

Nuclear Terrorism: A Potential Threat to World's Peace and Security

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Abstract

Since 9/11, there is a great concern in the international community about the potential nuclear terror attacks by the terrorist organizations in the major cities of the world. The quest of the terrorist organizations like Al Qaeda and Islamic State of Iraq and Syria (ISIS) to get access, seize, or steal the nuclear weapons and nuclear material either to inflict heavy damages to human lives or to disperse the radioactivity in the environment using a 'dirty bomb' further strengthens this concern which can pose a great threat to the security and peace of the world. This paper analyzes the potential threat of nuclear terrorism, the scenarios regarding the acquisition of the nuclear weapons or nuclear material, nuclear terrorism as myth or reality, consequences and response to nuclear terrorism, Al-Qaeda's and ISIS quest for nuclear weapon and nuclear material acquisition for nuclear terrorism, and international measures to eliminate the threat of nuclear terrorism so far.

Key Words: Al-Qaeda, ISIS, Iraq, Nuclear Terrorism, Nuclear Weapon, Fissile Material, Osama bin Laden, IAEA.

Nuclear Terrorism: an Introduction

Nuclear terrorism is a constantly evolving threat and has emerged as the most imminent challenge to world security. Nuclear terrorism refers to the prospective use of nuclear weapons containing fissile material by terrorists. Nuclear terrorism also denotes the attack of terrorists to sabotage a nuclear facility, destroy a nuclear facility to create massive radiology or consumption of nuclear fissile material using conventional

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explosives generally termed as “Dirty Bomb” which is also termed as 'Radiological Terrorism'. There is no uniformly agreed definition for this term. According to the United Nations' International Convention on the Suppression of Acts of Nuclear Terrorism (2005),

“Nuclear Terrorism is an offense committed if any person commits an offence within the meaning of this Convention if that person unlawfully and intentionally: (a) Possesses radioactive material or makes or possesses a device: (i) With the intent to cause death or serious bodily injury; or (ii) With the intent to cause substantial damage to property or the environment; (b) Uses in any way radioactive material or a device, or uses or damages a nuclear facility in a manner which releases or risks the release of radioactive material: (i) With the intent to cause death or serious bodily injury; or (ii) With the intent to cause substantial damage to property or the environment; or (iii) With the intent to compel a natural or legal person, an international organization or a State to do or refrain from doing an act”.¹

The EU representative, Catherine Ashton in 'International conference on Nuclear Security: Enhancing Global Efforts' stated, “Nuclear terrorism, as the risk of non-state actors getting access to nuclear materials or radioactive sources, represents a most serious threat to international security”.² In the past few years, the nuclear weapons in the hands of terrorist organizations, has become the biggest growing concern in the world. Since the 9/11 attacks on US soil, the world has witnessed the quest of terrorist organizations (specially Al-Qaeda) to acquire nuclear weapon or nuclear technology. Jamal Ahmad al-Fadl, who was a dissenter of Al Qaeda in his trial testimony had

¹“International Convention for Suppression of Acts of Nuclear Terrorism”, 2nd Session, September 11, 2008, accessed October 22, 2016.

http://www.un.org/ga/search/view_doc.asp?symbol=A/59/766

²“The EU and Nuclear Security”, EU Non-Proliferation Consortium, November 2013, accessed August 26, 2016.

<http://www.nonproliferation.eu/focus/archives/2013/2013-11.php>).

“revealed his extensive but unsuccessful efforts to acquire enriched uranium for Al-Qaeda”.³ The terrorist efforts to acquire a nuclear weapon or weapon grade Uranium for use in an improvised nuclear device pose a great threat. In case terrorists acquire nuclear fissile material, it is a hypothetical assumption that such nuclear radioactive material could be used as a “dirty bomb” by detonating it with a conventional explosive device. In reality, such explosives cannot produce similar results as that of a nuclear weapon but it will disperse radioactive particles over a wide range. The detonation of such a bomb in a large city will not create massive casualties but will cause the psychological terror which will lead to a mass panic situation that could be more devastating. In contrast, the detonation of a nuclear weapon by terrorists will be a nightmare, resulting in massive casualties that could range from few hundreds to over a million, depending upon the yield of the weapon. This paper will focus on the options for terrorist organizations to acquire nuclear weapons, its prospects, myths or realities, consequences of nuclear terror attack, options to respond to nuclear threat/terrorism, Al-Qaeda's history and current status with regards to acquiring Weapons of Mass Destruction, and efficiency of the existing international measures to eliminate the threat of nuclear terrorism.

Acquisition of Nuclear Weapons by Terrorists

The terrorist organizations around the world have different political, ideological, ethnic and nationalist associations. They seek to gain the attention of the people through devastating attacks without losing their base of support. According to Brain Jenkins, “Terrorists wants lots of people watching, not lots of people dead”.⁴ Therefore, terrorist organizations like Al-Qaeda and ISIS are determined to acquire the most devastating weapon system in the world for the purpose of terrorism to create terror in the minds of people around the world. If any terrorist organization makes efforts to go nuclear, there would be different obstacles which that organization will have to face. There are four different scenarios following which a terrorist organization could

³Rahimullah Yusufzai,. Exclusive Interview: Conversation with Terror,” Times. January 11, 1999, accessed 26 October, 2016.

www.time.com/time/magazine/article/0,9171,174550-1,00.html.

⁴Steve Bowman, *Weapons of Mass Destruction: The Terrorist Threat*, Congressional Research Report (CRS) Report for Congress (March 2002).

<http://fas.org/irp/crs/RL31332.pdf>

attempt to acquire a nuclear weapon. In the first and unrealistic hypothetical scenario, the terrorist organization could attempt to develop the fissile material enrichment facilities to develop highly enriched uranium for the manufacture of a nuclear weapon by getting the services of disgruntled nuclear scientists from Russia. As per the statement by the Office of Technology Assessment, US Congress:

“Producing nuclear weapon materials indigenously would require at least a modest technological infrastructure and hundreds of millions of dollars to carry out. The cost of a full scale indigenous program, however, if clandestine and lacking outside nuclear-weapon expertise, can be as much as 10 to 50 times higher than for a program aimed at producing just one or two bombs and largely carried out in the open or with outside technical assistance”.⁵

Thus, it is the most difficult and least likely scenario that could ever happen because the technological knowhow, infrastructure and finances required for this purpose are quite high which even an organization having strong financial resources could not bear.⁶

Following the second scenario, a rogue nation, like any of the former Russian States having fissile material stockpiles or a country like North Korea having capability of nuclear weapons, can sponsor a terrorist organization by selling a nuclear weapon to earn legitimate money⁷ and/or to serve its clandestine objectives. It may be the easiest way for terrorist organizations to acquire nuclear weapons but for certain factors. One of the obvious factors is that states normally do not

⁵United State Congress, Office of Technology Assessment, *Technologies Underlying Weapons of Mass Destruction*, (Washington, DC: US Government Printing Office, December 1993), 126.

http://books.google.com.pk/books?id=B4zSFd8DRWYC&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false

⁶Evan Braden Montgomery, *Nuclear Terrorism: Assessing the Threat, Developing a Response*, Center of Strategic and Budgetary Assessments (CSBA), (USA, 2009).

<http://www.csbaonline.org/wp-content/uploads/2011/02/2009.04.22-Nuclear-Terrorism.pdf>

⁷Michael Rühle, Analysis - The Nuclear Dimensions of *Jihadist Terrorism*, NATO Review, Growing Dangers: Emerging and Developing Security Threats, accessed October 25, 2016.

http://www.nato.int/docu/Review/2007/Growing_Dangers/Nuclear_jihadist_terrorism/EN/index.htm

share their valuable assets with terrorists, and there is always a risk of them being discovered of intentionally providing a nuclear weapon to a

terrorist organization which could bring serious consequences for that state. Another fact to be kept in mind is that states would be reluctant to provide such a powerful weapon to terrorists since there is a possibility that the terrorist organization might use it against the sponsor state. The third possible scenario could be that the terrorist organization acquires a nuclear weapon through theft either from the US or Russia as both countries have assembled nuclear weapons. But still there are various challenges for terrorist organizations to handle the nuclear weapon and overcome the security features such as incorporating the proper code. However small nuclear weapons (known as 'tactical nuclear weapons') developed by these states can easily be stolen as the International Task Force on the Prevention of Nuclear Terrorism declared tactical nuclear weapons of Russia as being vulnerable to fall in the hands of non-state actors through theft.⁸

Lastly, there is a growing concern that terrorists can steal fissile material from a civilian or military facility or purchase it from the nuclear black market to develop an improvised nuclear device.⁹ "Theft of weapon-grade nuclear materials would be more serious than that of material requiring substantial additional processing. If a particular stock is poorly safeguarded, diversion of material might not be detected before it had already been fabricated".¹⁰ This scenario is considered as the second easiest route which terrorists might seek because of the availability of fissile material all over the world in various civilian and military nuclear facilities most of which have vulnerable security and protection. Moreover, terrorist organizations can get the expert services to probably build a gun-type, in case of availability of highly enriched uranium, which has a relatively easier design causing the scenario of nuclear terrorism salient.¹¹

⁸Zafar Nawz Jaspal, *Nuclear/Radiological Terrorism: Myth or Reality?* Journal of Political Studies, Vol. 19, Issue - 1, 2012, 91:111.

⁹Op cit, Braden Montgomery, *Nuclear Terrorism: Assessing the Threat, Developing a Response*.

¹⁰United State Congress, Office of Technological Assessment, *Technologies Underlying Weapons of Mass Destruction*, 130-131.

¹¹Braden Montgomery, *Nuclear Terrorism: Assessing the Threat, Developing a Response*, x.

Nuclear Terrorism: A Myth?

If we focus on nuclear terrorism as a myth, it reveals that the technological impediments and sophistications involved in the process of enrichment forced various states to revert their nuclear weapon projects. As far as the technicalities and sophistications involved in the production of fissile material for the weapons are concerned, it seems impossible for a terrorist organization to develop a nuclear facility for the enrichment of fissile material. Moreover, it is very difficult for a terrorist organization to manufacture and design a nuclear device in case of availability of enough fissile material for a weapon. On the other hand, it is a very difficult process to design and assemble a reliable nuclear device and nuclear warhead.

Nuclear weapon technology is so expensive and sophisticated that countries who consider it as essential for their survival have to pay an extreme cost and go through a great deal of trouble in acquiring it. That is the reason of abandoning of the nascent programs of Argentina and Brazil, and the volunteer handover of nuclear weapons by Ukraine, South Africa, Kazakhstan and Belarus in early 1990's.¹² Moreover, many nuclear scientists have a consensus that the development of a crude nuclear weapon by terrorist organizations seems impossible due to certain scientific technicalities. It needs the technological expertise in nuclear physics, chemistry, engineering, propellants, high explosives, electronics etc to manufacture a nuclear device. According to Kevin O'Neil,

“in addition to sufficient fissile materials, a nuclear explosive device requires the assembly of several non-nuclear components. For instance, for an implosion system, these include high explosive lenses and high-speed switches; some form of a neutron generator; an iron or depleted uranium tamper; and perhaps natural uranium reflector. Assembling these components requires specialized knowledge and the ability to operate specialized machine tools.”¹³

¹²Jonathan Tepperman. *Why Obama Should Learn to Love the Bomb*, News week, (August 29, 2009), accessed 25 October, 2016. <http://www.newsweek.com/id/214248>

¹³Kevin O'Neill. *The Nuclear Terrorist Threat*, Institute for Science and International Security, August 1997. <http://isis-online.org/uploads/isis-reports/documents/threat.pdf>

Hence, if a state lacks the capability to acquire proficiency in nuclear knowhow and to develop or continue its nuclear weapon program without international assistance, then how can a non-state terrorist organization achieve the milestone of nuclear weapon research and development by itself? Thus, many scientists are of the view that it is impossible for a terrorist organization to develop or manufacture even a crude nuclear weapon because such a process requires extensive expertise in various fields which are not easily available to the terrorists. The former Director of the Central Intelligence Agency (CIA), Michael Hayden notes, "We are fortunate that those with the clearest intent to acquire and use weapons of mass destruction are also the least capable of developing them".¹⁴ The provision of nuclear material to terrorists organizations like Al-Qaeda by any nuclear state is over blown due to the fact that no sensible state will provide their most essential and valuable materials which is important for their own security to the terrorist organizations. Moreover, the US has already made it very clear that any provision of such assistance and supply of nuclear material and weapons to terrorist organizations for nuclear terrorism will be responded to accordingly by tracing the origin of the weapon using nuclear forensics technology.

Nuclear Terrorism: A Reality?

The incapability of terrorists to enrich fissile material or weapon development cannot overshadow the threat of nuclear terrorism if we see through the prism of reality. The possibility of nuclear terrorism cannot be eliminated due to the incapability of terrorist organizations to engineer fissile material. But, at the same time, the absence of any example of nuclear or radiological terrorism should not be taken for granted. There is a need to properly analyze terrorist ambitions that have a desire to acquire weapons of mass destruction, including nuclear, chemical and biological weapons or their development capability to

¹⁴Stuart S. Brown, *Human Security: US Leadership on Counter-Proliferation*, in *The Future of US Global Power: Delusions of Decline*, (Houndmills, UK, Palgrave Macmillan, 2013), 144.

<http://books.google.com.pk/books?id=RgVBK3B1oOQC&printsec=frontcover#v=onepage&q&f=false>

fulfill their clandestine objectives. Though the use of weapons of mass destruction (especially the nuclear weapons) is relatively less probable, but still there is a great concern of usage of such destructive weapons by terrorists like Al-Qaeda and its affiliates due to their mindset and philosophy. When it comes to nuclear terrorism, Al-Qaeda is the most active participant among the terrorist organizations to go nuclear. Other terrorist organizations include the Japanese cult group Aum Shinrikyo, Al-Qaeda and its associates – notably the Islamic State of Iraq and Syria (ISIS)—who intended, and actively sought to acquire weapons of mass destruction.¹⁵

Al-Qaeda: Striving to go Nuclear

Al-Qaeda, after its emergence, found the US as its future target. Osama bin Laden, along with Ayman al-Zawahri, showed their interest in acquiring the weapons of mass destruction.¹⁶ For this purpose, Ayman al-Zawahri extensively travelled to Russia, Yemen, Malaysia, Singapore and China hunting for the Weapons of Mass Destruction¹⁷ but remained unsuccessful. In 1998, Osama bin Laden declared war on the US and secretly planned for the 9/11 attacks. At the same time, Ayman al Zawahri was piecing together Pakistan and Malaysia based networks to develop Anthrax weapons for use in the US.¹⁸ The top leadership of Al-Qaeda is reportedly having close contact with the nuclear scientists from Russia and Central Asia which make the possibility of nuclear terrorism a reality. A Pakistani Nuclear Scientist, Sultan Basharuiddin Mahmood was arrested and interrogated by Pakistan and the US Intelligence Agencies. He confessed that “I met Osama bin Laden before 9/11 not to give him nuclear know how, but to seek funds for establishing a technical college in Kabul”.¹⁹

¹⁵Mowatt-Laressen, *Al Qaeda Weapons of Mass Destruction Threat: Hype or Reality?*, 5.

¹⁶Rolf Mowatt-Laressen, *Al-Qaeda's Religious Justification of Nuclear Terrorism*, in *Islam and the Bomb: the Religious Justification For and Against Nuclear Weapons*, Belfer Center for Science and International Affairs, Harvard Kennedy School, 29. http://belfercenter.hks.harvard.edu/files/uploads/Islam_and_the_Bomb-Final-pt2.pdf

¹⁷Ibid.

¹⁸Ibid.

¹⁹N-scientist confesses to meeting Osama, Dawn.com (May 05, 2010). Available at: <http://www.dawn.com/news/940677/n-scientist-confesses-to-meeting-osama>

Osama bin Laden considered the acquisition of WMDs an Islamic duty which was extensively followed by his lieutenants and followers. This started their quest to acquire WMD's. In 1998, he gave a Fatwa regarding the legitimate use of Weapons of Mass Destruction against the US, and pointed out to the Americans in a video release to “escalate the killing and fight against you (Americans)”.²⁰ Osama bin Laden stated during an interview with Pakistani journalist Hamid Mir, “I wish to declare that if America used chemical or nuclear weapons against us, then we may retort with chemical and nuclear weapons (purchased from Nuclear Black Market of Central Asia)”.²¹ During the same interview, Ayman al-Zawahri stated,

“If you have \$30 million, go to the black market in Central Asia, contact any disgruntled Soviet scientist and a lot of... dozens of smart briefcase bombs are available. They have contacted us, we sent our people to Moscow, to Tashkent and to other Central Asian states, and they negotiated and we purchased some suit case bombs”.²²

Later in 2008, Ayman al-Zawahri gave a Fatwa justifying the use of Weapons of Mass Destruction, he stated, “There is no doubt that the greatest enemy of Islam and Muslims at this time is America”.²³ Adding this statement, he quoted, “artillery bombardment is permissible when the Jihad needs or requires it”. He further quoted a Saudi cleric,

²⁰Mowatt-Laressen, *Al Qaeda Weapons of Mass Destruction Threat: Hype or Reality?*, 19.

²¹Rolf Mowatt-Laressen, *Al Qaeda Weapons of Mass Destruction Threat: Hype or Reality?*, Belfer Center for Science and International Affairs-Harvard Kennedy School, (Cambridge, USA: 2010), 18.
https://www.google.com.pk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=6&cad=rja&uact=8&ved=0CEwQFjAF&url=http%3A%2F%2Fbelfercenter.ksg.harvard.edu%2Ffiles%2FAI-Qaeda-wmd-threat.pdf&ei=ieYxU4ioL_Gz0QW394DYDw&usq=AFQjCNHGydNtb9LuhuhEf6tgO7e3pPkCTA&sig2=Hpg5cmsLI8OFyv-HVDtm6w&bvm=bv.63587204,d.d2k

²²Mowatt-Laressen, *Al Qaeda Weapons of Mass Destruction Threat: Hype or Reality?*, 18-19.

²³Mowatt-Laressen, *Al-Qaeda's Religious Justification of Nuclear Terrorism*, 38.

Nasir-al-Fahd's Fatwa: "If a bomb were dropped on them, destroying 10 million and burning as much of their land as they have burned of Muslim land that would be permissible without any need to mention any other proof. We might need other proofs if we wanted to destroy more than this number of them".²⁴ The nuclear deterrence strategy cannot work out in case of such ambitions of non-state terrorist organizations, regardless of the imagination of the results and consequences of such terrorist activities. According to Daniel Whiteneck,

"Evidence suggests, for example, that Al Qaeda might not only use WMD simply to demonstrate the magnitude of its capability but that it might actually welcome the escalation of a strong US response, especially if it included catalytic effects on governments and societies in the Muslim world. An adversary that prefers escalation regardless of the consequences cannot be deterred".²⁵

Osama bin Laden, the founder and head of the extremist militant group Al-Qaeda, was killed in Pakistan on May 2, 2011 by Navy SEALs of the US Naval Special Warfare Development Group (known as DEVGRU or SEAL Team Six)".²⁶ This operation was given the code name of "Operation Neptune Spear", and was carried out by the Central Intelligence Agency. The assassination of Osama bin Laden by US troops gave a shock to the Al-Qaeda's top leadership. It was also an important milestone for the US efforts to defeat Al-Qaeda but the threat of nuclear terrorism still exists. The Al-Qaeda leadership was later on transferred to Ayman al-Zawahri after Osama's demise. Since then, this quest of acquiring nuclear weapon and fissile material has been shifted to the ISIS.

²⁴Mowatt-Laressen, *Al-Qaeda's Religious Justification of Nuclear Terrorism*, 39.

²⁵Daniel Whiteneck, *Deterring Terrorists: Thoughts on a Framework*, The Washington Quarterly, The Center of Strategic and International Studies and the Massachusetts Institute of Technology, 187.

²⁶"US SEALs had ground support in Abbottabad Operation: Report", *The News*, July 08, 2013, accessed September 3, 2016. <http://www.thenews.com.pk/article-108532-US-SEALs-had-ground-support-in-Abbottabad-operation:-report>

ISIS: Striving to go Nuclear

In the current Syrian conflict, various Al-Qaeda affiliated groups joined in, but the presence of Al-Qaeda's top leadership is strikingly missing. In this regard, 'Islamic State of Iraq and Syria (ISIS)', also known as 'Daesh', emerged as a strong non-state actor in the current era. ISIS having its bases in Iraq and Syria is an organization with an objective to establish an Islamic Caliphate in the world. ISIS emerged around the year 2000 and began its insurgent activities in Iraq after the US invasion there. The mastermind of ISIS was 'Abu Mushab al-Zarqawi' who started training the militants under the banner of 'Jama'at al-Tawhid Wa'al-Jihad'. It later got affiliated with Al Qaeda in 2004 and started its insurgency operations under the banner of Al Qaeda in Iraq (AQI). The AQI faced decline after the death of Zarqawi on June, 7, 2006 in a US airstrike,²⁷ and Abu Ayub al-Masri, an Egyptian bomb maker, was announced as the successor of Zarqawi. In the leadership of Masri, AQI was criticized by the local Sunnis for the foreign influence and promoting the sectarian violence.²⁸ Masri convinced other militant organizations to join the newly established 'Islamic State of Iraq (ISI) to give it a more Iraqi brand. The suggestion was made to give leadership of ISI to 'Abu Umar al-Baghdadi' in order to launch a unified resistance against the US and coalition forces.²⁹ Despite the change of the leadership, ISI was still dominated by the foreign fighters and this caused local resistance to the ISI.³⁰

²⁷Peter Bergen, Joseph Felter, Vahid Brown, and Jacob Shapiro, "Bombers, Bank Accounts, & Bleedout: Al-Qa'ida's Road In and Out of Iraq", *Combating Terrorism Center at West Point*, Eds Brian Fishman, July 2008.

http://www.princeton.edu/~jns/publications/Sinjar_2_July_23.pdf

²⁸Karen DeYoung, and Walter Pincus. *Washington Post*, "Al-Qaeda in Iraq May Not Be Threat Here." 18 Mar. 2007, accessed September 7, 2016.

http://www.washingtonpost.com/wp-dyn/content/article/2007/03/17/AR2007031701373_pf.html

²⁹Joseph Felter, and Brian Fishman, "*Al-Qai'da's Foreign Fighters in Iraq*", *Combating Terrorism Center at West Point*, Jan. 2007.

<http://library.uoregon.edu/ec/e-asia/reada/felter.pdf>

³⁰Najim Abed Al-Jabouri, and Sterling Jensen, *The Iraqi and AQI Roles in the Sunni Awakening*, National Defense University. January 2010.

http://cco.dodlive.mil/files/2014/02/Prism_3-18_AI-Jabouri_Jensen.pdf

The Syrian War provided grounds to the ISI for its expansion and, by April 2013, it started operations in Syria. ISI was renamed as 'Islamic State of Iraq and Syria (ISIS)' by Baghdadi and announced the merger of 'al-Nusra' group created by Al Qaeda into the ISIS. Baghdadi's decision to operate in Syria was criticized by al-Zawahiri but Baghdadi negated the criticism and announced the continuity of the operation of ISIS in Syria.³¹ This decision led to a disavowal of ISIS by Al Qaeda and ISIS became the leading jihadist group carrying out the military offences against the Iraqi and Syrian government security forces. In 2014, the assets of ISIS were estimated to be worth \$2 billion which were acquired through the invasion of major cities and through various criminal activities like extortion and smuggling.³² Experts estimated the per day earning of ISIS only from the oil resources was around \$1 -2 million per day.³³

ISIS is believed to have about 90 pounds of low grade uranium (which was seized from Mosul University in Iraq after the invasion of the city in 2014) that can be used in the Dirty Bomb's to create serious panic among the public.³⁴ In 2015 and 2016, ISIS became the leading high profile jihadist group in Iraq and Syria. Moreover, ISIS carried out attacks in Paris on November 13, 2015, killing 130 civilians and injuring more than 100 people.³⁵ ISIS carried out a series of three coordinated suicide

³¹Thomas Joscelyn, "Al Qaeda in Iraq, Al Nusrah Front Emerge as Rebranded Single Entity." *The Long War Journal*, Foundation for the Defense of Democracies. 9 Apr. 2013. http://www.longwarjournal.org/archives/2013/04/the_emir_of_al_qaeda.php#

³²Ehab Zahiye, *Al-Jazeera, America* "How ISIL Became a Major Force with only a few Thousand Fighters", June 19, 2014, accessed September 8, 2016. <http://america.aljazeera.com/articles/2014/6/19/isil-thousands-fighters.html>

³³Gregor Aisch, Joe Burgess, C. J. Chivers, Alicia Parlapiano, Sergio Peçanha, Archie Tse, Derek Watkins and Karen Yourish, *How ISIS Works*, The New York Times, September 16 2014, accessed 9 September 2016. <http://www.nytimes.com/interactive/2014/09/16/world/middleeast/how-isis-works.html>

³⁴Ben Riley-Smith, *ISIL Plotting to Use Drones for Nuclear Attack on West*, The Telegraph, April 01, 2016, accessed September 9, 2016. <http://www.telegraph.co.uk/news/2016/04/01/isil-plotting-to-use-drones-for-nuclear-attack-on-west/>

³⁵BBC News, Paris Attacks: *What Happened on the Night* - BBC News, December 9, 2015, accessed September 10, 2016. <http://www.bbc.com/news/world-europe-34818994>

bombings in Belgium: one at Maalbeek Metro Station, Brussels and two at Brussels Airport in Zaventem, killing about 32 civilians and injuring 300 people.³⁶ During the attacks, a G4S guard working on the Belgian nuclear research center was also murdered and it left the world believing that the ISIS has a potential plot to attack the nuclear facility either to steal the radioactive material for dirty bomb or to release the radioactive material and waste into the atmosphere. These attacks also raised the issue of nuclear security after a discovery made by the Belgian authorities that the ISIS has kept an eye on the local nuclear scientists and their families. Moreover, two Belgian nuclear power plant workers at Deol having knowledge of the nuclear sites joined ISIS and could provide assistance to exploit them for terrorist purposes.³⁷ On March 30, al-Furat, the media wing of ISIS, threatened attacks on Germany and Britain on the eve of Washington Nuclear Security Summit 2016.³⁸ US President, Mr. Barak Obama expressed during the Washington Nuclear Security Summit 2016 that,

“We know that Al-Qaeda has long sought of nuclear materials. Individuals involved in the attacks in Paris and Brussels videotaped a senior manager who works at a Belgian nuclear facility, ISIL (ISIS) has already used chemical weapons including mustard gas in Syria and Iraq. There is no doubt that if these mad men ever got their hands on a nuclear bomb or nuclear material,

³⁶Sheldon Chad, Christina Boyle, and Corina Knoll, *Los Angeles Times*, “Hunt is on for Brussels Bombing Suspect; Islamic State Warns for more, Worse Attacks”, September 10, 2016, accessed September 10, 2016.

<http://www.latimes.com/world/europe/la-fg-brussels-airport-explosion-20160322-story.html>

³⁷Jennifer Newton, *Mail Online*, “Two Belgian nuclear power plant workers have joined ISIS leading to fears the jihadis have the intelligence to cause a meltdown disaster”, March 26, 2016. Accessed September 10, 2016.

<http://www.dailymail.co.uk/news/article-3510384/Belgian-nuclear-plant-guard-murdered-security-pass-stolen-two-days-Brussels-attacks.html>

³⁸Gilad Shiloach, *Voactiv*, “ISIS Threatens German, Calls for Attack on International Airport”, March 31, 2016, Accessed September 10, 2016.

<http://www.vocativ.com/news/303858/isis-threatens-germany-calls-for-attack-international-airport/>

they most certainly would use it to kill as many innocent people as possible”.³⁹

Moreover, the British Prime Minister David Cameron warned, “ISIL (ISIS) terrorists are planning to use drones to spray nuclear material over Western cities in a horrific 'dirty bomb' attack”. It shows that the ISIS' probable hold over nuclear material was being taken as too real.⁴⁰ All these advancements and attempts of ISIS to obtain the nuclear material forced the world to believe about the possibility of nuclear terrorism at its highest. Many of the experts believe that the threat of the nuclear attack on Europe by ISIS is real and can disturb the peace and security of the world.

Consequences of a Nuclear Terrorist Attack

The detonation of fission nuclear devices will generate massive amount of energy which will cause blast heat and radiation. The explosion in favorable conditions causes extensive radioactive fallout, firestorms, shockwaves, and intense winds which altogether result in massive damage and casualties.

“A 10-kiloton nuclear weapon would release a massive amount of thermal radiation... a fireball of superheated gas that would destroy everything for 200 meters in all directions. The intense light and heat radiating from the fireball would also ignite clothing as far away as 1,100 meters... the effects of thermal radiation, the explosion would generate an outwardly moving shockwave of overpressure capable of crushing heavy objects, and extremely high velocity winds of several hundred miles per hour”.⁴¹

³⁹Riley-Smith, *The Telegraph*, “ISIL Plotting to Use Drones for Nuclear Attack on West”.

⁴⁰Riley-Smith, *The Telegraph*, “ISIL Plotting to Use Drones for Nuclear Attack on West”.

⁴¹Braden Montgomery, *Nuclear Terrorism: Assessing the Threat, Developing a Response*, 30.

Besides the catastrophe caused by the nuclear weapon explosion, there will be a new phase of conflict between the states. Despite the fact that a non-state terrorist organization had conducted such an activity, the future victim of the war will be the “rogue” states, mainly North Korea, Russia, Iran and Pakistan. The world would believe that it is the ineffective security measures by these states that make it easy for the terrorists to acquire nuclear weapons using different tactics as mentioned above.

Response to Nuclear Threat

The nuclear terrorism combat strategy should comprehensively focus on three objectives: “preventing terrorists from acquiring nuclear weapons or fissile material; stopping terrorists from delivering a nuclear weapon to their intended target should prevention fail; and being prepared to respond as quickly and effectively as possible both at home and abroad, in the event that terrorists succeed in detonating one or more nuclear weapons”.⁴² The most important preemptive way to prevent possible nuclear terrorism is to keep away the terrorists from acquiring nuclear weapons, or fissile material to develop a nuclear weapon. In case terrorists acquire nuclear weapons, then the main challenge would be to prevent the usage of nuclear weapons and catastrophic effects of such attacks. The human intelligence has a very vital role in this regard. Other challenges would be to address the concern if in case the nuclear weapon is used by the terrorists then how one would be able to limit the damage. Developing and designing certain policies would also be needed in various areas like health, development and so on. In case of such a disaster, the very first priority of government would be to limit the effects of the attack. However there is more probability of governments quickly diverting their attention to identify those responsible and conducting actions against them. The quick analysis of the events can lead the victim state to retaliate against a respective sponsor of terrorist act. The rogue states i.e. North Korea and Russia already possessing nuclear weapons, and Iran, Central Asian States, and European States like Belgium, having nuclear facilities, can be identified as the non-responsible states as these states demonstrate vulnerable nuclear safeguards and have links with the terrorist and extremist organizations.

⁴²Braden Montgomery, *Nuclear Terrorism: Assessing the Threat, Developing a Response*, 63.

International Measure to Eliminate Nuclear Terrorism Threat

The growing concern of nuclear terrorism has forced the world to adopt certain measures to ensure a strong preventive defense against nuclear terrorism. The efforts of Al-Qaeda and ISIS to gain nuclear weapons and their ambitions to use it against the US threatened the world with the prospect of a holistic catastrophe if nuclear weapons fall in the hands of these terrorist organizations. The 9/11 incident further strengthened this threat where the international community felt the need to establish certain measures which could be effective in combating and eliminating the threat of nuclear terrorism. In this regard, the first ever initiative at international level was the 'Convention on Physical Protection of Nuclear Material' which was opened to signature on March 3, 1980, and entered into force on February 8, 1987. The Director General, IAEA was the depository of the convention and currently it has 149 state parties.⁴³ Later, on April 28, 2004, the United Nations Security Council (UNSC) resolution 1540 was unanimously adopted under Chapter VII of UN Charter which imposes binding obligations on all states to “prevent proliferation of nuclear, chemical and biological weapons, and their means of delivery and establishes appropriate domestic controls over related materials to prevent their illicit trafficking”.⁴⁴ The UNSC resolution 1673 (April 27, 2006), UNSC resolution 1810 (April 25, 2008), UNSC resolution 1977 (April 20, 2011) were adopted to reaffirm the objectives of the UNSC resolution 1540, endorsing the work already carried out by the signatory states and noting the full implementation of UNSC resolution 1540 by all the signatories. All these resolutions extended the mandate of UNSC resolution 1540 to two, three and ten years respectively.⁴⁵ The UN ad hoc committee was established by the United Nations General Assembly (UNGA) resolution 15/210 on December 17, 1996, which was adopted to elaborate on certain measures to eliminate international terrorism. It further addressed the

⁴³*Nuclear Threat Initiative*, “Convention on the Physical Protection of Nuclear Material”, accessed September 5, 2016. <http://www.nti.org/treaties-and-regimes/convention-physical-protection-nuclear-material-cppnm/>

⁴⁴*UN Home*, “United Nations Security Council Resolution 1540 (2004)”, accessed Septem4, 2016. <http://www.un.org/en/sc/1540/>

⁴⁵*UN Home*, “United Nations Security Council Resolution 1540 (2004)”.

'International Convention for the Suppression of Terrorist Bombings (November 25, 1997)' and thereafter addressed 'Nuclear Terrorism Convention' which is formally known as 'International Convention for the Suppression of Acts of Nuclear Terrorism (April 13, 2005)' and has 115 signatories and 91 state parties.⁴⁶ An important step in combating nuclear terrorism is the establishment of 'Global Initiative to Combat Nuclear Terrorism (GICNT)', on July 16, 2006, which was a volunteer initiative of US President G.W. Bush and Russian President Vladimir Putin to "strengthen global capacity to prevent, detect and respond to nuclear terrorism by conducting multilateral activities that strengthen the plans, policies, procedures and interoperability of partner nations. This organization is co-chaired by the US and Russia. It has an international partnership of 85 nations and four official observers.⁴⁷ Further in this regard, IAEA established 'World Institute of Nuclear Security (2008)', a unique organization which provides a forum to about 800+ members, including nuclear security experts, nuclear industry leaders, governments and international organizations from more than 60 countries, to implement best practices to reduce the amount of vulnerable nuclear material and to prevent nuclear terrorism.⁴⁸

The major contribution in designing a framework against nuclear terrorism is the 'Nuclear Security Summit (NSS)', an initiative of US President Obama, aimed at preventing the world from the possible threat of nuclear terrorism. The first NSS was hosted by US President Obama in Washington DC on April 12-13, 2010 in which 47 countries and three international organizations participated and issued a work plan to implement the objective of communiqué.⁴⁹ The objective of this Summit

⁴⁶ *Audio Visual Library of International Law*, "International Convention for the Suppression of Acts of Nuclear Terrorism", accessed September 4, 2016. <http://legal.un.org/avl/ha/icsant/icsant.html>

⁴⁷ *US Department of State* "The Global Initiative to Combat Nuclear Terrorism", accessed September 5, 2016. <http://www.state.gov/t/isn/c18406.htm>

⁴⁸ *Nuclear Threat Initiative*, "World Institute of Nuclear Security (WINS)", accessed September 5, 2016. <http://www.nti.org/about/projects/wins/>

⁴⁹ *US Department of State*, "Nuclear Security Summit, Washington DC 2010", accessed September 4, 2016. <http://www.state.gov/t/isn/nuclearsecuritysummit/2010/index.htm>

was to reaffirm the responsibility of all the states to maintain the security of nuclear materials and nuclear facilities from the terrorists and from the non-state actors, and to prevent them from obtaining the related information and technology. The information could be required to enrich the fissile material or to use the fissile material to develop a nuclear weapon or radioactive dispersal device/Dirty Bomb for terrorism purposes. It emphasized on developing the legislative and regulatory frameworks for nuclear security and on fully implementing all the existing international accords and commitments regarding the nuclear security (mainly Convention on the Physical Protection of Nuclear Material and Convention on the Suppression of Acts of Nuclear Terrorism). It also reaffirms the essential role of IAEA and recognizes the role of United Nations G-8 led Global Partnership Against the Spread of Weapons and Material of Mass Destruction, and Global Initiative to Combat Terrorism within their respective membership and mandates. The purpose is to cooperate at international, regional, multilateral and bilateral levels to develop mechanisms for effective prevention and response to the incidents of illicit nuclear trafficking, recognizing the private sector in nuclear industry and ensuring the physical protection of nuclear material, establishing the security culture, and maintaining the accountancy of the nuclear material. It also aims at supporting the establishment of strong nuclear security practices, including strengthening of the global nuclear security architecture, advancing tangible improvements in nuclear security behavior and their implementation, and facilitating the international cooperation for the peaceful utilization of nuclear energy.⁵⁰

The second NSS was held in Seoul (South Korea) on March 26-27, 2012 in which 53 countries and four international organizations (as observers) were invited. The focus was on establishing political agreements to implement the objectives of the first NSS.⁵¹ The goal of this summit was to reaffirm the commitments and the objectives of the Hague Summit and to look for

⁵⁰Communiqué of the Washington Nuclear Security Summit, Washington DC, 2010, accessed September 8, 2016.

<http://www.state.gov/documents/organization/237037.pdf>

⁵¹*US Department of State*, “Nuclear Security Summit, Seoul 2012”, accessed September 6, 2016. <http://www.state.gov/t/isn/nuclearsecuritysummit/2012/index.htm>

avenues for their implementation. The NSS 2014 was held in the Hague (Netherlands) on 24-25 March 2014 in which 53 states and 5 observers from international organizations participated. It focused on strengthening nuclear security, and preventing nuclear material (which could be used in nuclear weapons or in conventional weapons to disperse radioactivity) from any unauthorized use by terrorists and criminals. Moreover, it demanded international cooperation through IAEA and other intergovernmental organizations for strengthening international nuclear security architecture among the participant states and to adopt effective measures in order to control the illicit trafficking of nuclear material and devices. The Hague Summit reviewed the achievements made by the States in the light of Seoul Summit and determined the ways to achieve the remaining objectives.⁵² The last NSS was the continuation of The Hague Summit, and was held in Washington DC on 31st March and 1st April 2016, where all the participant states reaffirmed the global goal of nuclear non-proliferation, nuclear disarmament, peaceful use of nuclear energy and agreed to take measures to strengthen security of the fissile material to be used in nuclear weapons and nuclear facilities as the fundamental responsibility of all the states. All the participating states were required to cooperate at international level and to share the information in accordance with the national laws and procedures of every state to counter nuclear and radiological terrorism. Though NSS of the year 2016 puts an end to the NSS process, but the NSS communiqués of years 2010, 2012, 2014 and Work Plan of year 2016 will be the guiding principles for the full implementation of them.⁵³

International Measures to Eliminate Nuclear Terrorism Threat

Nuclear terrorism has emerged as a global concern and a reality which cannot be neglected because of the incapability of the terrorist organizations to develop, purchase, seize or steal the nuclear weapon or nuclear material for the development of a dirty bomb. One cannot

⁵²US Department of State, "Nuclear Security Summit, Hague 2014", accessed September 7, 2016. <http://www.state.gov/t/isn/nuclearsecuritysummit/2014/index.htm>

⁵³Communiqué, Nuclear Security Summit 2016, Washington DC., accessed September 7, 2016.

<http://static1.squarespace.com/static/568be36505f8e2af8023adf7/t/56fef01a2eeb810fd917abb9/1459548186895/Communiqu%C3%A9.pdf>

simply afford to take it as a myth. The terrorist organizations can attempt to target civilian or military nuclear facility in order to seize or steal the nuclear material and/or to disperse the radioactivity in the environment by damaging the facilities through 9/11 like tactics. The efforts of the terrorist organizations like (Al-Qaeda and ISIS) to get the nuclear capability by purchasing the nuclear weapons or by stealing nuclear material to make dirty bombs, intended to be used against the US and Europe without realizing the consequences, further strengthens the concerns of the international community regarding the dangers of nuclear terrorism. In case of any such adventure by the terrorist organizations, the primary target of the international community will be the Muslim world which will have to pay the price of western biases. The best way to eliminate the dangers of nuclear terrorism is to have collaboration at international level among all the states and to adopt the nuclear security cultures with the improved advancements at all the levels.

Conclusion

The destructive capabilities of nuclear weapons to inflict massive damages in the shape of instant deaths, massive casualties, destruction of infrastructure and creation of widespread panic in case of its detonation by a terrorist organization is the great challenge of today's world. The demonstration of efforts to acquire nuclear weapons by terrorist organizations like Al-Qaeda, ISIS and its affiliated groups, and their willingness and ambitions to use them against their enemies (especially the US and Europe) further creates the hype. On the other hand, the acquisition of nuclear weapon is not so easy and thus far has remained out of the reach of terrorist organizations. It involves a great degree of hurdles such as the security structure of nuclear weapons' storage facilities and the inbuilt device code systems of nuclear weapons, which is not easy to break and hence lowers the probability of such an attack by terrorists. However, the nuclear material can be used in the radioactive dispersal devices commonly known as 'dirty bombs' by the terrorist organizations to spread radioactivity and create fear and panic among the masses. In this regard, the international measures to combat the threat of nuclear terrorism pose a great offensive-defense against the threat of nuclear terrorism which ensures the safety of the world from the catastrophe of nuclear terrorism.