# The Correlation Between Non-State Actors and Weapons of Mass Destruction

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The probability of non-state actors acquiring and using weapons of mass destruction against vulnerable non-combatants has remained a worrisome threat since the turn of the century. However, the watershed event of the terrorist attacks on the World Trade Center in New York City and the Pentagon in Washington, D.C. on 11 September 2001 has significantly raised concerns regarding the availability of chemical, biological, radiological, and nuclear (CBRN) weapons and their probable usage. The reasons for increased concerns are varied. They include:

- Widespread perceptions that the events of 9/11 marked the crossing of a threshold in terrorist constraint and lethality<sup>1</sup>
- Open source accounts of interest in WMD technology by non-state actors<sup>2</sup>
- Increased availability of WMD technology<sup>3</sup>
- Greater media attention<sup>4</sup>
- Persistent Western military presence in global affairs and an upsurge of anti-Western sentiments<sup>5</sup>

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Prior to September 2001, no terrorist attack anywhere in the world had killed more than 500 people. In the twentieth century, only fourteen terrorist events killed more than 100 people. See Bruce Hoffman, "CBRN Terrorism Post 9/11," in *Weapons of Mass Destruction and Terrorism*, eds. Russell D. Howard and James Forest (New York: McGraw-Hill, 2007).

<sup>&</sup>lt;sup>2</sup> On 11 May 2008, *RIA Novosti* reported that Russia's antiterrorism committee had said it had evidence that terrorists were trying to gain access to weapons of mass destruction and to technology needed to produce them, as stated in Nancy K. Hayden, "Terrifying Landscapes: Understanding Motivations of Non-state Actors to Acquire and/or Use Weapons of Mass Destruction," in *Unconventional Weapons and International Terrorism: Challenges and New Approaches*, eds. Magnus Ranstorp and Magnus Normark (New York: Routledge, 2009), 188.

<sup>&</sup>lt;sup>3</sup> See Matthew Bunn and Anthony Wier, "Terrorist Nuclear Weapon Construction: How Difficult?" *Annals of the American Academy of Political and Social Science* 607 (Sept. 2006): 133–49.

<sup>&</sup>lt;sup>4</sup> See Jonathan B. Tucker, "The Proliferation of Chemical and Biological Weapons Materials and Technologies to State and Sub-State Actors," Testimony before the Subcommittee on International Security, Proliferation and Federal Services of the U.S. Senate Committee on Governmental Affairs, Washington, D.C., 7 November 2001.

<sup>&</sup>lt;sup>5</sup> See Brigitte Nacos, *Mass-Mediated Terrorism: The Central Role of the Media in Terrorism and Counterterrorism* (Lanham, MD: Rowman and Littlefield, 2007).

• The vital role played by Internet technology for Al Qaida in propagating its ideology and integrating its loose networks of affiliates and sympathizers.

Despite these important factors, one needs to ponder the fact that it is just not enough to have heightened concerns about the threat of a probable CBRN attack by violent non-state actors. In qualitative terms, understanding the reasons behind a threat is "not the same thing as facing an actual increase in a threat."<sup>6</sup> However, a comprehensive understanding of these factors is vital for developing an effective decision-making agenda in the interest of a successful national security and foreign policy strategy. According to John Parachini, "Although hedging against terrorists exploiting the catastrophic potential of CBRN weapons is an essential task of government resources ... attention cannot simply result in obsessing over CBRN effects but also must produce improved understanding of the motivations, vulnerabilities, capabilities and context for actual attacks, not just expressions of interest."<sup>7</sup> Hence, in tackling the challenge of preventing politically violent terrorist groups and organizations from resorting to the use of chemical, biological, radiological and nuclear weapons, it is not sufficient just to secure all nuclear weapons and weapons-usable nuclear materials. A sound policy would include concerted efforts to substantially dwell on an important question: What factors drive violent terrorist groups like Al Oaeda to seek out the most fearsome weapons? Unfortunately, research indicates that there is a paucity of statistical studies in analyzing why terrorist groups—particularly those grounded in extreme religious ideologies, like Al Oaeda-want to acquire and use CBRN weapons. This difficulty is further compounded by two additional factors: the absence of any real CBRN attacks by terrorists, which makes any empirical analysis impossible; and the problems associated with comprehending the potential extent of attacks by terrorists using CBRN weapons. However, despite these problems, this article will make an attempt to analyze certain variables that may provide a deeper understanding of violent terrorist groups' penchant for weapons of mass destruction.

<sup>&</sup>lt;sup>6</sup> Hayden, "Terrifying Landscapes," 164.

<sup>&</sup>lt;sup>7</sup> John Parachini, "Putting WMD Terrorism into Perspective," *Washington Quarterly* 26:4 (2003) 37–50.

## The Threat of Nuclear Terrorism<sup>8</sup>

The existing state of knowledge within the nuclear weapons technology field makes it painfully obvious that the danger of nuclear terrorism is no longer hypothetical. U.S. President Barack Obama, in a speech in Prague on 5 April 2009, emphasized that the danger of terrorists' acquisition and use of catastrophic weapons presents "the most immediate and extreme threat to global security."<sup>9</sup> There are several indicators that frame the danger of a probable CBRN attack.

Al Qaeda is in quest of nuclear weapons, and has attempted more than once to acquire the materials and expertise needed to make them. This is evident from Osama bin Laden's pronouncement that the acquisition of nuclear weapons or other weapons of mass destruction constituted a "religious duty" for Muslims.<sup>10</sup> Shortly before the 9/11 attacks, bin Laden and Ayman al-Zawahiri met with two senior Pakistani nuclear scientists to discuss nuclear weapons.<sup>11</sup> Al Oaeda's efforts to acquire CBRN weapons continued unabated even after the disintegration of the group following the dismantling of the Taliban regime and elimination of their sanctuaries in Afghanistan. In 2002-03, U.S. intelligence received a "stream of reliable reporting" that the leadership of Al Oaeda's cell in Saudi Arabia was negotiating to purchase three objects they believed to be Russian "nuclear devices," and that Al Qaeda's central leadership had approved the purchase if a Pakistani expert was able to confirm that they were genuine. (The actual nature of these "devices," if they existed, the name of the Pakistani expert, and the type of equipment he was to use to examine the devices have never been learned.<sup>12</sup>) It is well documented that even before Al Oaeda emerged into global consciousness, the Japanese terror cult Aum Shinrikyo also made concerted efforts to acquire CBRN weapons (and succeeded in launching an attack on the Tokyo subway in 1995 using sarin gas, killing thirteen people). As evidence and records indicate that at least two groups have actively pursued CBRN weapons in the last fifteen years, there is no reason to believe that future terrorist groups will not pursue the nuclear path.

<sup>&</sup>lt;sup>8</sup> See Reshmi Kazi, "Pakistan's HEU-based Nuclear Weapons Programme and Nuclear Terrorism: A Reality Check," Strategic Analyses 33:6 (November 2009): 863–65.

<sup>&</sup>lt;sup>9</sup> "Remarks by President Barack Obama," Prague, 5 April 2009; available at http://www. whitehouse.gov/the\_press\_office/Remarks-By-President-Barack-Obama-In-Prague-As-Delivered/.

<sup>&</sup>lt;sup>10</sup> Rahimullah Yusufzai, "Interview with Bin Laden: World's Most Wanted Terrorist," ABC News Online (2 January 1999); available at http://cryptome.org/jya/bin-laden-abc.htm.

<sup>&</sup>lt;sup>11</sup> David Albright and Holly Higgins, "A Bomb for the Ummah," Bulletin of the Atomic Scientists 59:2 (March–April 2003): 49–55; available at http://thebulletin.metapress.com/ content/ru1k226j4ln4585l/.

<sup>&</sup>lt;sup>12</sup> Rolf Mowatt-Larssen, "Al Qaeda WMD Threat: Hype or Reality?" Belfer Center for Science and International Affairs, Kennedy School of Government, Harvard University (January 2010); available at http://belfercenter.ksg.harvard.edu/files/al-qaedawmd-threat.pdf.

Several studies by the U.S. and other governments have concluded that it is plausible that a sophisticated terrorist group could make a crude nuclear bomb if it got enough of the needed nuclear materials. The easy availability of the nuclear science knowledge in the public domain has eased the work of terrorists seeking CBRN weapons. For example, one study by the now-defunct Congressional Office of Technology Assessment determined: "A small group of people, none of whom have ever had access to the classified literature, could possibly design and build a crude nuclear explosive device. ... Only modest machine-shop facilities that could be contracted for without arousing suspicion would be required."<sup>13</sup> In addition, several experiments like the "Nth Country Experiment" have proved that "three post-docs with no nuclear knowledge could design a working atom bomb."14 In January 2004, then-U.S. Senator Joseph R. Biden instructed the heads of national laboratories to "build, off the shelf, a nuclear device." The scientists were able to "actually construct this device."<sup>15</sup> It is also important to bear in mind that, from the caves of Afghanistan, Al Oaeda was able to mastermind and successfully execute the 9/11 attacks. Although the 9/11 terrorist attacks presented no technical challenges of the kind a nuclear weapon poses, the precision with which Al Qaeda was able to overcome the daunting challenges in carrying out their operation deserves attention. It can therefore be presumed with a fair degree of certainty that Al Qaeda would be now be further motivated to attempt a more challenging task.

According to International Atomic Energy Agency (IAEA) reports, there have been eighteen documented cases of theft or loss of plutonium or highly enriched uranium (HEU). Fissile materials are housed in numerous buildings in many countries. Security measures at these sites vary widely, from excellent to appalling. The risks to the proliferation of nuclear materials range from insider corruption to weak nuclear security regulation. In early February 2010, peace activists broke into a Belgian base where U.S. nuclear weapons are reportedly stored. They were finally intercepted by a single guard, whose weapon appeared to be unloaded—some ninety minutes after they entered the base.<sup>16</sup> In

<sup>&</sup>lt;sup>13</sup> U.S. Congress, Office of Technology Assessment, "Nuclear Proliferation and Safeguards" (Washington, D.C.: OTA, 1977), 140; available at http://www.princeton.edu/~ota/ disk3/1977/7705/7705.PDF.

<sup>&</sup>lt;sup>14</sup> Dan Stober, "No Experience Necessary," *Bulletin of Atomic Scientists* (March–April 2003): 57–63.

<sup>&</sup>lt;sup>15</sup> Joseph Biden, remarks at the Paul C. Warnke Conference on the Past, Present, and Future of Arms Control, Washington, D.C., 28 January 2004, as cited in Graham Allison, *Nuclear Terrorism: The Ultimate Preventable Catastrophe* (New York: Times Books, 2004), 95.

<sup>&</sup>lt;sup>16</sup> See Jeffrey Lewis, "Activists Breach Security at Kleine Brogel," ArmsControlWonk.com (4 February 2010); available at http://www.armscontrolwonk.com/2614/activists-breachsecurity-at-kleine-brogel. See also Hans Kristensen, "U.S. Nuclear Weapons Site in Europe Breached," FAS Strategic Security Blog, Federation of American Scientists (4 February 2010); available at http://www.fas.org/blog/ssp/2010/02/kleinebrogel.php.

November 2007, four armed men broke into the Pelindaba nuclear facility in Pretoria, South Africa, a site where an estimated twenty-five bombs' worth of weapons-grade uranium is stored.<sup>17</sup> In February 2006, Russian citizen Oleg Khinsagov was arrested in Georgia (along with three Georgian accomplices) with some 100 grams of HEU enriched to 89 per cent U-235.<sup>18</sup> According to the International Atomic Energy Agency, there have been a "disturbingly high" number of reports of missing or illegally trafficked nuclear material. According to agency figures, there were 243 incidents between June 2007 and June 2009.<sup>19</sup> Fortunately, the amounts reported missing have been small. Insider threats are also a potential source for the terrorists to tap nuclear materials for their goal; underpaid and disgruntled soldiers and guards, along with ideologically-motivated insiders, present attractive targets for terrorist networks.

Porous borders can facilitate the illicit movement of nuclear and radioactive materials by terrorists. The vast length of national borders and the myriad potential pathways across these borders makes the interdiction of smuggled sensitive weapons-grade material extremely difficult. In addition, it is also very difficult to detect radiation from plutonium and highly enriched uranium, particularly if it is shielded by protective layers. The detectors that are being widely deployed throughout the world—or even the more expensive Advanced Spectroscopic Portals (ASPs) that are being considered to replace them—would have little chance of detecting HEU metal if it had significant shielding.<sup>20</sup>

Finally, the threat of nuclear and other forms of WMD terrorism is likely to increase in the absence of substantial changes in the international policies and practices as part of comprehensive non-proliferation efforts. It leaves one to ponder that the Non-Proliferation Treaty (NPT)—the primary bulwark in the edifice of the non-proliferation regime—does not contain any provision to deal with the challenge of violent terrorists seeking to acquire and use nuclear weapons. It is open to debate whether

<sup>&</sup>lt;sup>17</sup> The Pelindaba nuclear facility is one of South Africa's most heavily guarded "national key points," defined by the government as "any place or area that is so important that its loss, damage, disruption or immobilization may prejudice the Republic." See Micah Zenko, "A Nuclear Site is Breached," *Washington Post* (20 December 2007): A29.

<sup>&</sup>lt;sup>18</sup> Elena Sokova, William C. Potter, and Cristina Chuen, "Recent Weapons Grade Uranium Smuggling Case: Nuclear Materials Are Still on the Loose," Center for Nonproliferation Studies, Monterey Institute of International Studies (26 January 2007); available at http://cns.miis.edu/pubs/week/070126.htm. Also see Michael Bronner, "100 Grams (And Counting): Notes From the Nuclear Underworld," Project on Managing the Atom, Harvard University (June 2008); available at http://belfercenter.ksg. harvard.edu/publication/18361/100\_grams\_and\_counting.html.

<sup>&</sup>lt;sup>19</sup> "Keeping Tabs on Nuclear Material," *International Herald Tribune* (2 November 2008).

<sup>&</sup>lt;sup>20</sup> See Thomas B. Cochran and Matthew G. McKinzie, "Detecting Nuclear Smuggling," *Scientific American* (April 2008).

the NPT should be substantively amended to deal with the challenge of clandestine proliferation of nuclear weapons and weapons-grade material.

Despite the reality check provided by the various indicators of nuclear terrorism, there exists no conclusive evidence to support the claim that terrorists have acquired the relevant expertise to construct a bomb. There are also no hard facts to substantiate the claim that terrorists can successfully build a crude nuclear explosive with HEU. Building even a simple nuclear device can be a challenging task involving numerous complexities, as was encountered by Al Qaeda and Aum Shinrikyo. There is also an emerging debate among radical Islamist groups about the moral legitimacy of mass killing of innocent people.<sup>21</sup> Nuclear security has also been improving, although there is still much to be done. However, this positive aspect also comes with the caveat "as of now." It is difficult to precisely quantify the chances of nuclear terrorism. Hence, in dealing with the danger of nuclear or other forms of CBRN terrorism, there cannot be any room for complacency.

#### Nuclear Terrorism: Analyses of Drivers and Consequent Scenarios

It can be assumed that small terrorist organizations that are relatively young, inexperienced, and with no territory of their own in which to safely operate will chose the least risky and most reliable tactical forms of attack. Hence, it can be presumed with a fair degree of certainty that only large, well-established and well-networked organizations will seek to attempt CBRN terrorism. What are the drivers that propel terrorist organizations of the likes of Al Qaeda to seek the most catastrophic weapons?

## Factors Contributing to the Potential Development of Nuclear Terrorism

**State Assistance**. The notion of state assistance to terrorist organizations does not necessarily imply that the state will facilitate the direct provision of weapons of mass destruction into the wrong hands. Rather, it generalizes that a terrorist group with WMD proclivities and state support will have greater access to funding, sophisticated weaponry, and logistical and technical support. The organization would possess a higher level of resources and technical expertise than it would otherwise be able to muster, while at the same time its strategic calculus would be less constrained by the need to maintain the support of a wider popular constituency.<sup>22</sup> It is arguable, for instance, whether Al Qaeda would ever have been able to set up its chemical and bio-

<sup>&</sup>lt;sup>21</sup> Lawrence Wright, "The Rebellion Within," *The New Yorker* (2 June 2008); available at http://www.newyorker.com/reporting/2008/06/02/080602fa\_fact\_wright.

<sup>&</sup>lt;sup>22</sup> Brian M. Jenkins, "Defense Against Terrorism," *Political Science Quarterly* 101:5 (1986): 778.

logical weapons "laboratories" in Afghanistan, or pursue its nuclear ambitions while in Sudan, were it not for the hospitable environment provided by the anti-Western governments of these states.<sup>23</sup>

**Technological Development.** It can be expected that the higher the level of technological development of the host country in which violent terrorist groups with a penchant for WMD operate, the more likely that non-state actors will be able to acquire the requisite knowledge, skills, materials, and equipment to develop nuclear or other forms of CBRN weapons. In recent years, the United Nations Conference on Trade and Development (UNCTAD) has developed an index of technological development.<sup>24</sup> However, this index is not available for countries like Afghanistan, Sudan, and Iraq. Nevertheless, according to noted analysts Victor Asal and R. Karl Rethemeyer, the UNCTAD index is highly correlated (0.86) with energy consumption per capita. Thus they settled on this widely available measure as an appropriate proxy for the technological level of a terrorist organization's home state.<sup>25</sup>

**Rooted in the Global Economy.** Developing and producing CBRN weapons requires access to sources of knowledge that are primarily in the Western sphere of influence. Most of these science and research data are available in the public domain, via the Internet, Ph.D. theses, and declassified documents accessible in public and academic libraries. Despite this, terrorists would require access to training and research institutions to be competent and effective in actually constructing a weapon. This can be possible only with access to scientists and engineers who are based in the host countries. The probability of non-state actors gaining access to skilled adherents can be expected to increase the more a given host country is globally integrated with learning institutions worldwide.

Terrorist organizations would also enormously benefit from the integration of the host country into the global economy. Terrorist groups would require access to sophisticated devices and materials that are not available in the open markets of less developed countries. However, the integration of such countries with the global economy will allow increased flows of trade that will provide greater opportunities for terrorists to clandestinely deliver and receive materials, blueprints, weapons, and devices concealed in legitimate cargoes.

<sup>&</sup>lt;sup>23</sup> Center for Nonproliferation Studies, "Chart: Al-Qaida's WMD Activities," *Monterey Institute of International Studies*, 13 May 2005; available at http://cns.miis.edu/other/sjm\_cht. htm.

<sup>&</sup>lt;sup>24</sup> United Nations Conference on Trade and Development, *Indicators of Technology Development* (Geneva: United Nations, 2002).

<sup>&</sup>lt;sup>25</sup> Victor H. Asal and R. Karl Rethemeyer, "Islamist Use and Pursuit of CBRN Terrorism," in *Jihadists and Weapons of Mass Destruction*, eds. Gary Ackerman and Jeremy Tamsett (Boca Raton, FL: CRC Press: 2009): 337–38.

**Nature of the Regime.** The type of regime prevailing in the host country of a nonstate actor significantly contributes to their capability and motivation to become involved in WMD terrorism through the wide variation in existing security parameters. Terrorists might find it difficult generally to operate in an autocratic environment where the state can exert greater police powers than is possible in a democracy.<sup>26</sup> However, terrorists would be able to operate more freely if the general effect of autocracy is reduced in the host country.

**Internal Disturbances.** Internal disturbances like civil strife and insurgency create political instability that accelerates terrorist groups' pursuit of CBRN weapons. Domestic instability creates zones where central authority becomes ineffective, thereby providing bases where authority can be exerted by terrorists groups or their political wings. This facilitates the building, developing, assembling, and transshipment of materials, knowledge, and technology needed to acquire and utilize weapons of mass destruction. For example, Hamas's partial control over the Gaza Strip has made it possible for it to illicitly acquire a variety of lethal weapons. Civil wars can also deflect the time and attention of less-developed host countries, providing terrorist organizations with the opportunity to carry out their illegal activities clandestinely.

**Situation in the Network of Terrorist Alliances**. The more deeply a terrorist organization is embedded in the network of global terrorist alliances, the more likely it is to pursue CBRN terrorism. To carry out an act of nuclear or some other form of WMD terrorism would require enormous planning and networking. This could be possible if a non-state actor is well integrated with the global network of like-minded terrorists.

**Revenge.** If Al Qaeda had only informed the global media that it would kill four million Americans unless the United States withdrew its entire military presence from Saudi Arabia, the threat might have caused concern, but the impact would not have been nearly as great as was caused by the attacks that followed in September 2001. Terrorist violence is a costly form of signaling. It is difficult for terrorist groups to impose their will by the direct use of force. However, sometimes terrorists are successful in persuading their targets to do as they wish by convincing their adversaries of their ability to impose costs and their determination to do so. Given the conflict of interest between terrorists and their targets, ordinary communication or "cheap talk" is insufficient to change minds or influence behavior.<sup>27</sup> Since it is hard for weak actors

<sup>&</sup>lt;sup>26</sup> Paul Wilkinson, *Terrorism Versus Democracy; The Liberal State Response*, Cass Series on Political Violence (London: Frank Cass, 2000).

<sup>&</sup>lt;sup>27</sup> Andrew H. Kydd and Barbara F. Walter, "The Strategies of Terrorism," *International Security* 31:1 (Summer 2006): 50.

to make credible threats, terrorists are forced to display publicly just how far they are willing to go to obtain their desired results.<sup>28</sup>

The drivers listed above can be factors that enable violent non-state actors to seek CBRN weapons. However the good news is that there has been no recorded event of terrorists having acquired the relevant expertise to construct a nuclear bomb. There are also no hard facts to substantiate the claim that terrorists can successfully build a crude nuclear explosive, or "dirty bomb," with HEU. Nuclear security has also been improving, though there is still much to be done to secure remaining stores of fissile materials. However, as was stated above, the caveat must be given: as of now. The trends of increasing violence, the spread of technology, and the ready availability of nuclear knowledge in the public domain compel us to think about the probability of a nuclear attack by terrorists. As was established by the bipartisan 9/11 Commission in the United States, it was a "failure of imagination" that led to the 9/11 disaster. The question now is, Can we afford to overlook any such possibility again? This question becomes more relevant especially after the attempted Al Qaeda terrorist attack on Northwest Airlines Flight 253 on 25 December 2009 (the so-called "underwear bomber" attack, when Umar Farouk Abdulmutallab, a native of Nigeria, attempted to detonate plastic explosives sewn in his underwear on a flight from Amsterdam to Detroit). To prevent a failure of imagination once again, three plausible scenarios exist under which a nuclear terrorist attack might be likely.

#### **Probability Scenarios for Terrorist Nuclear Attack**

**Scenario 1.** The weakening of the global nuclear nonproliferation regime—particularly the breakdown of the Non-Proliferation Treaty—will erode comprehensive nonproliferation efforts. This is likely to scuttle the possibility of ushering in any substantial changes to international policies and practices related to the NPT regime. This in turn will present a setback to the intelligence and law enforcement agencies that have spearheaded many counterterrorism missions, which will severely compromise the security measures protecting global stockpiles of nuclear weapons and materials. The terrorists will take advantage of the weakened security systems to gain access to dangerous fissile material or nuclear weapons.

**Scenario 2.** The present domestic uncertainty surrounding the newly acquired nuclear capability in North Korea presents another worrisome scenario. Hypothetically, should the present regime of Kim Jong II fall from power because of internal turmoil or a military coup, there is a possibility that nuclear weapons may go missing in the ensuing disorder and eventually fall into the hands of terrorists. Cash-strapped North

<sup>&</sup>lt;sup>28</sup> Ibid., 51.

Korea could trade its missiles and nuclear know-how with other states, who in turn may provide these warheads to terrorists.

**Scenario 3.** The growing civil unrest within Pakistan could divert the attention of the military, which is charged with safeguarding the nuclear assets within the country. Consequently, terrorists with insider assistance could gain access to Pakistan's fissile materials.

However, the above probabilities can be prevented by the recognition of the threat of nuclear terrorism as real, and the formulation of a clear agenda to combat the threat and pursue it with timely action to reduce the risk of nuclear terrorism. To that extent, another scenario that can be drawn is the following:

**Scenario 4**. Vigilance is stepped up globally, including upgrades to the security systems of sites housing dangerous nuclear materials. National laboratories develop a new suite of technologies to detect and counter unconventional weapons of all types, and these sentinels are positioned in a multilayered defense system within the country.

## Conclusion

The motivation for violent terrorist groups to seek and acquire weapons of mass destruction is a complex matter, and it plays out in dynamic and evolving circumstances. It is not a process that occurs in one day. However, in spite of the complexities involved, it remains an important fact that the threat of nuclear terrorism is no longer one of science fiction. It is a plausible phenomenon, and the threat is credible in terms of the will and intention of terrorist groups like Al Qaeda to pursue the nuclear option. The only safeguard against this catastrophic possibility is a concerted global effort to counter and prevent it.

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