

Nuclear Terrorism and Theft at Borders

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Abstract— Effectively managing country's border against the proliferation of nuclear substance is a considerable security risk that is faced by the border protection agencies. These state owned border agencies are expected to maintain a firm control on nuclear material and their enriching technology and the means of delivery to prevent from falling into the hands of harmful non-state actors. Immigration, Customs, Transportation, Intelligence, Police and Security agencies are expected to effectively address the volatile border security environment. With the increasing nuclearisation of states, nuclear theft has also become a common threat at borders. International treaties, domestic legislature and best vigilance practices are kept in place to manage the emerging threat. There are many collaborative actions initiated in the field of border management to curb nuclear dangers. It is evident that there are several cases reported in South Asian region, of stolen weapon-usable fissile material which terrorists may be interested in having access to. In most of these incidents, material was stolen from a civil nuclear facility. Under these circumstances and given Sri Lanka's strategic importance in international trade, the threats of international terrorism and theft towards Sri Lanka have become ever more real. On the other hand, overall nuclear security of South Asian States is fundamentally compromised by political instability and bureaucratic corruption. This paper intends to look at Sri Lanka's current situation on nuclear security at her borders. The issue will be studied using primary and secondary data gathered at the borders. The author also intends to draw the attention of policy making elite on the strengths and weaknesses at the borders in order to effectively manage the nuclear threat

Keywords: Nuclear terrorism, Border Security, Nuclear Theft

I. INTRODUCTION

Prehistorically, battles were fought over food and shelter. With passage of time, wars were prosecuted over religious and ideological beliefs, and now the predominant struggle for sophisticated warfare leans towards economic and technological supremacy. (APJ Abdul Kalam and Arun Tiwari, 1999) Consequently, economic and technological supremacy is equated with political clout and global control. Following the same line

of their arrogance, some South Asian states have adopted their nuclear doctrines with a high level of confidence that their respective nuclear programmes will not bring harm to any innocent fellow state in the periphery. Whether Non Nuclear Weapon States in South Asia should feel confident or be wary about their neighbouring nuclear powers is a harsh truth that is yet to be realised.

Development, deployment and employment of nuclear weapons as well as nuclear material must be executed with utmost care, since the dangers posed by them are irrevocable. There are approximately 19000 weapons in the stockpiles of nine nuclear weapons possessing states throughout the world. They have a combined yield of 6 billion tonnes. This capacity is 500000 times more destructive than the bombs that tore asunder Hiroshima and Nagasaki in 1945. (Johnson, 2012) The blast, radiation and climatic consequences of the possible use of these weapons continue to pose the worst-ever destructive man-made threat to the planet. However the intention of this paper is not to discuss the nuclear explosions or accidents. Instead, the author tries to discuss some elements that have undermined non nuclear states and which in future could pose a grave security threat to them.

II. AN EMERGING THREAT

In our common atmosphere, a variety of radioactive materials is available and could be used in Radiological Dispersal Devices (RDD), including Cesium-137, Strontium-90, and Cobalt-60. Hospitals, universities, factories, construction companies and laboratories are possible sources for these radioactive materials. RDDs - also called "Dirty Bombs"- combine conventional explosives with some form of radioactive material. Such an improvised device does not produce a chain reaction or a nuclear detonation. It merely uses the explosive to spread radioactive material across a localized area. Ideally, for the terrorist, the winds will help to spread the radioactivity to cover a larger area. The "Backpack bomb," is another small improvised RDD that includes a small explosive charge and radiological material in a shielded tin which is called a "pig." It's doubtful that such devices could produce a nuclear detonation. A backpack bomb would not even be considered as a weapon of mass destruction but the disruption it could cause to the

peaceful livelihood of citizens is immense. Therefore we can observe that there are serious remedial measures adopted by the scientific community to face these types of dangers. In 1995, the Incident and Trafficking Database (ITDB) was initiated by the International Atomic Energy Agency (IAEA). It provides information on incidents of illicit trafficking and other unauthorized activities and events involving nuclear and other radioactive material outside the regulatory control.

According to IAEA from January 1993 to December 2013, a total of 2477 incidents were reported to the ITDB. Out of these incidents, 424 involved unauthorized possession. Incidents included in this category involved illegal possession, movement or attempts of illegal trading or use nuclear material or radioactive sources. The disturbing news is that sixteen incidents in this category, reported high enriched uranium (HEU) or plutonium that are usable for nuclear weapon production. (IAEA, 2014)

There were 664 incidents recorded, that involved the theft or loss of nuclear or other radioactive material. A total of 1337 cases pointed to involving other unauthorized activities, including the unauthorized disposal of radioactive materials or discovery of uncontrolled sources. During 2013, 1461 incidents were confirmed to the ITDB. Of these, 6 involved possession and related criminal activities, 47 pointed to theft or loss and 95 involved other unauthorized activities. There were also five incidents involving IAEA Category 1-3 radioactive sources, four of which were thefts. (IAEA, 2014)

The International Nuclear and Radiological Event Scale (INES) is another IAEA introduced tool for public safety which identifies the significance of events associated with sources of ionizing radiation. The primary purpose of INES is to facilitate communication and to provide understanding among the technical communities, (IAEA, 2014) the media and the public on the safety significance of events. IAEA intends to keep the public as well as nuclear authorities accurately informed on the occurrence and consequences of reported events in order to face the dangerous situations.

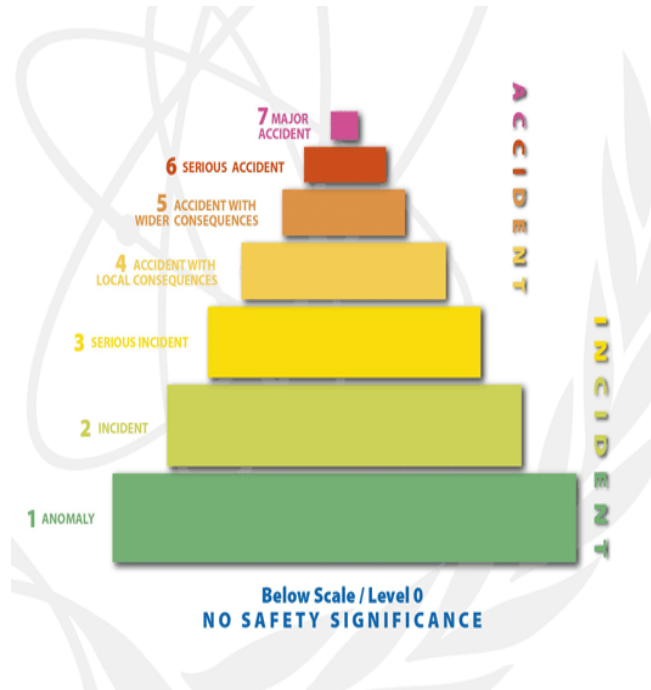


Figure 1. The International Nuclear and Radiological Event Scale (INES

Source: With the courtesy of IAEA

III. HOMELAND SECURITY

According to Hilary Clinton the biggest nightmare that USA has is, as to how terrorist's organisation gets their hold on a weapon of mass destruction. In referring to the al Qaeda network, Clinton remarked that it is "unfortunately a very committed, clever, diabolical group of terrorists who are always looking for weaknesses and openings". (CNN, 2007) Intelligence Community chief Dennis Blair¹ noted that, although counter-terrorism actions have dealt a severe blow to al Qaeda's near-term efforts to develop a sophisticated chemical, biological, radiological and nuclear (CBRN) attack capability, the U.S. intelligence community guesses that the group is still intent on acquiring that capability. Blair also stated the obvious when he said that if al Qaeda were able to develop CBRN weapons and had the operatives to use them, it would definitely do so. (CNN, 2007)The following quote by Osama Bin Laden commissions Denis Blair's assumption.

"It presupposes that I do possess such weapons, and goes on to ask about the way in which we will use them. In answer, I would say that acquiring weapons for the defense of Muslims is a religious duty. To seek to possess the weapons that could counter those of the infidels is a religious duty. If I have indeed acquired the weapons then

¹ U.S. Director of National Intelligence

this is an obligation I carried out and I thank God for enabling us to do that .And if I seek to acquire these weapons I am carrying out a duty. It would be a sin for Muslims not to try to possess the weapons that would prevent the infidels from inflicting harm on Muslims. But how we could use these weapons if we possess them is up to us.” Osama Bin Laden (ABCNEWS, 1999)

The nuclear substance used by terrorists as a weapon would cause casualties in the immediate areas as well as triggering health, environmental, and economic effects. Its greatest impact would undoubtedly be the psychological. In such circumstances depending on the amount of radioactive material released, the size of the area affected and levels of contamination, authorities may be compelled to seal off the affected area for a long period which would be followed by an expensive cleanup and remedial work.

IV. UN SECURITY COUNCIL RESOLUTION 1540

UN security council resolution 1540 obliges States, *inter alia* to refrain from supporting by any means to non-state actors from developing acquiring, manufacturing, possessing, transporting, transferring or using nuclear, chemical & biological weapons and their delivery systems. (Johnson, 2012) Security Council Resolution 1540 adopted in April 2004 sponsored by the United States, was a non-proliferation initiative outlined by President George W. Bush. By this resolution President Bush proposed a Security Council resolution to criminalize the proliferation of weapons of mass destruction. (Datan, 2004) This was also aimed at enforcing strict export controls in consistent with international standards and to secure any and all sensitive materials within their own borders. The resolution further establishes an obligation on all states to implement and enforce national legislation that prevents WMD related materials and their means of delivery from falling into the hands of non-state actors. The ultimate danger here is the possibility of terrorists obtaining Highly Enriched Uranium (HEU) or Plutonium to use in improvised nuclear devices. A coordinated terrorist attack, timed to coincide with optimum wind conditions could easily capitalise on improvised explosive devices (IED). Due to such a complicated scenario, many states have complained to the 1540 committee about insufficient capacity to implement all measures required by the resolution.

V. NUCLEAR TERRORISM CONVENTION

In 2007, Nuclear Terrorism convention came in to existence. It was a multilateral treaty open to ratification by all states. This convention prohibits unlawful local and

international use or possession of radioactive material. The significance of this document is that it provides the definition related to nuclear terrorism based on an instrument originally proposed by the Russian Federation in 1998 and covers a broad range of possible targets including nuclear power plants and nuclear reactors. According to its provisions, alleged offenders must be either extradited or prosecuted. It also encourages states to cooperate in preventing terrorist attacks by sharing information and supporting each other in connection with criminal investigation and extradition. The treaty also requests states to store all nuclear material strictly in accordance with the IAEA safety standards. This treaty is not been signed by Pakistan.

VI. SOUTH ASIA

South Asia has been ravaged by many security problems that ranged from colonialism of the bygone era to modern day terrorism. Borders in South Asia are one of the most volatile concepts that lead to an alarming level of security instability in the region. The author intends to capture the border security lapses relating to mismanagement of nuclear related substance, nuclear theft and illegal transport of nuclear material. In this regard the author sheds a holistic look at the following areas and sees the strengths and weaknesses from the Sri Lanka's security point of view.

1. Organizational Capabilities
2. Security Trilemma
3. Logistical Resources
4. Financial Resources
5. Knowledge/Skill Acquisition
6. Materials and Technology Acquisition
7. Initial Production of the Agent
8. Weaponization of the Agent

The central feature of the post cold war (second nuclear) age is that most nuclear weapon states face threats from two or more potential adversaries. This gives rise to a security **trilemma** where actions taken by a state to defend against another state produces the inadvertent effect of making a third state feel insecure. The real challenge in this regard is, cross-border terrorism and growing nuclear arsenals and the trilateral linkage increases the region's susceptibility to outside shocks and amplifies the risk that regional developments will have far-reaching effects. (Koblenz.2014)

Nuclear disasters are transnational phenomena. The institutional failures in nuclear States could wreak havoc upon the entire region. The safe & ethical nuclear usage and optimum practices of the States are the most effective protective mechanisms to minimize the disasters. Fukushima nuclear disaster proves that even

the world’s most secured nuclear facilities are not immune to natural disasters. Even though the Fukushima earthquake and the following tsunami triggered the nuclear leak, the prime causes of the nuclear accident lie on the institutional failures of political influence and industry-led regulation of that country. According to reports, it was a failure of human institutions to acknowledge real reactor risks, the negligence to establish and enforce appropriate nuclear safety standards (Greenpeace: 2012).

VII. NTI INDEX

Nuclear Threat Initiative (NTI) index is a tool to measure the nuclear safety levels of states. As its mission elaborates, the NTI Index is not a facility-by-facility review or an on-the- ground review of material tool. Since information about the security measures that are in place at specific nuclear facilities are understandably sensitive and should remain strictly classified, the NTI Index assesses only the scores that are publicly available. (NTI Index: 2009) In case of south Asia, the transparency and the public availability about the nuclear facilities and their details are very poor. Therefore a tool like NTI index where they use obscure data, may be inaccurate in South Asian case.

VIII. INDIA

The number of nuclear theft cases reported in India suggests that there is a significant possibility of having a smuggling passage for stolen nuclear substance through Sri Lankan borders. This may occur due to many reasons. A few of them are as follows:-

1. Lack of knowledge and discourse possess by public about the nuclear related activities.
2. The increasing number of nuclear theft cases in South Asia.
3. Non disclosure of incidents to the public and media due to public phobia on uncontrollable radioactive fiascos.
4. Lack of facilities to detect such stolen substance at ports of entry and exit.
5. The terrorists overwhelming desire to acquire nuclear weapons.²

2. The probability of a terrorist organization using a chemical, biological, radiological, or nuclear weapon or high-yield explosives, has increased significantly during the past decade. Terrorists have declared their intention to acquire and use weapons of mass destruction (WMD) to inflict even more catastrophic attacks against the United States and other interests around the world.

The potential effects of nuclear theft in South Asia extend beyond the national borders. It is often a subjective matter to the context of transnational linkages. There are cases reported In South Asia on ‘Kilogram quantities’ of stolen weapon usable fissile material. In the case of India, the incidences of nuclear thefts date back to as early as 1980 s. After the 1994 nuclear tests carried out by India and Pakistan, the respective nuclear programmes followed the rapid path of expansion. With that, the probable threat of using nuclear substance by sub national groups and terrorists also became aggravated. (Shareen Mazari & Maria Zultan , 2001)

Table 1: Some Cases of Nuclear Theft in India

Place	Substance	Year	Source
West Bengal	200g of Semi processed Uranium	2001 August 21	BBC South Asia News ³
Tamil Nadu	Over 8 kg – in granule form (U237& U238)	1998 July	Central Bureau of Intelligence (CBI) India ⁴ .
Leelawathie Hospital in Bandra	8.3 kg Uranium/ Depleted but Radioactive	2000 May 01	News paper ⁵ The Indian Express.
Bibi Cancer Hospital	25 Kgs of Radioactive Uranium	2000 May	Newspaper :The Hindu November 07 2000

Source : Author’s Collection

Limited access to fissile material and international safeguards on nuclear facilities are two main barriers to nuclear proliferation and nuclear terrorism. Given thorough protection, nuclear theft has become a common threat in South Asia. It is evident that there are ample cases in our region of stolen weapon-usable fissile

³ Uranium Smugglers quote in India’ / News bbc.co.uk/hi/englishworld/south_asia/newsid_1512000/1512077.stm

⁴ The Indian Express 4th August 1998.

⁵Times of India 06th May 2000.

material which terrorists may be interested in having access to, in future. In most of these incidents, it is noted that material was stolen from a civil nuclear facility such as a research reactor. It is also noted that the relevant authorities are sometimes trying to down play the gravity of these crucial issues. (Shareen Mazari & Maria Zultan ,2001) This may be due to the negative international pressure that could be mounted on the gross inefficiency of their respective safety culture. The final result of this issue is that the government authorities not being transparent to the public. Under these circumstances, the threat of international terrorism has become ever more lethal and omnipresent.

IX. THE SCRAP DEALER PROBLEM

All atomic research substance from hospitals are supposed to be duly returned to the atomic research centres. There were a few instances where scrap metal dealers were arrested in India for possessing radioactive substance. The hospitals or research centres are not allowed to sell the radioactive substance to any unauthorised party. There were instances reported where the hospitals have sold machines with uranium inside them. The question raises why and how these thefts ended up in the hands of scrap dealers. In most of these cases, hospitals that were clearly involved in selling the substance to third parties pretended that, they have nothing to do with these shady deals.

X. BLACK DIAMONDS

There were allegations that some nuclear scientists were involved in exporting 'Black Diamonds'. Black diamonds are found naturally and they are very rare. However, scientists know how to create black diamonds by using radioactivity. They use the technology at research reactors to carry out this dangerous conversion. (Freespeech, 2010)

The most critical question about the issue is to identify the buyers of this valuable substance and also of nuclear waste who continue their unscrupulous business in an uninterrupted manner. Under such a backdrop, the question about the alarming vulnerability of Indian nuclear facilities is also a grave concern to the security of surrounding states such as Sri Lanka.

XI. PAKISTAN

Pakistan recently came under increased pressure over its nuclear arsenal when a Harvard study warned of a "real possibility" that its warheads could be stolen by terrorists. However, the report by Harvard University's Belfer Centre for Science and International Affairs, titled '*Securing the Bomb 2010*', quoted Pakistan's stockpile "faces a greater threat from Islamic extremists seeking

nuclear weapons than any other nuclear stockpile on earth". (Borger, 2014) It further reveals that despite extensive security measures, there is a possibility that sympathetic insiders might carry out or assist terrorists for nuclear theft. It may also be in the form of a sophisticated outsider attack (possibly with insider help). This type of an assault could overwhelm the defences, the report warned. It also remarked that weaknesses remained in measures that Russia had implemented in recent years to guard its world's largest nuclear stockpile. (Borger, 2014)

Finally, there are some 130 research reactors around the world that still use HEU as their fuel and many of these reactors have only the minimal security measures in place. Many of the facilities do not have enough material for a bomb to be developed at a single site, but some possess the capacity even to produce that.

XII. SRI LANKA

In 2011, Sri Lanka Customs detained a container load of highly radioactive stainless steel and aluminium household articles imported from India. Relevant tests conducted by the Atomic Energy Authority of Sri Lanka determined that the 125 pieces contained high concentrations of Cobalt 60, a radioactive substance usually used to treat cancer. (Yatawara, 2012)

There was another 40-foot container traced at the Colombo Harbour in December 2013, which carried used machinery and vehicle spare parts (Kariyakarawana, 2014). The consignment was addressed to a businessman in Yakkala. It was loaded in to the container carrier from the Port of Yokohama in Japan. The container was sent through Radiation Detection Portals at the port and initially found to be highly radioactive. The container was then run through a scanner and was retested. At this stage the laboratory revealed that the radioactive chemicals 'Caesium 134 and 137' -which are rated hazardous- were emitting from the container.

Caesium 134 and 137 emitted especially from used Gully-Bowsers imported from the port of Yokohama, which is situated close to Fukushima Nuclear Power Plant in Japan. The container was promptly re-exported.

XIII. THE MEGA PORT INITIATIVE

Colombo Port is the only harbour in this country that is armed with the facility of Radiation Detection Portals. It is equipped with 17 Radiation Detection Portals or Radiation Portal Monitors at all three main terminals of South Asian Gateway Terminals (SAGT), Jaya Container Terminal (JCT) and recently extended Colombo International Container Terminals (CICT) of the Sri Lanka

Ports Authority. All these portals were set up under the United States Mega-port initiative.

U.S. Mega-port initiative in Sri Lanka could be identified as a healthy security development in this regard. The aim of the US backed Mega-port programme is to deploy radiation-detecting systems at the world's most important sea ports as a part of global effort to interdict illicit movements of nuclear materials without hampering the competitiveness of bona fide global trade. Colombo was the first port in the Indian sub-continent region to take part in the Mega-Port Initiative of the National Nuclear Security Administration of the United States government. Even though Colombo and a few other ports in South Asia boast of offering this preventive measure, the majority of sub continental ports and all ports owned by other states, largely operate outside the hub ports for the transshipment of their cargo. Therefore we cannot ensure that these ports can address the issue of efficiently detecting the radioactive material. However this Mega-port initiative is not exclusively targeted for the benefit of Sri Lankan domestic security. But it is broadly to buffer the nuclear threat to the United States before it reaches her own shores. However Sri Lanka is getting a substantial security shelter under this initiative.

Apart from the two incidents highlighted, there could be many incidents of nuclear substance trying to enter into the country. In certain cases the shipments were successfully identified and returned to the port of origin of the consignment. However, according to authorities, most instances were not reported to the local media. If once reported, the custom authorities will find it difficult to motivate their workers to handle the cargo. Especially, the drivers refuse to transport such cargo due to the fear of their own health getting affected by the radioactive substance.

It is revealed that international arms brokers are also involved in the proliferation. Nuclear trading no longer remains a state monopoly. Effective border management is a challenging task for all states including Non Nuclear Weapons States (NNWS) such as Sri Lanka. There have been many collaborative efforts taken place at border management. Immigration & customs, transportation, intelligence, police and security agencies are expected to effectively address the volatile environment. Even the transportation of nuclear usable material like heavy water to South Asian countries, could simulate nuclear proliferation.

XIV. CONCLUSION

However borders may seem the easiest points to protect; in practice they seem very difficult to safeguard.

Therefore in the present day paradoxical context, terrorist threats to states are prominent at every domain of border security management.

For the past few years, Sri Lankan maritime borders were threatened due to several reasons. The prime factor was the thirty year protracted internal conflict that ravaged Sri Lanka. There is no concrete evidence to prove that illegal nuclear material crosses Sri Lankan borders. But there is a remote possibility. Even though the border protection agencies - whether sea, land or air domains-initiated steps to safeguard the country from threats, the adequacy of their effort is questionable.

Sri Lankan Government should pay attention at a few key areas to face future problems effectively. They are:-

1. Develop the human resources in the field of border security.
2. Carry out more research on the subject matter.
3. Increase the transparency and accountability of the border security agencies.
4. Make the populace aware of the seriousness of the threat.
5. Collaborate with nuclear states and establish a common nuclear security network based on information sharing and security cooperation.

In addition to the technical difficulties, overall nuclear security of South Asia is fundamentally compromised by political instability and corruption at government level. Even stringent physical security systems could be undermined by corrupt or radicalized insiders with access to nuclear material. If a country possesses nuclear substance, it should also acquire high levels of social discipline and political maturity in order to face a nuclear related crisis at any time. However the three prominent nuclear accidents i.e. Chernobyl-Russia, Three mile Island-USA and Fukushima- Japan have amply revealed that even the most developed states could crumble into hopeless situations when it comes to nuclear disasters. According to the Nuclear Threat Initiative (NTI) index, nearly a quarter of the countries with weapons-usable nuclear materials have scored poorly on the societal factors category because of very high levels of corruption. (NTI index: 2012) The combination of these two factors significantly raises the risk of nuclear theft. However, given the ingenious nature of illegal cross-border activities suggests that crossing of illegal nuclear waste or nuclear substance through Sri Lankan borders is not a hypothetical threat any more. Therefore this is the time to take precautions to mitigate the threat. Otherwise it will be too late to shut the stable door after horse has bolted.

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