avenues for enhancing security happen in earnest, as both climate change-related risks and nuclear security risks are rising, and rising fast.

NOTES

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- 4 Keith Johnson, "China's Got Nuclear Power Plans for its Fake Islands," *Foreign Policy*, April 22, 2016. Accessed at <http://foreignpolicy.com/2016/04/22/chinas-got-nuclear-power-plans-for-its-fake-islands/>
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- 8 World Nuclear Association, "Emerging Nuclear Energy Countries," updated February 2016. Accessed at <http://www.world-nuclear.org/information-library/country-profiles/others/emerging-nuclear-energy-countries.aspx>
- 9 Turkey, which is working to develop its nuclear system for energy independence, low-emissions growth, and other objectives, is an often-cited example given domestic terrorism concerns and instability in its neighborhood. See Sinan Ülgen, ed., "Nuclear Security: A Turkish Perspective," Centre for Economics and Foreign Policy Studies, 2015. Accessed at <http://edam.org.tr/en/AnaKonu/nuclear-security~a-turkish-perspective>
- 10 Michael D. Regan, "Brussels attacks renew concerns over global nuclear security," *PBS Newshour*, April 3, 2016. Accessed at <http://www.pbs.org/newshour/rundown/brussels-attacks-renew-concerns-over-global-nuclear-security/>
- 11 See, for example, Adrian Levy, "India's nuclear solution to global warming is generating huge domestic protests," Center for Public Integrity, December 15, 2015 Accessed at <https://www.publicintegrity.org/2015/12/15/18873/indias-nuclear-solution-global-warming-generating-huge-domestic-protests>
- 12 International Atomic Energy Agency, "IAEA Trains Experts to Use Diagnostic Tools for Quick Zika Detection," April 5, 2016. Accessed at <https://www.iaea.org/newscenter/pressreleases/iaea-trains-experts-to-use-diagnostic-tools-for-quick-zika-detection>; also see the agency's "Topics in Focus" highlights at <https://www.iaea.org/newscenter/focus>
- 13 A diverse group of experts developed these types of multi-decade pathways in a conversation called "The Future We Want: Is a World Without Nuclear Weapons Possible?" hosted by Reinvent on April 4, 2015. Accessed at <http://reinvent.net/the-future-we-want/#scenario2>