

Addressing the Transnational Nature of Nuclear Incidents

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- I. Securing buy-in from states that nuclear incidents are transnational**

More often than not policy-makers and experts from different parts of the world do not see concerns about nuclear incidents¹ as relevant to them. Generally, the likelihood of a nuclear accident or a nuclear terrorist attack is perceived as low or non-existent.

Policy-makers, regulators and operators generally take an optimistic view when it comes to the likelihood of a nuclear accident (an event similar to Fukushima) in their own countries. As a rule, the majority of officials and experts in countries with advanced nuclear power programs and countries that are only about to develop nuclear power evaluate national provisions for nuclear safety as adequate. Even in the aftermath of Fukushima, most policy-makers and industry representatives believe that nuclear power is mostly safe. It is not uncommon to hear that the Fukushima accident was a result of a unique combination of factors that are unlikely to happen in their respective countries (“we do not have tsunamis,” “we are not in a seismic zone,” “our plants’ autonomous power supply is more reliable”).

¹ For the purposes of this discussion paper, I refer to nuclear incidents as a combination of nuclear accidents (unintentional release of radioactivity) and nuclear terrorist attacks.

The threat perception on the likelihood of nuclear terrorist attacks brings out even more optimistic attitudes. While top political leaders, especially from the countries participating in the Nuclear Security Summit (NSS) state that nuclear terrorism is a concern, the bureaucracies behind many of those governments do not believe the threat is real or relevant to them. A threat of a nuclear terrorist act remains mostly a preoccupation of the United States and a few other countries. No other world leader sees the threat of nuclear terrorism in the same light as the president of the United States who believes that nuclear terrorism is “the biggest single threat to the United States” and that “the risk of nuclear attack has gone up.”²

What explains prevalent optimism when it comes to threat perceptions? Psychologists would likely attribute it to an optimism bias prevalent in up to 80 percent of people, a phenomenon of believing that negative events are less likely to happen to them compared to other people.³ Smokers believe smoking kills other people. People generally underestimate their risk of developing a cancer, being injured, suffering financial losses, not meeting a deadline. As a result, optimism bias influences policy-making: it makes it difficult for governments to invest energy and resources in mitigating threats they perceive as low-probability.

There is another major factor that feeds the perception that nuclear security is irrelevant to many countries. And that is the way the discourse on nuclear security risks is framed. Those interested in promoting the importance of strengthening nuclear security around the world mostly utilize threat scenarios involving an attack on one of the major Western cities. No country is eager to be implicated as a source of loose nuclear material that ended up in a nuclear device exploded in New York or London. And of course no country would like to see destruction and loss of life anywhere in the world. At the same time, a continuously reinforced message that only few key Western locations are primary targets for a nuclear terrorist event make nuclear dangers for most countries a remote and abstract risk.

Many countries around the world are reluctant to embrace the idea that the nuclear security regime needs strengthening because they see the process as further promoting the unfairness of

² David Jackson, “Obama: Nuclear Terrorism is ‘the Single Biggest Threat’ to U.S.,” *USA Today*, April 11, 2010; Remarks by President Barack Obama, April 5, 2009, Prague, <http://www.whitehouse.gov/the_press_office/Remarks-By-President-Barack-Obama-In-Prague-As-Delivered>.

³ Tali Sharot, “The Optimism Bias,” TED Talk, <http://www.ted.com/talks/tali_sharot_the_optimism_bias.html>; Tali Sharot, *The Optimism Bias: A Tour of the Irrationally Positive Brain*, Pantheon, 2011.

the global nuclear order. Some associate the nuclear security regime with pressure to invest into nuclear nonproliferation when there is only slow and, in the eyes of many countries, unsatisfactory progress towards nuclear disarmament. Promoting nuclear security values through the Nuclear Security Summit process and not the IAEA also contributes to countries' resistance.

The discourse on nuclear security should follow a different route. It is difficult to counter a common view that if a nuclear terrorist act occurs, it will occur in one of the Western cities. It is impossible to argue that the global nuclear order is fair. It is equally unrealistic to persuade non-nuclear weapon states to fully embrace nuclear security values because a few Western countries are concerned about nuclear terrorism. It would be more productive to frame the discussion around the notion that no matter where a nuclear terrorist act occurs, it will have a global impact. Countries should be motivated to act not only for normative reasons but because of their own self-interest.

A nuclear terrorist act will be a global event

The biggest challenge to a strong and universal nuclear security regime is securing buy-in from countries that a comprehensive nuclear security regime is in their interest. Despite political rhetoric, right now there is no real sense of urgency to close gaps in the nuclear security regime. Many countries believe that if an act of nuclear terrorism happens, it will happen in the U.S. or in one of its ally countries, and many hold a wrong assumption that such an act would not have severe repercussions on other parts of the world.

One of the solutions to this fundamental challenge of very diverse threat perceptions is to frame the conversation about nuclear risks not around *whether* and *where* a nuclear terrorist act is likely to occur, but on *how* a nuclear event *anywhere* will have repercussions on all countries. To borrow terminology from economics, the policy debate on nuclear security should include a comprehensive assessment of *transnational externalities* of nuclear incidents.⁴

⁴ In economics, an externality is a consequence of an economic activity that is experienced by unrelated third parties.

There are two levels at which such a conversation can develop: the regional and the global. The regional dimension can involve projections on the impact of a nuclear incident in one country on its immediate neighbors. An assessment of the environmental fall-out is an obvious first step. Another major component is an economic assessment. Depending on how inter-connected economies are in each region, it is important to assess how a nuclear incident will affect cross-border trade and export-import operations.

In our day and age there is an unprecedented interconnectedness between countries around the world. However, in the debate about nuclear security the links are not fleshed out enough. There are two main angles to consider.

First is the potential disruption of supply chains. In a modern economy, companies and production lines throughout the world rely on an extended international network of suppliers and transnational shipping routes. There is also a trend of ordering “just enough” and “just in time” to keep production flowing. That means that even a temporary disruption in supply or shipping in one country due to a nuclear incident will have an economic impact on many countries around the world.

In 2004 the RAND Corporation conducted an exercise that simulated a nuclear terrorist attack. RAND’s scenario simulated a terrorist attack in the port of Long Beach, California. The exercise results pointed to global impact of such an event. RAND experts stressed that there would be “a conflict between the political desire to mitigate the risks of future attack compared with the business requirements for continued operation of the ports and the global shipping supply chain.” In RAND’s determination, there would be “reasonable prospects for extended closures of *all* U.S. ports” which means that global trade will be severely impacted since a large percentage of it relies on U.S. ports.⁵

Second, the interconnectedness of financial markets should make governments pause and be more attentive to the threat of nuclear terrorism. Should a nuclear event occur in London, Tokyo or New York, and obliterate foreign exchange institutions there, major banks world-wide would instantaneously face a major crisis. To get an essence of the financial volumes involved one

⁵ Charles Meade, Roger C. Molander, “Considering the Effect of a Catastrophic Nuclear Attack,” RAND Corporation, Santa Monica, 2006.

should consider the data from the Bank for International Settlement. The Bank reported that the daily average foreign exchange market turnover was worth \$4 trillion in April 2010.⁶ London alone is responsible for over \$2 trillion per day in foreign exchange trade.⁷ If a collapse of just one company – *Lehman Brothers* – reverberated through the economies of many other countries,⁸ one can only imagine the global economic impact if one of the international financial centers is wiped out.

The third angle to look a nuclear incident is through the lens of individual industries. Former U.S. customs and border protection commissioner Robert Bonner made a very compelling argument on this matter. In his opinion, if terrorists used a container to smuggle a nuclear device that was later detonated, it would have a severe impact on global trade: “Simply put, the shipping of sea containers would stop. The American people, for one, would not likely permit one more sea container to enter the United States until there was a significantly greater assurance -- such as 100 percent inspections -- that no additional terrorist weapons would be smuggled into the country. Governments in other major industrial countries would no doubt adopt a similar policy, thus bringing the global economy to its knees.” “Even a two-week shutdown of global sea container traffic would be devastating, costing billions. But the shutdown would, in all likelihood, be much longer, as governments struggled to figure out how to build a security system that could find the other deadly needles in the massive haystack of global trade.”⁹ Unfortunately, there are not enough studies specific to nuclear incidents in the open literature to drive this point home.

Absent active public discourse on what a nuclear incident would mean for the global economy, several real-life events of the past decade have exposed the vulnerabilities of today’s interconnected world. The tragic events of 9/11 led not only to human losses but also to damage of the global economy. The world economic growth dropped from 4.1 percent in 2000 to 1.4

⁶ Michael King, Dagfinn Rime, “The \$4 Trillion Question: What Explains FX Growth Since the 2007 Survey?” Bank for International Settlements, December 13, 2010, <http://www.bis.org/publ/qtrpdf/r_qt1012e.htm>.

⁷ Morten Bech, “FX Volume During the Financial Crisis and Now,” *BIS Quarterly Review*, March 2012, p. 37, <http://www.bis.org/publ/qtrpdf/r_qt1203f.pdf>.

⁸ “The Lehman Brothers Collapse: the Global Fallout,” September 4, 2009, *The Guardian*, <<http://www.guardian.co.uk/business/2009/sep/04/lehman-collapse-global-impact>>.

⁹ Robert C. Bonner, Speech Before the Center for Strategic and International Studies (CSIS), January 17, 2002, <http://www.cbp.gov/xp/cgov/newsroom/speeches_statements/archives/2002/jan172002.xml>.

percent in 2001.¹⁰ The eruption of an Icelandic volcano demonstrated how disruption at one transport hub can reverberate around the world. The crisis that emerged resulted in the largest air-traffic shutdown since World War II. The International Air Transport Association reported that the total loss for the airline industry was around \$1.7 billion with 1.2 billion passengers per day affected.¹¹ Approximately 107,000 flights were cancelled during an eight-day period, accounting for 48 percent of total air traffic. An outbreak of SARS not only disrupted air travel in Asia for two months, but also brought down East Asia's regional GDP by about 0.6-0.7 percent in 2003.¹²

Addressing transnational threats in the nuclear field and beyond

The following section explores international instruments in the nuclear and non-nuclear field with the following criteria in mind:

- How good are they in setting universal benchmarks?
- Do they provide specific enough guidance?
- What are the mechanisms for informing the international community about the countries' performance? (reporting requirements/peer review)
- What are the provisions for international cooperation noting these international instruments deal with transnational threats?

Nuclear security

There are several international instruments that are designed to address nuclear security, but none is comprehensive enough to fully support a robust nuclear security regime. The only legally binding international instrument - the Convention on the Physical Protection of Nuclear Materials (CPPNM) – currently applies to nuclear materials in international transport. The

¹⁰ Dick K. Nanto, "9/11 Terrorism: Global Economic Costs," CRS Report to Congress, October 5, 2004, <http://digital.library.unt.edu/ark:/67531/metacrs7725/m1/1/high_res_d/RS21937_2004Oct05.pdf>.

¹¹ "Flight Disruptions Cost Airlines \$1.7bn, Says IATA," BBC, April 21, 2010, <<http://news.bbc.co.uk/2/hi/business/8634147.stm>>.

¹² Bernice Lee and Felix Preston, with Gemma Green, *Preparing for High-impact, Low-probability Events: Lessons from Eyjafjallajökull*, London, RIIA, 2012.

CPPNM amendment that would extend the treaty to nuclear materials in domestic use and storage is not yet in force. The International Convention on the Suppression of Act of Nuclear Terrorism (2007; 79 state parties) covers materials and facilities in both civilian and military use and focuses on the criminalization of planning, threatening, or carrying out acts of nuclear terrorism.¹³ The UN Security Council Resolution 1373 adopted under the UN Charter Chapter VII (binding for all UN members) calls for broad counter-terrorism measures and mentions “the threat posed by the possession of weapons of mass destruction by terrorist groups.”¹⁴ The UN Security Council Resolution 1540 (2004), also adopted under Chapter VII, requires that all UN member states “shall take and enforce effective measures to establish domestic controls to prevent the proliferation” of WMD and WMD materials. UNSCR 1540 was a major step towards universalizing requirements for proliferation controls in four key areas: accounting, physical security, border controls, and export controls. However, UNSCR 1540 has its limitations. The relatively mild language of the Resolution refers to “effective” and “appropriate” measures without setting specific benchmarks. The Resolution recognizes the need of inter-state assistance and encourages countries that are in a position to assist to do so.¹⁵ The helpful provision requiring states to submit reports on the implementation of the Resolution does not always bring desired results – states have been known for submitting brief, inaccurate reports, sometimes solely focused on the legal framework and not regulatory and enforcement capacity.

At the July 2012 workshop *On Improving Nuclear Security Regime Cohesion*, NSGEG experts pointed out that “none of the nuclear security regime’s multilateral instruments, including the amended CPPNM, the International Convention on the Suppression of Acts of Nuclear Terrorism, and UN Security Council Resolutions 1373 and 1540, provide the legal foundations for international cooperation and confirmed performance that are part of the nuclear safety and safeguards regimes.”¹⁶

¹³ The International Convention on the Suppression of Act of Nuclear Terrorism, UN, <<http://untreaty.un.org/cod/avl/ha/icsant/icsant.html>>.

¹⁴ UNSCR 1373, UN, <<http://www.un.org/News/Press/docs/2001/sc7158.doc.htm>>.

¹⁵ UNSCR 1540, UN, <<http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N04/328/43/PDF/N0432843.pdf?OpenElement>>.

¹⁶ “Improving Nuclear Security Regime Cohesion: Summary Report & Initial Policy Recommendations,” NSGEG, 2012, <http://www.stanleyfoundation.org/nsgeg/Improving_Nuclear_Security_Regime_Cohesion.pdf>.

Nuclear safety

Compared to nuclear security, the nuclear safety regime has a relatively more robust foundation when it comes to international legal instruments and can provide lessons on how to integrate provisions for international cooperation and performance review in the international instruments. The Convention on Nuclear Safety (CNS) is a legally binding instrument that requires State-parties to adhere to a set of nuclear safety benchmarks. It includes a comprehensive set of measures countries commit to take in order to strengthen the safety of nuclear installations. Among the most important components of the CNS are provisions requiring the establishment of national safety requirements and the regulations and establishment of a licensing and regulatory system.¹⁷ CNS also calls for establishing a regulatory body “entrusted with the implementation of the legislative and regulatory framework.”¹⁸ In recognition of the fact that radiation does not respect national borders CNS specifically mentions that state parties “shall take the appropriate steps to ensure that...the competent authorities of States in the vicinity of the nuclear installation are provided with appropriate information for emergency planning and response.” In addition, CNS establishes a peer review process by requiring countries to regularly submit reports on the implementation of relevant nuclear safety measures.¹⁹ As of 2012, 75 states adhere to CNS.²⁰

There are two more Conventions that deal specifically with nuclear accidents: the Convention on Early Notification of a Nuclear Accident (1986) and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (1986), adopted in the aftermath of the Chernobyl catastrophe. The Convention on Early Notification of a Nuclear Accident calls on its 114 state parties to directly or indirectly (through the IAEA) notify “states which are or may be physically affected” of a nuclear accident and provide information “relevant to minimizing the radiological consequences” in those states.²¹ The Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency provides three key avenues for seeking assistance to its 108 state parties: impacted countries can call for assistance from another state party (directly or

¹⁷ Convention on Nuclear Safety, IAEA, <<http://www.iaea.org/Publications/Documents/Infcircs/Others/inf449.shtml>>.

¹⁸ Convention on Nuclear Safety, Article 8.

¹⁹ Convention on Nuclear Safety, Article 5.

²⁰ Convention on Nuclear Safety: Background, IAEA, <<http://www-ns.iaea.org/conventions/nuclear-safety.asp>>.

²¹ The Convention on Early Notification of a Nuclear Accident, Article 2, IAEA, <<http://www.iaea.org/Publications/Documents/Infcircs/Others/infcirc335.shtml>>.

indirectly through the IAEA); from the IAEA; or from other international nongovernmental organization.²²

Since nuclear security risks are of a transnational nature, it might be worth exploring how the international community deals with other types of transnational risks such as transnational crime and the spread of disease.

Transnational crime

The main international instrument in the fight against transnational crime is the UN Convention against Transnational Organized Crime. The UN General Assembly adopted the Convention in 2000, and it entered into force in 2003. Parties to the Convention commit themselves to “the creation of domestic criminal offenses (participation in an organized criminal group, money laundering, corruption and obstruction of justice); the adoption of new and sweeping frameworks for extradition, mutual legal assistance and law enforcement cooperation; and the promotion of training and technical assistance for building and upgrading the necessary capacity of national authorities.”²³

The Protocols that accompany the Convention deal with three specific areas. The Protocol to Prevent, Suppress and Punish Trafficking in Persons, especially Women and Children, is the first global legally binding instrument that contains an agreed definition on trafficking in persons. The Protocol against the Smuggling of Migrants by Land, Sea and Air contains the first globally agreed definition of smuggling of migrants. Finally, the Protocol against the Illicit Manufacturing of and Trafficking in Firearms, their Parts and Components and Ammunition is the first legally binding instrument on small arms. States that ratify the Protocol commit to establishing relevant criminal offenses; implementing a system of relevant government authorization (or licensing); marking and tracing firearms.

²² The Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency, Article 2 (1), IAEA, <<http://www.iaea.org/Publications/Documents/Infcircs/Others/infcirc336.shtml>>.

²³ “United Nations Convention against Transnational Organized Crime and the Protocols Thereto,” United Nations Office on Drugs and Crime, UN, <<http://www.unodc.org/en/treaties/CTOC/>>.

The example of the UN Convention against Transnational Organized Crime might provide lessons for the nuclear security field in two key areas: negotiating globally accepted definitions and developing sub-instruments (Protocols) dealing with specific aspects of nuclear security.

Public health

The International Health Regulations (IHR) is a good example of a legally binding international instrument dealing with a transnational security threat – the global spread of disease. The IHR, in force from 2007, require countries to report certain disease outbreaks and public health events to the World Health Organization (WHO) and to strengthen existing national capacities for public health surveillance and response.²⁴ One hundred ninety four states are committed to IHR, which makes it a near-universal instrument. WHO plays an active role in helping countries strengthen national capacity to implement IHR.

The experience of WHO and the implementation of IHR can provide lessons to the nuclear security field on the mechanisms of international responses to transnational events. IHR provide very specific and operational guidelines to countries on disease surveillance, notification and reporting. A careful analysis on the operationalization of IHR might give policy-makers new ideas on how to beef up and complement existing instruments in the nuclear field.

Recommendations

Interested governments, Centers of Excellence, international policy experts could:

- Promote buy-in for the importance of nuclear security by emphasizing economic and trade repercussions of a nuclear incident;
- Carry out studies on the economic impact of a nuclear incident on the neighboring countries (region-specific) and the global economy;

²⁴ “What Are the International Health Regulations?” World Health Organization, <<http://www.who.int/features/qa/39/en/index.html>>.

- Conduct regular inter-state exercises simulating a nuclear incident, including scenarios involving an intentional disperse of radiation (terrorist attack) or a threat of such, in order to test the inter-operability of regulatory, enforcement, emergency and other services;²⁵
- Explore and apply lessons from the nuclear safety regime, specifically on how to integrate provisions for international cooperation and performance review in the international instruments;
- Explore and apply lessons from international regimes dealing with transnational risks:
 - o a. The UN Convention against Transnational Organized Crime might provide lessons for the nuclear security field in two key areas: negotiating globally accepted definitions and the development of sub-instruments (Protocols) dealing with specific aspects of nuclear security.
 - o b. The experience of WHO and the implementation of IHR can provide lessons on the mechanisms of international responses to transnational events. IHR provide very specific and operational guidelines to countries on disease surveillance, notification and reporting. A careful analysis on the operationalization of IHR might give new ideas policy-makers on how to beef up and complement existing instruments in the nuclear security field.

²⁵ Every few years the Inter-Agency Committee for Response to Nuclear Accidents (IACRNA) carries out international emergency exercises (ConvEx-3) designed to test and evaluate global radiological emergency preparedness.