

Organized Crime, Terrorism and Nuclear Trafficking

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Introduction

The merging of international terrorist organizations with transnational organized crime is one of the most serious threats that our society faces today. The debate about these emerging alliances has been ongoing for some time now.^[1] Experts agree that there are clear overlaps between international terrorist and organized crime networks. In her Congressional Testimony delivered in September 2005, Glenn E. Schweitzer stated that organized crime had 'entered a new phase of complicity' with terrorist networks:

Terrorist and criminal organizations rely on the same global transportation, communication, and financial infrastructures for illegal ploys. They take advantage of the same breakdowns in authority and enforcement in states under siege. They both seek increasing shares of the fortunes generated from narco-trafficking and other crimes.^[2]

The most obvious example of such linkages is narcotics smuggling operations in Central and South America and Asia, where drug proceeds are used to finance terrorist activities. The overlap between drug industry and terrorism, widely known as narcoterrorism, is most pronounced in Colombia, where two major terrorist groups—the Revolutionary Armed Forces of Colombia (FARC) and the United Self-Defence Groups of Colombia (AUC)—receive more than half of their operational funding through cocaine production, taxation and distribution.^[3] The former Taleban regime in Afghanistan, which was providing sanctuary to al-Qaeda, had also profited from the local opium and heroin trade. The Islamic Movement of Uzbekistan in Central Asia and the Abu Sayyaf Group in the Philippines have both been involved in drug trafficking.^[4] Weapons smuggling, kidnappings and financial crime have also been widely used by these and other terrorist groups to raise proceeds for their activities.

The links between organized crime and terrorist networks will not be the focus of this paper. Neither will the paper discuss whether terrorist groups are capable of building a crude nuclear device or a radiological dispersal device—an issue addressed at length by many experts.^[5] Instead, it will concentrate on the existing evidence of the interest displayed by organized crime, drug trafficking networks and terrorist groups in acquiring, smuggling, selling, buying and using nuclear and other radioactive materials based on the open source information collected in the Database on Nuclear Smuggling, Theft, and Orphan Radiation Sources (DSTO) operated by the University of Salzburg in Austria.^[6] The paper will first provide the historical background and recent trends in nuclear trafficking and will then discuss the existing evidence from the last five

years—January 2001 to December 2005—of the possible nexus between organized criminal networks and terrorist groups seeking nuclear fissile material and radioactive substances.

Nuclear Trafficking: Historical Background and Recent Trends

The first cases of trafficking in nuclear and other radioactive material made headlines in 1991, when the collapse of the Soviet Union triggered a wave of nuclear thefts and smuggling attempts in Russia, Lithuania, Ukraine, Kazakhstan and other former Soviet republics. The subsequent fifteen years can be divided into three five-year periods, which differ in their nature based on the observed trafficking incidents. The first period from 1991 to 1995 was clearly revolving around the problem of 'loose nukes' in the Former Soviet Union (FSU). Eastern, central and southern parts of Europe were heavily affected, as smugglers started bringing their radioactive goods to Germany, Austria, Italy, Poland and Czech Republic hoping to find a market. What they seem to have found instead, though, were security services and journalists posing as buyers. Germany, which alone registered at least 75 incidents in this period, had conducted multiple sting operations, some of which instigated the smuggling, and possibly even the diversion, of Russian weapons-usable material. Several samples and two batches of plutonium and HEU were seized in Germany and Czech Republic in 1994 and 1995. These controversial undercover operations, which had apparently had a local political agenda, were prohibited in 1996 as a result of the parliamentary investigation into the 1994 seizure of 363 gram of plutonium transported to Munich Airport on an ordinary Lufthansa flight from Moscow. However, these incidents have also helped highlight the glaring deficiencies in the security of nuclear material in the FSU—the problem the Russian and other governments had finally acknowledged and started tackling following these seizures.

The second period—1996 to 2000—started with an overall decrease of registered smuggling incidents and a 'lull in significant cases'.^[7] This 'lull' may have been due to a number of reasons. The traffickers were either deterred by the prospects of being caught, or realized that a nuclear black market might have actually never existed in Europe. Such a realization could have prompted some to abandon the risky business altogether and others to look for new routes and new markets. The research of drug smuggling patterns shows that upon the discovery of old routes traffickers adapt and establish new ones, circumnavigating the existing barriers.^[8] The same apparently happened with more persistent nuclear smugglers, who in the second half of 1990s identified direct and less dangerous routes from Russia to the Middle East and Southwest Asia through the Caucasus, Central Asia, Turkey, and the Balkans.^[9] The overall number of incidents gradually increased along these poorly guarded routes, and the only two seizures of weapons-usable material recorded in this period outside of Russia have both occurred in this region as well—an HEU sample on the Bulgarian border with Romania on its way from Turkey in 1999, and 770 gram of HEU in the Black Sea port of Batumi, Georgia, on its way to Turkey in 2000. On a global scale, new players on the nuclear black market emerged in South Asia and in Africa, where several smuggling cases came to light.^[10] The total number of thefts and seizures of ionizing radiation sources increased significantly in this period as compared to the early 1990s, whereas the cases involving nuclear fissile material clearly decreased.

This latter trend also continued into the period from 2001 to 2005, with the number of cases involving radioactive sources steadily growing and those involving nuclear material remaining low and representing no more than twenty percent of the total figure. Again, only two seizures of weapons-usable fissile material were made—another HEU sample, similar to the one seized two years previously in Bulgaria, was confiscated from three traffickers in Paris, France, in 2001, and a small batch of HEU, 170 gram, was detected by Georgian border guards in a failed attempt to smuggle it into Armenia. This period appears to have been influenced by the events of September 11, 2001, by raising the level of threat awareness on a global scale. Whereas reports about 'loose nukes' in the former Soviet Union have been abundant since early 1990s, the terrorist attacks in New York and Washington, D.C., as well as train and subway bombings in Madrid and London, have brought the realization that terrorism can hit at home, that dirty bombs could be used, and that they wouldn't have to be filled with radioactive substances stolen in

Russia. This realization prompted national governments to increase their activities to prevent theft and trafficking of nuclear and other radioactive material. Many countries have started initiatives to improve their detection capabilities at national borders and points of entry and to collect uncontrolled radioactive—or the so-called 'orphan'—sources. For example, the International Atomic Energy Agency (IAEA) conducted several missions to Georgia, Moldova, Afghanistan and other countries to provide assistance in recovering orphan radioactive sources. Similar efforts have been carried out in the United States—the EPA Orphan Source Initiative and DOE Off-Site Recovery Project.^[11] As a result of such programs many incidents have come to light, which would have likely remained unnoticed otherwise.

If one compares the total numbers of trafficking incidents, both intended (e.g., a smuggling attempt) and inadvertent (e.g., an international shipment of contaminated scrap metal), which were detected at national borders and points of entry (e.g., ports and airports) as recorded by DSTO in the three time periods described above, the situation during the first two periods was rather similar, with 38 and 44 cases correspondingly, whereas the third period showed a triple increase of such cases, totaling 130. This increase was clearly caused by improved border control in many of the countries affected by the problem of nuclear trafficking. Turkey appears to be a good example of this cause-effect relationship. Of 27 seizures of radioactive substances (mostly natural and low-enriched uranium) in Turkey recorded in the DSTO between 1993 and 2002, 25 were due to police and intelligence operations and only two resulted from customs control. In the subsequent three years, Turkish authorities recorded already 48 trafficking incidents, all but one resulting from radiation control at the country's newly equipped checkpoints on the borders with Georgia and Iraq. The absolute majority of these cases involved radioactive sources or contaminated material found inside scrap metal shipped into the country.^[12] The number of such illegal shipments into Turkey may have been comparable in the previous years, but due to the lack of detection equipment on Turkish borders it had remained undetected. Among the other countries, where the rate of detection at national borders over the last five years has clearly improved, are Russia, Armenia, Georgia, and Kazakhstan.^[13] Unfortunately, the installation of radiation monitoring equipment does not always guarantee an improved detection rate in countries with untrained, unmotivated and corrupt border control officials.

The increased interest in nuclear and radiological terrorism due to the new threat perception has also contributed to better reporting of the incidents by the national and international mass media in the last five years. For example, after September 11, thefts and losses of radioactive sources in the United States have been reported far more frequently than before the attacks. Before the end of 2005, however, the U.S. Government reported only three incidents to the International Atomic Energy Agency (IAEA), which collects and analyses state-confirmed incidents in its Illicit Trafficking Database (ITDB).^[14] For comparison, the DSTO has recorded 180 incidents of theft and loss of radioactive material in the United States since 1991. Such underreporting of incidents by states is not unique.^[15] For example, the number of incidents confirmed to the IAEA by the Russian Federation between 1993 and 2005 is less than a third of some 300 cases, which were reported in open sources in the same period.^[16] This makes it difficult to rely for a comprehensive global assessment on nuclear trafficking on state-supplied information only and warrant the use of open-source data. However, according to the IAEA, the reporting by its Member-States has improved in the last several years.^[17]

Nuclear Trafficking and Organized Crime

The involvement of organized crime in the trafficking of nuclear and other radioactive material has been a subject of concern ever since the problem of nuclear smuggling came to light in the early 1990s. There are many reasons to fear such a connection, ranging from the financial means available to organized crime syndicates and their capabilities to move almost any illegal product across multiple international borders undetected, to their growing links with terrorist networks. Indeed, resourceful criminal organizations with well-established trafficking channels and infrastructures seem to be ideally suited for either delivering nuclear fissile and other radioactive

material to the customer or trafficking weapons built with these materials to their final destination. For example, since September 11, the U.S. authorities discover each year more than ten underground tunnels used for smuggling narcotics and illegal immigrants into the United States from both Mexico and Canada.[18] Some of the immigrants reportedly come from as far as Pakistan. Such underground tunnels have also been used for smuggling people into the European Union. There is nothing to stop terrorists from exploiting this kind of vulnerabilities in border control in pursuit of their causes. In case of nuclear smuggling, no sophisticated radiation detection equipment installed at official border crossings would prevent them from entering a country together with their dangerous materials or weapons, if they chose to do so through an underground tunnel.

Given the enormous profits organized crime makes from their traditional criminal activities, such as narcotics or people smuggling, nuclear trafficking may not be its first choice.[19] Nevertheless, it can be tried as a sideline activity, if the criminals believe it can be profitable. Today organized crime does not limit itself to single forms of illegal activity, but engages in multi-crime and deals in anything and everything that can bring profit. Besides, criminal networks can resort to nuclear trafficking upon a specific order by a potential buyer. It is the latter scenario that raises the biggest concern among international experts due to its high plausibility and low chances of detection. First of all, a serious potential customer approaching a criminal network with a demand for specific radioactive substances is likely to be either a state with a clandestine nuclear program or a terrorist organization bent on acquiring or building a nuclear weapon or a far less devastating, but much easier to make, radiological dispersal device (RDD). Second, such customers typically have already established links to organized crime and trafficking networks, stemming from their other illicit activities, such as weapons deliveries and drug smuggling. They also have sufficient financial resources to pay the supplier. Such a sophisticated demand-driven smuggling model, which includes a network of front companies, corrupt officials in nuclear and law-enforcement establishments, and professional smuggling networks, has been described in detail by Rensselaer Lee.[20] The expert notes that the existing U.S. counter-proliferation efforts in Russia and other affected states are 'not designed to counter such operations, which in any case are likely to be well-concealed'. Just how well one can conceal such clandestine efforts, was demonstrated by the A. Q. Khan network discovered in 2004, which had organized supply of nuclear technologies and fissile material to several countries through a number of players and front companies in Asia, Africa, Europe and the Middle East.[21] This example makes it imperative to continue studying the involvement of organized crime in the nuclear black market.

The problem of definitions

In order to assess the degree of involvement of organized criminal structures with radioactive substances it is important to define *organized crime*. The traditional definition speaks about a group of criminals with a clearly definable, or a 'corporate', structure. It does not account for loose and shifting coalitions of groups and individuals relying on networks rather than more conventional hierarchical structures. However, these less traditional, but more flexible groups without a corporate structure are the reality of today, forming new associations and partnerships depending on the criminal objectives they pursue. In its 2006 Organised Crime Threat Assessment report, EUROPOL notes that organized crime groups in the European Union are becoming increasingly 'heterogeneous and dynamically organised in structural terms, moving towards loose networks rather than pyramidal monoliths'.[22] Similarly, in the FSU, where organized crime has shown particularly staggering dimensions, criminal groups numbering in thousands are also based on network structures rather than the rigid hierarchical structure, such as that adhered to by the Italian Mafia, for example.[23] Phil Williams, an expert on transnational crime, contends:

Although some of the major organizations have hierarchical structures, Russian organized crime can only be fully understood in terms of network connections between the underworld and the upperworld.[24]

Such a shift in the structural dynamics appears to have a global dimension. For example, the majority of organized crime structures in South Africa are informal associations changing on a daily basis.^[25] According to an assessment by EUROPOL, there is a tendency that many of such criminal groups:

...are in practice loose networks of relatively independent members that coalesce around one or more prominent criminals. These networks take up tasks of varying structure, length and complexity according to the demand and concrete profit.^[26]

Thus, the international debate around definitions of organized crime has moved towards the conduct and the nature of criminal organizations, rather than focusing on the structures alone. The FBI rather broadly defines organized crime as 'any group having some manner of a formalized structure and whose primary objective is to obtain money through illegal activities'.^[27] The definition adopted by the INTERPOL General Assembly of the member countries in 1998 states that 'any enterprise or group of persons engaged in a continuing illegal activity which has as its primary purpose the generation of profits irrespective of national boundaries' constitutes organized crime.^[28]

If one follows the FBI or INTERPOL definition, many of the trafficking rings apprehended with radioactive material in Russia, Europe, Turkey, Central Asia and the Caucasus should be considered as organized crime groups. The sections below will discuss nuclear trafficking incidents with the suspected involvement of such organized crime groups as recorded in the DSTO database in the period 2001 to 2005. The cut-off year of 2001 was chosen deliberately in order to concentrate on the most recent trends observed in the last five years, when the threat perception with regard to mass casualty terrorism dramatically changed. Besides, the involvement of organized crime in the nuclear black market in 1990s has already been thoroughly researched.^[29]

DSTO case study: 2001–2005

Altogether, forty trafficking incidents, which can be associated with organized crime elements fitting the INTERPOL and FBI definitions above, have been identified in the DSTO database for the period January 2001 to December 2005. These cases represent roughly ten percent of the 426 trafficking incidents involving criminal intent (e.g., thefts, seizures) recorded in DSTO for that five-year period. The forty incidents were selected on the following principles: (a) they had to involve an actual seizure of radioactive substances, as opposed to a claim that such material could be obtained or delivered; (b) they had to involve at least three actors—the minimum number to constitute a group; (c) the group had to be involved in what could be termed 'a continuing illegal activity', such as transborder trafficking, trade in illegal substances, smuggling of drugs, possession of weapons, repeated offences, and involvement in other types of crime; and (d) the group had to pursue the ultimate objective of making a profit from its activities, explicitly or implicitly (e.g., trying to sell the material vs. trafficking it as a courier). Thirty-one incidents fulfilled all of the above criteria. In nine incidents the number of actors was less than three, but the incidents had strong indications of the possible presence of a larger criminal network behind those arrested. For example, if two persons are apprehended with both drugs and radioactive substances, there is a reason to believe that they may be part of a smuggling ring. Similarly, if only one person is arrested in an attempt to smuggle highly enriched uranium across a border, it is also very likely that this person is merely a courier belonging to a larger network.

Some of the selected incidents are the obvious ones, such as two cases recorded in March and December 2001, which involved members of the well-known Balashikha criminal organization operating in Greater Moscow in Russia trying to sell cesium-137 and low-enriched uranium. Others were selected based on the available circumstantial evidence. The assessments by the national authorities involved in foiling or investigating these crimes were also taken into account. For instance, apprehended criminals were in many cases described by the local officials as

members of 'criminal gangs' or 'trafficking rings'. Turkish authorities referred to the smuggling of nuclear material from the former Soviet Republics as being of 'an organized nature'. Bulgarian security services were quoted as saying that 'an underground market' existed in Bulgaria, part of which was destroyed by the police.

Although taken into account, the type of material involved was not a determining factor for the selection of the incidents. After all, for most criminals in the nuclear trade the ultimate objective is to resell the material at a higher price than was paid for it. First, they may not be very knowledgeable about the substance in question themselves, and second, they can intentionally mislead their prospective customers by misrepresenting the material and its characteristics, using the if-it-sells-it-goes principle. Thus, plutonium-containing smoke detectors are often referred to as 'weapons-grade plutonium', yellow-cake and low-enriched uranium are upgraded to 'highly-enriched' and cesium-137 is offered in 'kilogram' amounts. One can correctly argue, that in this case such incidents do not pose a serious threat from the standpoint of either proliferation or terrorism. However, they still appear to represent the merge between organized crime and nuclear trafficking, which is the focus of this discussion. Nineteen cases involved nuclear material, seventeen involved radioactive sources and the remaining four were seizures of both types of material. Highly-enriched uranium (HEU) was involved in two, low-enriched uranium in five, and 'enriched' uranium with an unknown level of enrichment in two cases. Ten other incidents involved yellowcake with amounts ranging from 200 gram to 110 kilogram, as well as natural and depleted uranium. The other radioactive materials seized in these incidents were cesium-137 sources (8 cases), plutonium-containing smoke detectors (5), strontium-90 (4), americium-241 (2), radium-226 (1) and plutonium/beryllium (1).

Two thirds of the forty analyzed incidents involved a group between 3 and 17 players, with an average of five. Most of these groups were engaged in buying, selling, or storing radioactive substances, including nuclear fissile material, and were disclosed by national security services, anti-organized crime units, drug enforcement agencies, and police. Although several of the arrests resulted from sting operations, none of the cases appear to have been provoked by security services, as it frequently happened in the early and mid-1990s in Germany and Russia. Instead, the law-enforcement services appeared to have engaged on a tip-off that radioactive material is being offered for sale. Over the years, such reactive undercover operations have proven to be a rather effective means of regaining control over stolen nuclear fissile material and ionizing radiation sources and warrant better support from the governments. Seven other incidents involved two actors each, most of them couriers in a larger trafficking network. A single individual—also a courier—was registered in only one case, which took place in July 2003, when 170 gram of highly enriched uranium (HEU) were seized from an Armenian national trying to cross the Georgian border with Armenia.^[30] This was the latest confirmed trafficking incident involving weapons-usable material.

It should be noted that the above selection of forty incidents, which involved some form of organized crime, is rather conservative. For example, it does not include two other similar incidents, in which Georgian security services and border guards apprehended lone Armenian traffickers with a less significant material from the standpoint of either nuclear proliferation or radiological security. These suspects, however, might have been couriers trying a new route or serving as a distraction from the real smugglers. After all, Georgia is known for being a transshipment country for nuclear and radioactive material from Russia and Kazakhstan. Three seizures of low-enriched uranium, as well as the confiscation of 770 gram of HEU, took place in Georgia between January 1999 and December 2001.^[31] In June 2005, a Georgian senior nuclear official informed the press that four attempts to smuggle HEU via Georgia were prevented by local authorities in the two previous years.^[32] Only one of these alleged seizures, which happened on the border with Armenia as described above, was reported to the IAEA to date.^[33] Georgian officials explained that the delay in reporting these cases was due to continued investigations. According to the information revealed by Georgian authorities to a U.S. expert on organized crime, the latest seizure of HEU, reportedly stolen from a Russian nuclear facility, took

place in Georgia in February 2006.[34] As of yet, the IAEA List of Significant Incidents still does not list any other of these alleged HEU seizures in Georgia.

The criminal groups in the selected forty incidents can be divided into two categories—national and transnational. Over a half of the groups (60%) were of transnational character in so far as they either involved actors of various nationalities or dealt internationally, involving different countries for the supply, transshipment and sale of the material. For example, the 2001 Paris case, which was the latest seizure of HEU in Europe, involved nationals of several countries, who were engaged in various tasks and stages of the trafficking operation: France, Cameroon, Portugal, Romania, and Moldova. The national groups were mostly regional in character with the majority of their members coming from the same city, district or region, e.g., Balashikha criminal group.

The total number of actors—sellers, traffickers, and in some cases buyers—involved in these incidents was at least 169.[35] Most of these perpetrators were arrested, but a small number of the involved individuals either escaped the arrest or could not be found during the subsequent investigations. These perpetrators represent 25 countries in Europe, Africa, and Asia, whereas the number of countries where the seizures and arrests were made is only 18. The table below lists the countries where the seizures were made and the nationals involved in these and other seizures, i.e., in their own countries and abroad.

Table 1. Countries and nationals involved in nuclear trafficking incidents with the suspected involvement of organized crime in the period 2001 to 2005.

Country	Number of cases	Number of nationals
Ukraine	9	33
Russian Federation	7	38
Georgia	5	15
Belarus	3	27
Kazakhstan	2	2
India	2	4
Tajikistan	2	6
Bulgaria	1	3
Congo	1	1
France	1	1
Kenya	1	3
Namibia	1	3
Portugal	1	4
South Africa	1	5
Tanzania	1	4
Thailand	1	7
Turkey	1	2
Uzbekistan	-	3
Cameroon	-	2
Armenia	-	1
Ethiopia	-	1
Moldova	-	1
Romania	-	1
Uganda	-	1
Zaire	-	1

Looking at the number of both seizures and actors involved, the former Soviet Union still stands out as a major staging area for criminals trading in radioactive substance, with Ukraine, Russia, Georgia and Belarus taking the lead. Given the crime scene and the abundance of still poorly

protected nuclear material and radioactive substances in these countries and their neighboring states, this is hardly surprising. Ukraine, which tops the list with the highest number of incidents, appears to have a suppliers' nuclear black market, which trades mostly in ionizing radioactive sources. According to Sergey Oskalenko, Head of Nuclear Counterproliferation Unit of the Security Service of Ukraine, in most cases the criminals are motivated by making a profit, rather than using the material for terrorist or extremist activities.[36] Criminals appear to treat radioactive material purely as a valuable commodity and believe there is a market for it. The material is often sold at a profit from one group to the other one, which hopes to resell it at a higher price. The discussed prices are often absurd, sometimes amounting to half a million U.S. dollars. The one at the end of such a chain, which has failed to find a buyer, loses financially. A good example of a well-organized ring was described in a Ukrainian weekly, which reported about the simultaneous arrest of two criminal groups trading in cesium-137 and strontium-90 in Odessa region in April 2003. In order to boost the price, the criminals were presenting the material as weapons-grade plutonium. The radiation sources had been stolen from different locations by thieves, who did not know each other. The ID-numbers on the containers were forcefully removed to prevent the identification of their origin. In case of a successful deal, the sellers offered to deliver 40 more such radiation sources.[37] Ukrainian officials believe that a real end-user for radioactive substances cannot be found in Ukraine, which prompts the sellers to engage into the trafficking of their material abroad. According to Oskalenko, his biggest concern is that transnational criminal groups with vast financial resources and functioning smuggling channels could get involved in nuclear trafficking from Ukraine—an activity so far not seen by the local authorities.

Looking at the geographical distribution of incidents in Ukraine, it is interesting to note that two-thirds of them took place in shoreline areas of the Black Sea (e.g., Odessa, Crimea peninsula), especially if one considers that several other Black Sea ports, such as Batumi in Georgia, Novorossiysk in Russia, and Istanbul in Turkey, have also been frequent sites of nuclear seizures. This concentration around seaports may indicate that the Black Sea is used for trafficking radioactive substances from the former Soviet Republics south to Turkey. In fact, one of the forty incidents included in this study, involved a ship captain, who was arrested along with three other suspects in Batumi in possession of low-enriched uranium. The group was believed to use the vessel to smuggle the uranium to Turkey.[38] Maritime shipments may be preferred due to a weaker border control and easier logistics than on land routes. Indeed, the Black Sea provides a direct connection between several countries and regions and is heavily used to smuggle various contraband goods and illegal immigrants. Smugglers can exploit uninhabited coastlines and small marinas as entry points.

The number of incidents and involved nationalities from Africa prompts an observation of an emerging nuclear black market on the African continent, with nationals of nine African countries involved in the illegal trade. Traditionally, Africa has not been associated with nuclear trafficking. The only well-known case was the theft of uranium enriched to almost 20 percent from a research reactor in Kinshasa, The Democratic Republic of Congo, which had taken place in mid-1990s. One of the eight missing fuel bars was seized from members of an Italian mafia clan in Rome in 1998—a rare case of nuclear trafficking involving a traditional corporate organized crime structure.[39] Since the recent incidents registered in Africa did not involve either weapons-usable material or strong ionizing radiation sources, this newly emerging trend may be discarded as of little concern. However, the fact as such that local criminal rings have picked up uranium and other radioactive substances as a new business opportunity warrants a closer look. The physical protection and accounting practices at uranium mines and mills are known to be lax in all uranium-mining countries, but they are especially weak in Africa. If one adds to that weak law-enforcement and high levels of corruption in African countries, large-scale diversions of yellowcake, which is needed at the initial stage of a clandestine nuclear weapons program, are easy to conceive.[40] The involvement of corrupt officials in nuclear trade was demonstrated in one case of this study, with a former governor of a province in Kenya engaging in selling uranium in Congo, together with a middleman from Uganda.[41]

In over 80 percent of the cases, neither the final destination nor the end-user of the radioactive material could be determined. It is likely that in many cases they did not exist, since the material was either resold from one group to the next in a scheme described above or sold to undercover security agents in a sting operation. Smugglers in all six incidents, where the final destination was reported or could be identified based on the trafficking route, were using southern routes leading from the former Soviet Republics to Afghanistan (1 case), Iran (1), Turkey (2), and Middle East (2). No end-users were either apprehended or could be identified in the selected cases.

A more detailed research of the forty incidents discussed above would be significantly aided by tapping into the information revealed in court hearings. Unfortunately, this final and often most informative part in the case history, which sheds light on involved suspects, their motivations, and the origin and destination of the smuggled substances, remains unknown for most incidents due to the lack of follow-up reporting. The actual number of nuclear trafficking cases involving organized crime within the last five years is likely to be higher than what is discussed here for two reasons. First, like with any kind of illicit trafficking, the detection rate in nuclear smuggling is very unlikely to be one-hundred percent, which means that some incidents, probably the better concealed ones, remain below the radar screen. In case of smuggling other illegal products or immigrants, the total smuggled volume and number can be assessed indirectly, for example, based on the rate of consumption (e.g., drugs), the quantities of the stolen and reported items (e.g., cars), or the number of undocumented illegal immigrants registered by the host country every year. Such a baseline in nuclear trafficking is hard to establish. The control and accounting of both nuclear and radiological materials in many countries of the world range from stringent to non-existent. The exact amounts of fissile nuclear material are often kept secret by the states. This makes it difficult to assess how much of the material is missing. If the smuggled material has reached the final destination, probably the only way to find out what type of material and how much of it has been acquired by the customer, would be its use in a radiological terrorist act or for building a crude nuclear device, unless intelligence services disclosed and foiled the planned attack before. Since neither a nuclear nor a radiological terrorist attack has taken place yet, this permits to assume that terrorists have not yet obtained the needed material. However, this could also mean that they haven't been able to design and build the weapon yet.

Second, due to various definitions of organized crime adopted by different countries criminal groups involved in some of the recorded trafficking incidents may not be considered to be of organized nature by the local authorities. Thus, French prosecutors were not able to conclusively link the three smugglers involved in the HEU seizure in Paris in 2001 to an organized criminal network selling enriched uranium from Eastern Europe, despite all the evidence indicating that such a link had indeed existed.^[42] In many cases the apprehended criminals are dismissed by the local authorities as 'amateurish' and 'primitive', which can lead to the incorrect conclusion that 'primitive' criminals cannot possibly be part of an organized crime group. For example, if a courier is caught with radioactive material, he may not even know exactly what he is transporting. In today's criminal networks operating like multinational companies, it is compartmentalization, or the division of labor, that makes them more efficient and better protected from potential disclosures. A courier doesn't have to know what exactly he is trafficking. Neither does he have to know other members of the network behind the smuggling operations, except for maybe two or three immediate contacts, who supply him with the material and receive it the other end. Therefore, it is possible that a larger criminal network may be behind a few couriers arrested in a case. Besides, investigations of transborder smuggling cases and suspects from other countries are often inefficient due to a complex bureaucracy of inter-state cooperation. Sadly, criminals seem to enjoy a far less complicated cross-border cooperation than law-enforcement and security forces.

Emerging alliances with drug-smugglers?

In the recent years, nuclear trafficking incidents have started to come to light, which show the involvement of drug dealers and traffickers. There were a lot of well-grounded concerns about the

possibility of such an alliance in the past. Now there is more and more evidence that this merge is indeed taking place. In fact, six of the forty incidents analyzed above were related to drug offences, including parallel seizures of both narcotics and radioactive substances from couriers. Two cases were recorded on the Silk Road route in Central Asia, which is heavily used for trafficking heroin from Afghanistan. In February 2002, agents of the Kazakhstani Committee for National Security arrested two Uzbek smugglers in an operation directed against international drug trafficking in Southern Kazakhstan. The security service confiscated a large cache of heroin and 1.5 kg of uranium oxide, allegedly smuggled from Tajikistan via Uzbekistan. According to a press release by the Committee for National Security, Kazakhstani officials believed that the smugglers were part of a ring trafficking in radioactive materials and narcotics.[43] Another Uzbek citizen was apprehended in Tajikistan trying to sell a radioactive source in March 2004. The resident of the Uzbek city Fergana was arrested on the suspicion of trafficking drugs from Tajikistan to Uzbekistan. However, after the arrest, the agents found on him a plutonium-beryllium source instead of anticipated Afghan drugs. A spokesperson for the Tajik Drug Enforcement Agency, reported that the suspect was considered to have had long-standing connections with drug dealers.[44]

In a similar incident in February 2005, two Indian nationals, also suspected of peddling drugs, were arrested in the Bareilly district of the Indian province of Uttar Pradesh. Besides the 25 kilogram of an 'opioid substance,' the police—to their surprise—had also confiscated a radioactive substance from the two, which turned out to be depleted uranium. The material was reportedly stored in a sophisticated lead-lined metal box. The police did not have any information about where the suspects procured the depleted uranium and to whom they intended to sell it.[45] This was actually the second such incident in India since 1998, when three other Indian nationals, a local politician among them, were apprehended in West Bengal with one kilogram of yellowcake and 350 gram of heroin, which they were trying to smuggle to Pakistan through Nepal. The seized uranium had been apparently stolen from the Jaduguda uranium mines in the neighboring Bihar state.[46] Altogether, nine seizures of uranium, mostly yellowcake and LEU, were reported by Indian authorities since 1998.

Yet another drug lead resulted in a seizure of radioactive material in Ukraine in early 2005. During a search for illegal drugs in the Crimean village of Ishun, Ukrainian authorities found six containers with caesium-137 weighing 83 kilogram each. The suspects were planning to sell the devices.[47] In September 2002, Krasnodar Kray police and Russian Federal Security Service (FSB) agents arrested an organized criminal group trying to sell an unspecified amount of radioactive material. The subsequent search revealed that the group was also dealing in drugs.[48] Finally, a Georgian national with a history of drug offences was involved in the June 2003 case, when Georgian law-enforcement authorities had seized two metal containers with Cs-137 and Sr-90 in the capital Tbilisi. The man had reportedly supplied the containers to the courier, also a Georgian national, who was arrested in possession of the material, for the subsequent transfer across the border into Turkey.[49]

Weapons-smugglers on the black nuclear market

Speculations regarding the possible involvement of weapons-smuggling networks in the nuclear trade have also been abundant. Although it is not far-fetched to imagine such an alliance, not much evidence, which would clearly demonstrate it, has been presented so far. Of the forty cases analyzed above, four involved parallel seizures of radioactive material and caches of small arms. Three cases involved criminal groups and the fourth one—a manager at the Russian State enterprise Atomflot believed to have been linked to a weapons-trafficker.

In March 2002, Belarusian police arrested 17 members of a criminal gang based in the town of Kalinkavichy, Gomel Oblast. Four containers with unidentified radioactive material were confiscated from the gang members, as well as firearms, a grenade, and explosives. The suspects were charged with 100 crimes committed in Gomel and Brest Oblasts in the period 1998

to 2000, including premeditated murder, robbery, intentional destruction of property, and theft.^[50] In September 2002, Russian police and Federal Security Service (FSB) agents in Krasnodar Kray arrested an organized criminal group that was reportedly trying to sell 40 kilogram of mercury and a certain amount of unidentified radioactive substance. During the search of the suspects' homes 'firearms, grenades, ammunition, drugs, gold jewelry and a police uniform' were also found and confiscated.^[51] In August 2003, "a whole arsenal" of guns was confiscated from Aleksandr Tyulyakov, the deputy director for administrative issues at Atomflot, together with a cache of uranium. Murmansk police and local FSB agents linked the suspect to a weapons trafficker, who had allegedly received an order for what police presumed was radioactive material for a buyer in one of the Baltic states.^[52] Finally, in August 2004, Ukrainian police and security agents in Kodyma, Odessa Oblast, confiscated three containers with what was reported as strontium and plutonium sources along with a cache of small arms. Three people were arrested in the incident.^[53]

Although the above incidents—with the exception of the Atomflot case—appear to have involved criminals possessing illegal weapons rather than actual weapons-traffickers, it is important to note that criminal groups are likely to have direct connections to arms-dealers, who supply them with the small arms and munitions. These same arms-dealers could theoretically either supply radioactive material to the criminal gangs or order it from them for another client.

At least two claims by arms-dealers that they could supply both nuclear fissile material and radioactive sources came recently to attention. These claims were not part of the forty analyzed incidents though, because they did not involve actual seizures of radioactive material. Just how well these claims are substantiated is difficult to judge, since both of them appear to be highly speculative. In the first case, reported in April 2003, Samir Yatim, an arms-dealer from Syria—allegedly known to MI5 and FBI as 'highly dangerous'—promised British investigative journalists posing as Muslim extremists to deliver Russian iridium-192 from Istanbul to London. Yatim had allegedly sold arms to the IRA and organized training for this organization in Jordan in 1960s. According to the source, he had lived in Britain and Ireland for 33 years, but was deported to Syria after serving prison sentences for smuggling and weapons offences.^[54] Although some parts of this story make it sound far-fetched, others appear to be too plausible to be discarded, for example, the arms-dealer's knowledge about the nuclear black market. He mentioned that a delivery of at least five kilogram of uranium from Russian nuclear sites could be arranged through Georgia into Turkey, where the material could be inspected by a customer's expert. This route has indeed been the most popular one for trafficking Russian nuclear material. He also indicated that from Turkey the material could be smuggled into Europe either by ship or by land hidden in false car batteries—a method very similar to the one used by a Turkish trafficker to smuggle a small amount of HEU into Bulgaria in 1999, when the material was concealed inside an electrical compressor in the trunk of a car. "Once it's in Europe, it's like shipping vegetables"—was Yatim's alleged comment.

The second claim was made by an Armenian arms-dealer Artur Solomyan, who was arrested in New York in March 2005 on weapons-smuggling charges. Altogether, eighteen people—U.S. nationals among them—were charged with the attempted delivery of Russian anti-tank rockets, surface-to-air missiles, grenade launchers and machine guns worth US\$2.5 million to the United States. The arrests were the result of an FBI undercover operation. During the negotiations with the 'customer' in late 2004, Solomyan offered for sale highly enriched uranium to be used in a terrorist act in the New York underground. The U.S. officials, however, doubt that he actually had HEU, since this subject never came up in the subsequent meetings. It is likely that the initiative came from the undercover agent, who indicated he was working on behalf of a terrorist group operating in the United States and inquired if Solomyan could deliver weapons-usable uranium. Whether the arms-dealer was bluffing remains unclear. His readiness to supply such material though confirms that organized crime networks are willing to deliver anything that brings profit, without any moral considerations coming into play.

Malevolent uses of radioactive material by organized crime

The use of radioactive material for malicious purposes falls within the range of capabilities of organized criminal structures, at least those in Russia. Such a malevolent use may be an indirect evidence of the organized crime involvement in the illicit trafficking of radioactive substances. More than a dozen of malevolent radiological acts, such as intentional contamination and irradiation of persons, have been reported in open sources since 1993. One of them, which happened in Guangdong Province of China in 2002—resulted in significant exposure of as many as 74 people working in the same hospital.[55] Two incidents—both in Russia—have been linked to organized crime. A widely-publicized murder of a Moscow businessman with a strong radioactive source implanted in the head-rest of his office chair in 1993 was one of them. The director of a packaging company died of radiation sickness after several weeks of exposure. The culprit was never found and it was alleged that mafia might have been behind the ploy to remove a business competitor.[56] The same source mentioned a similar incident, which happened in Irkutsk around the same time, when somebody planted radiation sources in office chairs in an attempt to kill two company directors before the "hot seats" were discovered and removed. No speculations were made regarding the possible mafia involvement in this murder attempt, although it cannot be excluded.

The less known case with strong indications that shady criminal networks may have plotted it happened more recently in St. Petersburg. On March 18, 2005, Moskovskiye Novosti published an article, in which the author discussed several high-profile assassinations and murders in Russia and abroad using various methods of poisoning. One of such killings was reportedly performed with a highly radioactive substance. In September 2004, Head of Baltik-Escort security company in St. Petersburg and FSB Colonel, Roman Tsepov, died a sudden and mysterious death as a result of what was suspected to be poisoning. However, according to a source in St. Petersburg Public Prosecutor's Office, the posthumous examination established that the death had been caused by an unspecified radioactive element. In the past, Tsepov was reportedly in charge of collecting protection money from casinos and other commercial enterprises in St. Petersburg on behalf of 'a high-ranking FSB official'. [57] These two incidents demonstrate that some organized crime structures have the knowledge about the characteristics and effects of specific radioactive materials, have access to these substances, and do not shy away from using them as weapons of murder, which are hard to trace to the perpetrators.

Terrorist Networks and Nuclear Trafficking

Terrorism changes together with society and in order to preserve itself as a phenomenon it must use what society gives it, "including the most modern weapons and advanced ideas." [58] The risk of terrorists obtaining nuclear fissile material is small, but real. After the terrorist attack on the school in Beslan in September 2004, the Head of Russian Federal Agency for Atomic Energy (Rosatom, formerly Minatom) Alexander Rumyantsev said that the possibility that international terrorist groups may acquire nuclear fissile material, including HEU and plutonium, as well as nuclear weapons technologies, could no longer be ruled out. [59] Such a risk is much higher for radiological material, which is omnipresent around the world and is not subject to nearly the same level of control and protection as nuclear fissile material. Its use as a weapon in a radiological dispersal device (RDD) would also be achieved with just a fraction of time, investment, and skills required for making a crude nuclear weapon. These reasons make the deployment of radiological material the most probable scenario of nuclear terrorism. Although radioactive substances have already been used as a weapon of killing and a threat mechanism, so far, there is no evidence of their successful deployment in terrorist acts. The only case that comes close to deployment of an RDD, was recorded in Chechnya in 1998, when the local authorities found a container filled with radioactive substances and emitting strong radiation levels together with a mine attached to it buried next to a railway line. [60] The local authorities considered the incident as a foiled act of sabotage. The Chechen fighters are also believed to have made several raids on the Radon radioactive waste depository, located in the vicinity of Grozny, and stolen several containers with

radioactive substances.[61] In 1996, the director of the Radon facility confirmed that about half of some 900 cubic meters of waste, with radioactivity levels of 1,500 curies, which had been stored at the Radon facility at the start of the first Chechen war in November 1994, was missing.[62] The Russian authorities believe the terrorists were planning to use them in explosions in order to spread contamination.

It should be noted that Chechen extremists stand out from many other terrorist organizations by persistently making threats to use nuclear technologies in their acts of violence. The notorious burial of a radiation source in the Gorky park of Moscow in 1995 by the now late field commander Shamil Basayev and the threat by Ahmed Zakayev after the Moscow theater siege in October 2002 that the next time a nuclear facility would be seized are just two such examples.[63] In January 2003, Colonel-General Igor Valynkin, the chief of the 12th Main Directorate of the Russian Ministry of Defence, in charge of protecting Russia's nuclear weapons, said "operational information indicates that Chechen terrorists intend to seize some important military facility or nuclear munitions in order to threaten not only the country, but the entire world." [64] According to an assessment of a Russian expert on nonproliferation, whereas unauthorized access to nuclear munitions by terrorist groups is 'extremely improbable,' access and theft of nuclear weapons during transport or disassembly cannot be wholly excluded.[65] Russia's top security officials recently admitted they have knowledge about the intent and attempts by terrorists to gain access to nuclear material. In August 2005, the director of the Russian Federal Security Service Nikolay Patrushev told at a conference that his agency had information about attempts by terrorist groups to acquire nuclear, biological and chemical weapons of mass destruction.[66] Later that year, the Minister of Interior, Rashid Nurgaliev, stated that international terrorists intended to "seize nuclear materials and use them to build WMD." [67]

If terrorists indeed attempted to gain access to nuclear material in order use them for the construction of WMD, such attempts have not been revealed to the public. Out of almost 1100 trafficking incidents recorded in the DSTO since 1991, only one has reportedly involved terrorists, other than Chechen fighters. The incident was recorded in India in August 2001, when Border Security Force (BSF) officials seized 225 gram of uranium in Balurghat, northern West Bengal along the India-Bangladesh border. Two local men, described as 'suspected terrorists', were arrested. Indian intelligence agencies suspect that the uranium was bound for Muslim fighters in the disputed regions of Jammu and Kashmir and that agents of Pakistan's Inter-Service-Intelligence (ISI) were involved.[68] Whether the arrested suspects were indeed members of a terrorist organization remains unclear based on the available information.

Conclusion

Alliances between terrorist groups and drug cartels and transnational criminal networks are a well-known fact. Such alliances have successfully operated for years in Latin America, and in Central-, South-, and South-Eastern Asia. The involvement of organized criminal groups—albeit relatively small and unsophisticated—in nuclear smuggling activities has also been established based on the study of some 400 nuclear trafficking incidents recorded in the DSTO database between January 2001 and December 2005. Elements of organized crime could be identified in about 10 percent of these incidents. However, no reliable evidence of the "marriages of convenience" between all three—organized crime, terrorists, and nuclear trafficking—could be found.

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