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Nuclear Terrorism in South Asia: Potential Threats/Challenges and Options: Post 9/11 Analysis

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ABSTRACT

Nuclear terrorism has emerged as one of the principal concerns for states maintaining nuclear weapons technology as well as states maintaining peaceful nuclear programs. The idea is that non-state entities, in pursuance of their goals of achieving maximum tactical leverage over states, aspire to either jeopardize nuclear facilities as a means to warrant a radiological anomaly or would, in worst case scenario, acquire or construct weaponized devices. The concept of Improvised Nuclear Device (IND) or Radiological Dispersal Device (RDD) is both argued as a plausibility and as a reality in current global technological layout. More specified to South Asia, where non-state entities are allegedly employed for transnational target acquisition and the where the security paradigms are hampered by technological inferiority, it is speculatively concluded that chances of such occurrences are marginally higher as compare to other nations.

Vulnerabilities of South Asia pertaining to radiological terrorism are extended internationally based upon proliferation patterns in South Asia, utilization of proxies for achievement of leverage, comparative technological inferiority of nuclear facilities and auxiliary systems, spread and introduction of terrorism in South Asia, lack of understanding of nuclear terrorism and inability to proactively participate in international non-proliferation regimes and designs. Important considerations in these regards would then have to focus on efficacy of security infrastructure from production to disposal and from civilian to military nuclear installations. Where in South Asia, states have maintained secrecy and state control over nuclear installations, radiological terrorism seems a highly unlikely scenario postulation but being cautious is still operationally necessary.

Key Words Radiological Terrorism, South Asia, Security, Nuclear facilities

Introduction

Security is the most important requirement at all level of analysis from individual to state and global levels. Baruch believes that ultimate security requires potential threat perception, acceptance of challenge which leads to risk and openness to vulnerability. There is a disagreement between Realists and Neo realists whether concept of security has changed or not in the post-cold war era. Concept of security is very sensitive in South Asia where India-Pakistan conflict model provides a suitable environment for nuclear terrorism. After 9/11, concept of nuclear terrorism has expanded and included not only state but non state actors (terrorist organizations) as well. This paper is divided into two sections, First

section deals with the India-Pakistan security deficit to each other, which pushes both states to nuclear proliferation. Second section focuses on the potential threat of terrorist organizations to India and Pakistan. Old India-Pakistan rivalry and impact of 9/11 are two motivating factors for the destabilization of the region. Mutual threat perception of each other after the nuclear tests by both states not only has raised regional but also international concerns. Nuclear acceleration is highlighted by their Nuclear Doctrines; although they have pointed out that they are trying for credible nuclear deterrence. Pakistan is also trying to equalize its nuclear capability against India's conventional military. The age old Kashmir problem and internal security issues have raised concerns of international community about the command and control systems of both states. The trends of globalization in the form of advanced technology, religious conviction and global black market might provide terrorists an opportunity to acquire nuclear weapons. The ft, acquisition of explosive material, discharge of crude nukes in the form of Improvised Nuclear Devices (IND) and illegal purchase of radioactive stuff leading to Radiological Weapon or a conventional bomb are all some of the challenges that terrorists might pose to the states. This paper aims to highlight that South Asian vulnerability very much depends on India-Pakistan rivalry, nuclear proliferation, inadequate security systems and most importantly nuclear challenges posed by the terrorist organizations.

Concept of Security

Security is the core concept of International Relations. It is also a comprehensive concept which covers individual, state or global levels. Generally speaking, it means to secure oneself from harm. Baruch provides some categorization of the concept of security which comprises of threat, challenge, risk and vulnerability.

Categorization of the Concept of Security

Why states need security? The answer is to reduce above mentioned factors of insecurity. This can be applied to both state vs state and state vs non state actors also. In case of potential threat, the ultimate requirement for state is to face challenge. Challenge always makes state vulnerable for a risk. The incident of 9/11 has transformed the concept of threat but also increased the potential challenges for state actors. The concept of threat has been changed drastically after the cold

war due to the increased number of violent domestic wars. (Shafer, 2013. P. 11) A change has also occurred because of the change in the forms of warfare which is not symmetrical but asymmetrical and the important role of non-state actors like terrorist networks has stimulated a change in the conception of threat. (Ekatarina, 2008, p. 3)

So far as security challenge is concerned, it may also refer to security issues. These challenges are primarily issues of the internal security agenda. (Günter, 2011, p. 29)

In case of vulnerability, targets become so weak that these can easily be attacked. There are external and internal factors of vulnerability. The domestic factors are those of dealing with and foreseeing a threat. On the other hand external factors are those concerning an exposure to danger and shock. Uncertainty and risks are complementary to each other. In international and national security contexts, security can be defined as restraining threats, attacks, or aggression by one state against another. Some scholars focus on individual emancipation and perceptions.(Hough, 2008, p. 2)

In this anarchical world, most of the realist thinkers viewed that states are more concerned of their security. In the state's interaction with one another, mostly force is applied by the governments in order to preserve their unity. The management and prevention of security depends on the reduction of threats to security. (Lasan, 2000, p. 40) The concept has taken different forms from the traditional state centric approach in the cold war period to human centered in the post cold war period. But the Neorealist thinkers like Kenneth Waltz points out in his main work, *The International Political Theory* that there is no alternation in the idea of defense because still countries are contending one another. (Lasan, 2000, p. 46)

David Baldwin is of the opinion that there is no need of new concepts with respect to emergence of new issues in this changing world environment. (Baldwin, 1997, p. 5-26) But from nuclear terrorism point of view, the concept of security is broadened, it is not only limited to state vs state but state vs non state actors which can be considered as a great menace.

Most of the scholars agree that globalization has changed and expanded the old notion of security parameters. In the view of Director General Internal Atomic Energy Agency (IAEA) in the 20th century, the concept of security is undermined in front of the advent of most modern technology and also by the porous borders. (Ali, 2007, p. 27)

Post cold war period security threat perception increased/maximized globally as well as regionally. This threat perception leads states to proliferation of nuclear weapons. This race for armament ultimately raised concerns in the mind of major powers which result into nuclear regimes. But this problem could not be countered because no one can give guarantee to state security. After September 11 incident and the following "War on Terror" brought the military security perspective more prominent with the entry of terrorist organizations as a reckoning

force. Military security, concentrating on state actors, has gained importance once more. (Shafer, 2013, p. 10)

If we look at the issue of nuclear terrorism, after decentralization of Soviet Union (1991) the chance of getting nuclear weapons/ fissile material was for the first time realized. Fifteen new independent republics came into existence and most importantly among them four new nuclear weapon states emerged. Today Russia is considered as a hotspot of smuggling.(Lalbiakchhunga, 2015, p. 16) Currently, it is not only a single area of concern for nuclear terrorism but other regions of the world especially South Asia is also threatened by this type of terrorism. In South Asian region the prominent model of India-Pakistan conflict /rivalry can provide a space for the terrorists to make maximum efforts to acquire nuclear capability.

This paper is divided into two sections, First section deals with the India-Pakistan security deficit to each other, which pushes both states to nuclear proliferation. Although this proliferation of nuclear weapons restrains / deters both states to declare war against each other. But the security of the nuclear material weapons raise serious concerns. Second section highlights the challenges posed by non state actors especially the terrorist organizations to the state actors like India and Pakistan which raise questions like whether it is possible for terrorist organizations to hold nuclear capability.

Section I: South Asian Security Environment

Nuclear Terrorism is a tactic or a strategy to undermine the position of some lawful authority (government or a state) through the systematic exercise of violence in-order to get some political goals. In the age of global terrorism the acquisition and protection of nuclear weapons is one of the major challenge for the security of all states. Main concern of the world states regarding security environment today is not only the danger of state actors to be attacked by the non-state actors but also the possession and mishandling of atomic explosives by nongovernmental actors. Moreover, increase production of nuclear-weapons materials coupled with the dispersion of information relevant to the construction of nuclear weapons are clear indications of terrorists to acquire nuclear capabilities. (Doyle, 2013, p. 34)

The fear of nuclear weapons has started since the genesis of the weapons themselves. But in case of nuclear terrorism the incident of 9/11 can be considered as a turning point in maximizing the threat of nuclear terrorism. Due to threat perception nuclear proliferation has raised concerns for safety and security of states and recently nuclear terrorism is added dimension in it. Throughout the cold war period use of nuclear weapons have been seen as an existential fear by state actors. In the post-Cold War era not only nuclear materials were regularized but after 2001, more efforts were put in securing nuclear sites from the terrorist attacks. (Perkovich, 2007, p. 86-91) Moreover, the greatest concern of the nuclear policy is of weak states proliferation and nuclear states stability. In 2011 President

Barack Obama in his *National Strategyfor Counterterrorism* has pointed out that the greatest threat posing to global security is nuclear terrorism. Our most important goal is to restrain terrorists from acquiring Weapons of Mass Destruction (WMDs) and nuclear materials. (Ali, 2007, p. 2)

Threat perception posed by 9/11 not only ended the terrorist constraint but also maximized the lethal interest of non-state actors in WMD technology. Motivations, vulnerabilities and capabilities of non-state actors (terrorist organizations) and at the same time increasing threat, challenge, risk and vulnerability for the state actors have also raised concerns for an international community. To prevent political violent terrorist groups and organizations from resorting to the use of nuclear weapons, it is not just sufficient to secure all nuclear weapons and weapons usable materials. President Barak Obama has said that the global world's security is threatened by not only acquiring but also by the use of nuclear weapons. The advent of global network of terrorist organization is due to the various forces of globalization like expanding trade and commerce, open borders and information technology. Therefore, the possibility of theft and diversion of nuclear and fissile materials has increased manifold (Barak Obama 2009 speech in Prague 5th April, 2009). (Ali, 2007, p. 28)

Former President of USA Bill Clinton labeled South Asia as the most unsafe place on earth. (BBC News, 2000) This statement basically pointed out two major rival powers in South Asia-India and Pakistan. The hostility between India and Pakistan is mainly responsible for the destabilization of the region. The complexity of the South Asian security environment presents a chequered picture of major wars and low intensity conflicts in order to effect each other internal dynamics. The hot wars of 1948, 1965, 1971 and 1999 were all examples of having maximum threat perception of two states for each other. (Carranza, 2009, p. 25)

Mutual distrust coupled with variety of domestic and international structural factors, including the impact of the September 11 terrorist attacks affected the relations of two states. Both states have also seen as de facto allies of the United States after US-India rapprochement in the 2000s and the US-India nuclear deal of 2005–2008. It was expected that strategic ties with US will improve their relations but on the other hand the war on terrorism has seriously affected their relationship. (Carranza, 2009, p. 26)

Moreover, asymmetrical relationship at regional level, no intention to resolve Kashmir dispute, Indian desire to maintain a status quo and burden of the maintenance of forces on the Line of Control near Siachen Glacier are all examples of security threat perception of each other. (Lodhi, 2001, p.4) Besides this, the loss of Afghanistan as a strategic asset by Pakistan after 9/11 raises a serious concern in case of war with India and making it more dependent on the threat of use of nuclear weapons for its survival.

Moreover, the Kargil War (2001-2002) intensified the use of nuclear weapons in future Indo-Pakistani military conflicts. Due to the direct intervention of

President Bill Clinton the hot war under the nuclear umbrella was avoided. (Crranza, 2009, p.25)

Self declarations of India and Pakistan (1974 of Indian explosion and in 1998 Pakistan tests) as nuclear powers before 2001 has raised concerns in international community. But in post 9/11 scenario, threat of the terrorist organizations has an added element in Indo-Pakistan rivalry. After September 11 attacks, war against al-Qaeda started to revolve around South Asian region, which was followed by terrorist assault on Indian Parliament in 2001, the Mumbai attack 2008, Marriott bombing in capital territory of Pakistan, as well as various attacks on Pakistani government officials and army facilities. (Khan & Burke, 2014, p. 83)

Pakistan –India Nuclear Development and Ensuing Threat Perceptions

Pakistan is facing Indian threat perception since independence. Indian expansionist territorial designs, increased defense budgets, nuclear test in 1974 and modernization of its forces were alarming factors for Pakistan. India's nuclear test forced Pakistan for launching reactionary nuclear tests in order to deter Indian nuclear ability and to ensure its own defense. Moreover, Indian nuclear doctrine which advocates a triad of air, land and sea based delivery systems and its justification given on the basis of second strike capability and no first use declaration seems quite sound as compared to Pak conventional inventory affected by US sanctions. Besides this, the threat of atomic war has increased with the adoption of the *'Cold Start'* doctrine by the Indian army.

Pakistan's nuclear program since inception is for peaceful purposes which resulted into the establishment of Pakistan Atomic Energy Commission (PAEC) in 1956. After some incidents like debacle of 1971, first nuclear test by India in 1974 and under the leadership of AQ Khan the PAEC was able to make significant development. Pakistan had conducted its first ever test of a nuclear bomb in 1983. Pakistan was in a position to assemble a basic nuclear device by 1984. (Hoodbhoy &Mian, 2014, p. 3)

The gradual development of Pakistan's nuclear weapons production and assembly capabilities resulted into the completion of three new plutonium production plants at its Khushab facility, as well as ongoing to store highly-enriched uranium. In the view of some analysts in the nuclear stockpiling, Pakistan is the world's fastest-growing country with the collection of 110 to 130 atomic devices. The number has boosted from an expected 90 to 110 weapons in 2011. (Kristensen & Norris, 2015)

Country	Year of First Nuclear Test	Total Arsenal Estimates
Pakistan	1998	110-130
India	1974	110-120

Pakistan- India Estimated Nuclear Arsenals (2015)

Maximization of radical threat perception in Pakistan after 2001 can be seen internally and externally. Even specific incidents start occurring that targeted armed forces of Pakistan. Now, nuclear system of Pakistan is facing threats both externally and internally. Analyzing these threats which include the incidents like attack on Osama bin Laden in Abbottabad, Central Intelligence Agency (CIA) agent Raymond Davis's killing of civilians in Lahore; drone attacks, and Salala attack on PakAf border, ongoing terrorist operations in Afghanistan – especially those launched by Afghan Taliban, Lal Mosque Operation 2007, the formation of Tehrik-i-Taliban Pakistan (TTP) and other violent radical groups and sectarian religious groups, separatist violent movement in Baluchistan and Al Qaida's attacks were sufficient to challenge the authorities of Pakistan time by time. Besides this, the threat of nuclear terrorism especially nuclear materials falling into the hands of radicals is a grave issue facing Pakistan. It can be seen in various forms like knowledge or information of nuclear assets, stealing of nuclear material, possibility of some employee within the Pakistan's atomic program proliferating nuclear technology.

India is having a threat perception from two states-Pakistan and China. Besides India-Pakistan rivalry on various issues and resulted wars in 1948, 1965, 1971 and 1999, the most significant threat is a perceived threat of a terrorist attack. India has been facing threat of radical extremist groups like the Naxalites in Eastern India, secessionist movements in Kashmir in the north to Tamil Nadu in the south. Furthermore, the activities of terrorist groups like Jaish-e-Mohammed (JeM) and Lashkar-e-Taiba (LeT) in Kashmir and somewhere else, porous border in Afghanistan and the rise and involvement of extremist groups in Indian Parliament attack 2001 and Mumbai attacks 2008 were sufficient to portray threat perceptions for both states.

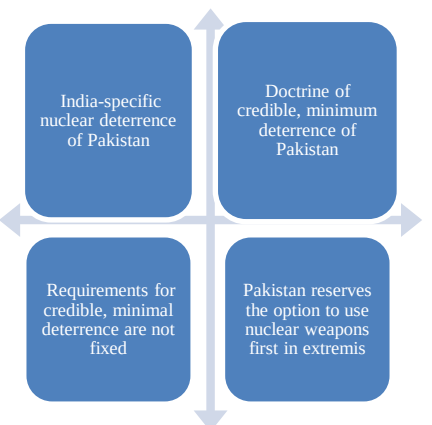
Pakistan- India's Nuclear Capabilities and Nuclear Doctrine
Pakistan's Nuclear Capabilities and Nuclear Doctrine

The conflicting nature of Pak-India relations is the core determinant of Pakistan's nuclear expansion. But Pakistan is trying to use its nuclear capability as a peaceful means. As a small power, Pakistan perceives its atomic weapon as a mean to counteract the military and economic power of India. Pakistan is having two objectives of its security policy. Firstly, to prevent the danger of actual exercise of atomic bombs by India, and secondly, to equalize her nuclear capability against India's conventional military. To some extent, Pakistan has accomplished its aim to compete India in atomic field despite their disparities in the other arenas of national power. (Albert, 2015) Zulfiqar Ali Bhutto's famous statement in 1965 clearly showed the intention of Pakistan's government to get nuclear capability. He said that if India succeeded in getting a nuclear weapon, then "we will eat grass, even go hungry, but we will get one of our own." The separation of East Pakistan (1971), emergence of Bangladesh and India's 1974 nuclear test further

intensified the government's efforts to launch nuclear bomb program. After 1976, under the guidance of A. Q Khan, Pakistan has increased its efforts to militarize its nuclear program. Pakistan also received help from China in the form of transfer of technology and buying of material. India's tests in 1998 persuaded Pakistan and she responded with six explosions. According to some analysts the Kargil war in Kashmir was due to these tests also. Experts estimate that Pakistan has the capability of two kinds of weaponry deliverance vehicles: ground to ground missiles and aircrafts.

Besides this, it has also some 110 to 130 warheads The Strategic Plans Division (SPD), secretariat of the National Command Authority, has the responsibility of regular over viewing the nuclear policies of Pakistan and its arsenals. It is supervised by a three-star general from the Pakistan's military. Basically, this body is a de facto military structure as per some analysts. In today's world, it can be seen that the nuclear program of Pakistan is the fastest growing program in the world, nearly surpassed the quantity of weapons is three times more it had ten years ago. According to some experts, looking at the pace of Pakistan's nuclear arsenals, it could be probable that it will double in number of Indian warheads and also surpass the arms of China, France, and the UK. (Dalton & Krepon, 2015, p. 13)

So far as Pakistan's nuclear doctrine is concerned, it has four components.



Pakistan's Nuclear Doctrine

Nuclear competition is not a new phenomenon in South Asia. It highlights the classic enigma of international relations which covers the traditional conflicting interests and few realistic avenues for mitigating threats. (Markey, 2013)

India's Nuclear Capabilities and Nuclear Doctrine

India has designed a strategic nuclear program which is consisted of various fields of nuclear-carrying jets and ballistic projectiles. It is commanded by a civilian authority set-up named the Nuclear Command Authority. According to an estimate, India has an approximately a collection of 110 to 120 weapons. India has spent some $4.9 billion on atomic arsenals in 2011.

It has spent in a ballistic missile defense system, longer-range ballistic missiles, nuclear submarines, Multiple Independently Targetable Reentry Vehicle (MIRVs). It also has ground-ranged, air-ranged, and marine ranged cruise missiles, among other programs. (Albert, 2015)

India launched its first nuclear test in 1974 as a counter move of China's explosion in 1964. India announced that it is a peaceful nuclear explosion. Internationally it was condemned as a violation of Nuclear Proliferation Treaty (NPT). After 1974, India's nuclear capabilities grew by leaps and bounds which threatened the security of the region. By mid-1990s in the opinion of scholars it might be possible that growing Indian civilian nuclear program could have a potential to surpass Pakistanis in the capability to produce the materials and components for nuclear warheads. By the year 2000, India would have a capacity to separate more civilian plutonium than China. (Leventhal & Chellaney, 1998)

A turning point came when Indo- US nuclear deal of 2008 signified the US intention to overcome barriers to cooperation. Despite the efforts of US, India did not willing to ratify the NPT and the Comprehensive Nuclear Test Ban Treaty (CTBT). Regardless of this stance of India, now its nuclear services are currently under purview of IAEA shelter. It has not only signatured but also confirmed the IAEA Additional Protocol. The harmonization of Indian export control regimes with international regimes made possible only after the conclusion of U.S.-India deal. India is trying to follow the global non-proliferation principles and as well as the Nuclear Suppliers Group (NSG), the Australia Group, the Missile Technology Control Regime, and the Wassenaar Arrangement.

Moreover, nuclear policy of India stood on a set of ground, air and marine based atomic weapons. India has increased its defence budget up to 28 percent. Having Pakistan's role, it can be easily analyzed that it has not only the policy of self-restraint as well as self-responsibility on nuclear concerns. Indian articulated doctrine (2003) emphasizes the Indian intentions to work for credible minimum deterrence. Moreover, the doctrine very clearly states that in case of some outside assault on its land or military wherever would be tackled with maximum force. (Lodi, 2000)

South Asia's Nuclear Test Sites
Source: Council on Foreign Relations, Accessed April 6th, 2016, www.cfr.org › Asia and Pacific.

Command and Control Systems of India and Pakistan

Command and control of explosive armaments is another reason of anxiety in both India and Pakistan. Internal security problems and most importantly Kashmir problem have raised serious concerns about the chain of command and control systems. It is estimated that the reaching time from Indian and Pakistani missile launch sites to 'Islamabad and New Delhi' is only about 4 to 5 minutes. In such a case, it is hard to predict that in case of terrorist attack deterrence can be considered as a stabilizing factor in South Asia. (Kane, 2012) Both countries have tried to observe secrecy and adopted various measures. Various components of nuclear material is kept at different places. Processing and storage items are kept separately. Similarly warheads and missiles are not at one place. Very limited persons know about the exact locations of the nuclear storage sites. (Kane, 2012, p. 18)

So far as Pakistan is concerned, it took some other measures also like establishment of SPD, responsible for security of nuclear assets. Besides this, it formed Strategic Export Control Division (SECDIV) which is authorized to look after the atomic exports. But still the possibility of some terrorist attack can be happened. Since 1998 Pakistan expanded its nuclear capability so much that it is a burden on the security apparatus of Pakistan. (Kane, 2012, p. 18) Pakistan's many sensitive nuclear facilities areas are located at a place where chances of government-terrorist conflict can be easily manipulated e.g Khushab reactors area. (Global Terrorism Index, 2014)

Concerns of International Community

Internal crisis in South Asia and threat of nuclear terrorism is a major concern of international community. Pakistan's military operations in tribal areas and in turn massive retaliation by the terrorist organizations have raised concerns in the world. The attacks on military headquarters and bases have also raised questions

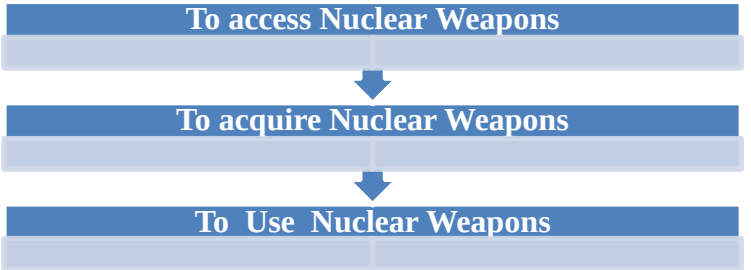
regarding the authority of our intelligence institutions. Pakistan operates under continuous intense international scrutiny which enabled it to develop a proper infrastructure. The ultimate result was an establishment of Center of Excellence. The Nuclear Threat Index (NTI) released in 2014. It is stated that terrorism is highly intensive as well as a globally dispersed phenomenon. In terrorist activities 2013, more than 80 % of the lives have been lost only in five countries: Pakistan, Nigeria, Syria, Iraq, and Afghanistan**.** It was recognized by the international community. (Moore, 2006) On the other hand, one can see a different role of the international community in case of India's nuclear security infrastructure. Indo-US Civil Nuclear Agreement is an example of global community's advance towards Indian nuclear security. It not only highlighted the trade between India and US but also showing the approval of US of Indian nuclear program. But overall the agenda of US and other major powers is to convince the acknowledged nuclear powers to trim down their nuclear weapons and formalize the atomic testing suspension by carrying the CTBT into force. (Graham, 1998)

The vulnerability of South Asian region is providing an opportunity to the terrorists to increase their strikes with modernized weaponry. How to combat terrorism and maintain stability has become the biggest political challenges to the national leadership in India and Pakistan. Terrorism may remain the main political problem in both countries and an international issue, if it is not addressed properly. The 2016 Summit's formal agenda was also focusing on the improving of global security of nuclear materials and technologies.

Still US is trying to show its concern for both Pakistan and India to follow a policy of control in nuclear sector and also resume a dialogue. India's is always showing a gesture of non cooperation and always opposed any type of mediation/arbitration etc. This type of attitude by India is creating tension in the region. Pakistan was trying to show a great control in its nuclear policy. It displayed esteem for global standards and resisted to carry out the atomic explosion a decade ago. But now Pakistan is proceeding very rapidly in its arsenals production which is going to be fastest in the world. This poses a great concern of international community as well.

Section II: Potential Challenges Posed by Non State Actors (Terrorist Organizations)

Security with respect to risk, threat, challenge and vulnerability became more significant after 9/11 because of the element of the perceived threat of the use of nuclear weapons by terrorist organizations. There can be three main steps for the terrorist organizations to achieve its set goals. These are to access, to acquire and to use nuclear weapons.



Three Main Steps for the Terrorist Organizations to achieve Set Goals

Behind terrorists access to these weapons has certain responsible factors in the global environment which might, there give them an opportunity and space. These include the emergence of international black market after the decentralization of Soviet Union offers various components of armaments and technical expertise. Basically Soviet Unions' nuclear security setup just prevented the US access to steal weapons not the insider's theft. Motivations of terrorists are changing with the passage of time. Terrorists are now motivated not by the traditional objectives but by the desire to give maximum threat by showing technical knowledge while using modern weapons. Religious conviction, the proliferation of chemical-biological weapons and technological advancement have made easier to acquire the nuclear weapons. Some analysts have an opined that chances of using of radiological, chemical and biological weapons used by terrorists are very high. But terrorists must fulfill the following criteria for this purpose.

Criteria for Terrorist to Acquire Nuclear Weapons

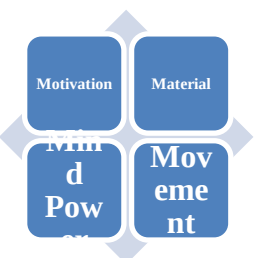
Terrorist must have a capability to acquire weapons from whatever source, must have interest in mass killing, and must be willing to use such weapons to achieve it. Some analysts declare that due to the risk factor terrorists might not use these weapons.

South Asia has become home of many terrorist and insurgent violence activities. Islamist terror organizations are not only located but also very active in Afghanistan, Pakistan, and India. Their main concern is the occupation of Indian

Kashmir, as well as the ejection of coalition forces from Afghanistan. Porous and ill defined borders in Kashmir, ungoverned areas with Pak-Afghan border in North West Frontier and Federally Administered Tribal Areas of Pakistan and the India's threat from the Maoist Naxalite insurgents each year are some of the examples of raising of security threat perception.

The active terrorist organizations include Jaish-e-Mohammad (JeM), Tehrik-e Taliban Pakistan (TTP) and Lashkar E-Tayyiba (LeT), serve as force multipliers for Al-Qaeda (AQ) in this region. The United States listed the Haqqani Network to its Foreign Terrorist Organization list in September 2012. (Albert, 2015)

Two types of nuclear weapons are under consideration like Improvised Nuclear Devices (IND) and Radiological Dispersion Device (RDD). Scholars have pointed out that if terrorists are deterred by the security measures of a state then they have other options like to get explosive material by buying, force or theft. Highly Enriched Uranium (HEU) and plutonium are two types of material use for this purpose. It is easier to use first type of material to make Improvised Nuclear Device (IND) due to their maximum production in the nuclear and civilian atomic-energy programs in the world. Currently, fissile substance is being produced in a great number at various places in the world without having proper arrangements. It is more complex to uphold firm check over ballistic materials than over the nukes. Some scholars declare that so far theft of nuclear weapons is a rare phenomenon as compared to the stealing of fissile materials. But the quantity of such fissile material is not sufficient to build a nuclear device. (South Asia 1540 Reporting, 2015)



Four Elements of Use of Nuclear Weapons by the Terrorists

If terrorists want to use nuclear weapons, certain elements are required for them. Inclination and motivation is the first requirement for the use of atomic arsenals device. For the construction of nuclear device they also require sufficient fissile material, either highly enriched uranium or plutonium. Moreover, technical know-how and an ability to place device on a selective target. (Moore, 2006)

There are some other motivating factors for the terrorists to use nuclear weapons. They are interested to seek legitimacy. Their main intention is huge destruction and highest number of casualties. (Ackerman, 2006) Other intentions of terrorists may include physical destruction of infrastructure and denial of vital areas. Anthony Cordesman asserts those sometimes nuclear weapons are used just

for psychological and political impacts not for physical disasters. (Ackerman, 2006, p. 9)

There is a growing concern among the scholars that terrorists can have a potential to build IND and radiological weapon like Radiological Dispersal Device (RDD)? It is a known fact that technical information is available on the electronic sources. But it is not enough to produce nuclear explosive device. Some experts agree that to obtain necessary fissile material to build IND is the most difficult challenge.

Potential Challenges

Nuclear terrorism has various dimensions and each dimension has its own consequences. It includes denotation of an intact nuclear weapon, stealing or purchase of explosive material, incapacitate of nuclear facilities and the unlawful attainment of radioactive materials causative to the ignition of a RDD or dirty bomb. (Ackerman, 2006, p. 10)

Theft of Nuclear Weapon or Explosive Material

States, most important responsibility is to protect their nuclear weapons from the non-state actors. Smaller size of the nuclear establishments can be more easily guarded as compared to larger size. Pakistan's small size nuclear arsenals reduce the chances of theft. IAEA experts point out that it would be difficult for the terrorist organizations to manufacture and detonate a nuclear due to some technical and industrial challenges. In the case of Pakistan, state has a strict control over strategic organizations. Some experts say that chances of stealing of an atomic weapon by the terrorist organization cannot be ruled out especially in case of small nuclear devices called tactical nuclear weapons and miniaturized devices. In 1998, the Russian had experienced the stealing of 18.5 kilograms of weapons-grade uranium officials from the nuclear facility in the Chelyabinsk region.

Theft of Radiological Sources

RDD or dirty bomb is a conventional explosive. It is not a nuclear bomb and does not involve a nuclear explosion. These are easy to steal without spotting. Making RDD is quite easy in process. It usually incorporates easily available material with predictable destruction. Enrichment process is not required. RDDs have the ability to cause widespread terror and economic damage. It also causes more destruction than other conventional explosives. (Moore, 2006)

Incidents of theft of nuclear radioactive material can be found in Russia and can be possible elsewhere. In the view of Kevin O'Neill to assemble a nuclear explosive device is more difficult as compared to the manufacturing of a radiological weapon. More quantity of plutonium is required to build a nuclear device but on the other hand less numbers of radioactive materials required for a

dispersal device. A terrorist can take high-level radioactive waste from reprocessing plants. In Pakistan the authority like Pakistan Nuclear Regulatory Authority (PNRA) has a responsibility to take all measures in order to provide nuclear safety. Expert like Matthew Bunn is of the opinion that if terrorist would get hold of these materials from black markets which could shorten a proliferating state's bomb programme from a decade to months or even less. (Graham et al, 2008)

Purchase of a Nuclear Weapon

Having so many challenges for the terrorist groups to acquire nuclear material at their own, two options are left; either to buy or steal a fully assembled nuclear weapon. Scholars are of the opinion that it is not possible that state would take this option in any case to trade a nuclear gadget to a nongovernmental actor. In this case state could put her public at a risk. But the chances of theft of nuclear weapons still remain. Shortage of personnel, element of secrecy, low level security and radicalized ideology all factors are enough to raise the chances of theft of nuclear weapon. But some states are more prone to this type of threat than others. (Eweiss, 2016, p. 5)

Sabotage Against Nuclear Availability and Concern over Proliferation by Nuclear Establishment

Basically this issue is related to those persons who work in the laboratories and other places. Reliability and trustworthiness are two important requirements.

After nuclear tests of 1998 Pakistan is facing three main challenges to institutionalize the nuclear program, to reevaluate the capacity of national defense strategies, and the necessity for an effective force development strategy. (Jaspal, 2012, p. 91) Initial efforts include establishment of Creation of National Command Authority (NCA), PNRA, Security Division, and Strategic Force Command. Moreover, effective systems and formulation of laws can make a difference. No incident of leakage of nuclear material took place since so far. Another step further is the formation of a Strategic Export Control Division in order to effectively supervise the export of sensitive and material and technology. After A Q Khan's episode, strict measures were adopted by to have a strong control. It also checked the transfer of the tangible and intangible sensitive technologies and material. Pakistan strategic weapon program was institutionalized in Feb 2000. (Schaper, 2003)

Accidental/Unauthorized Launch

The protection against mishap and loss of control is the responsibility of the state. Since 1998, Pakistan has developed a control system called Permissive Action Links (PALs). (Ali, 2016, p13) Due to a crisis prone region, India and Pakistan

both have been trying to develop an effective nuclear command and control system through technical and non-technical means. (Lodi, 2000)

Insider threat

Pakistan is passing through its critical phase of history especially after 9/11. In this critical phase it is very important to have an effective system of security. Threat coming from some insider is worrisome for the policy makers especially after the A Q Khan's episode. Military installations can be a target of terrorists and in 2012 actually this was happened when terrorists attacked Pakistani airbase where some 100 warheads stored. Besides this, other targets might be nuclear reactors producing HEU and plutonium.

Facility vulnerability

Explosive-material production sites, atomic power stations, plutonium separating amenities, and radioactive-waste storage areas can be possible targets for the terrorists. Scholars are of the view that both conventional and modern nuclear plants cannot be excluded from the list of possible targets. (Kristensen & Norris, 2015)

Options

The above discussion shows that challenges of nuclear terrorism in South Asia are mostly related to Pakistan and India because both are nuclear weapon states. Their security deficit due to bilateral rivalries like Kashmir dispute and nuclear issue is giving space to non state actors especially the terrorist organization to make an active effort to acquire nuclear materials and then use them against these states. Pakistan is facing more threat of non state actors attack as compared to India. Scholars are of the opinion that terrorists might get hold of nuclear material or might not possible for them because it is difficult to formulate a nuclear device easily, although some states are now renouncing their nuclear programs.

Keeping in mind the whole scenario, there are certain options for India and Pakistan to avoid this to be happened. Firstly, both countries should seriously think of the stability of the region. Stability of the South Asian region depends on the stability of Afghanistan and Middle East also. Secondly, both should work on a new security architecture for South Asia based on nuclear and missile restraint by India and Pakistan, Thirdly, both should believe on peaceful resolution of disputes, sharing of information, proactive participation in international no proliferation regimes, regional cooperation and global integration etc.

Conclusion

Globally hard core and unstable nuclear competition can be predicted in South Asia. Unsettled territorial contentions, terrorism across the border and proliferation

of nuclear weapons are all posing risks for the strategic stability. Pakistan and India both are facing domestic pressures, in case of Pakistan from the militant groups and in case of India, from the secessionist/ separatist groups. Despite both India and Pakistani claims that their nuclear arms are secure, but the terror still remains that the terrorists might get hold of nuclear weapons. Nuclear intensification risk is escalated if non-state actors can have a capability to build up cyber-security means to misuse the nuclear security, although it is very difficult for the terrorist organizations to build a nuclear device. It is a forecasting that South Asian dependence on the nukes will increase in future. The proliferation trends and lack of proactive participation of India and Pakistan in the international non proliferation regimes are some of the signs of their vulnerability for the nuclear terrorism.

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