

## [SE1-GB-2] Nuclear and Missile Commerce: The Cases of Iran, Myanmar, North Korea, and Syria

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### Full Summary

Session One of the first Asan Plenum featured three experts in the field of illicit trafficking. Leonard Spector, who is the Deputy Director of the [James Martin Center for Nonproliferation Studies \(CNS\)](#), brought his considerable experience – particularly in the field of ballistic missiles and nuclear technology – to the discussion. He gave an overview of four “outlier” countries which operate outside or in violation of relevant treaties such as the Treaty on the Non-Proliferation of Nuclear Weapons (NPT). Joshua Pollack, a senior analyst at Science Applications International Corporation (SAIC) provides consulting services to the U.S. Government and others on arms control. He frequently contributes to nonproliferation publications and blogs such as *Arms Control Wonk*. His most recent article, [“Ballistic Trajectory: the Evolution of North Korea’s Ballistic Missile Market.”](#) in *The Nonproliferation Review* provided the foundation for his talk. Finally, Dr. Jeffrey Lewis, the Director of the James Martin Center for Nonproliferation Studies’ East Asia Nonproliferation Program, spoke about the quickly evolving events surrounding Myanmar’s nuclear program and its possible links to North Korea. In addition to his work at CNS, Dr. Lewis is the founder and lead author of [Arms Control Wonk](#), where he has written extensively about all four countries.

Leonard Spector sought to address the question of how states can effectively meet the challenge of states such as Iran, Myanmar, North Korea, and Syria which exist outside the NPT, are in violation of the NPT, or which are acting in ways that are inconsistent with their obligations. He began the discussion by commenting on the timely nature of the session, particularly given fellow conference participant, David Sanger’s 12 June article in *The New York Times*, entitled [“U.S. Said to Turn Back North Korea Missile Shipment.”](#) The article described a recent standoff between the U.S. Navy and a Belize-flagged North Korean ship suspected of transporting missile technology to Myanmar. Spector noted that such incidents will prove an ongoing challenge as states try to manage the flow of technology appropriately.

Spector outlined several methods by which the four states could collaborate. First, he suggested the case of Country A manufacturing an item and transferring it to Country B. For

example, Pakistan manufactured P-1 and P-2 centrifuges for its own use, but later A.Q. Khan forwarded the related items to Iran. He noted that it was unclear whether this was officially sanctioned. Secondly, he identified transfers of technology to a second country which then does its own manufacturing. This is a more serious problem because it is not merely the physical item that is transferred, but the ability to manufacture it. This is particularly common in the area of missiles, where technology for the production of scud or North Korea's Nodong missiles has been transferred previously. Third, he noted cases in which Country A procures an item both illegally and illicitly, then transfers it to Country B. North Korean networks that were based in Europe acquiring items that were then transferred to Syria in support of the Al Kibar Reactor are examples of this method. The fourth pattern is when Country A manufactures and tests items with Country B. Spector suspects this scenario occurred during North Korea's moratorium on long-range missile tests when there were multiple tests in Iran of the Shahab-3 which is technically similar to North Korea's Nodong missile. Though it has not been proven, he noted that there is speculation that North Korea may have provided a form of reciprocation to Iran through its nuclear tests. Finally, he noted that there might be cases in the future where Country A provides services for Country B, such as the conversion of uranium.

Next, Spector reviewed types of trade to and from the four countries. He began with North Korea, which has exported missile technology related to scuds, Nodongs, and possibly the Musudan to Iran. He also saw the potential for transfer of nuclear technology along a similar pathway, suggesting the conversion of uranium, warhead designs, nuclear test data, and plutonium production technologies would all be desirable to Iran. Syria also received scuds and scud manufacturing technology from North Korea, as well as transfers related to the Al Kibar Reactor design and possibly a fuel fabrication plant and reprocessing technology. He noted that North Korea shared Nodong design information with Pakistan (Ghauri) in the past. In the case of Myanmar, North Korea is suspected of transferring either missiles or missile technology in the form of scuds, and perhaps technology related to uranium mining and enrichment. His examples related to Pakistan's transfers were historical, noting that the adoption of stronger export controls had improved the situation. There is a much less clear picture of exports for the other three countries, so Spector highlighted several areas to watch that were comprised of potentially desirable technology and resources such as: Syria's advance chemical weapons capabilities, Iran's missile transfers to Hezbollah, and Myanmar's uranium deposits.

In terms of constraining the trade of WMD, Spector discussed several strategies that are or could be pursued. These include the attempt to deter by means of multilateral or bilateral sanctions, such as the case of South Korea, the U.S., and the European Union's efforts to block North Korea. Additionally, there is the effort to dissuade through a patron pressuring

the country, such as China leaning on North Korea. There are efforts at interdiction through the denial of ports or airspace access, as exemplified by the Proliferation Security Initiative (PSI) and some of the Iran sanctions. The effort to deny access to Western banking systems has had mixed success, but is an example of a relatively new type of effort that was initiated during the Bush administration. A fifth example that he described, is an effort to interfere with a country's WMD program through sabotage or assassination, as was the case of Iran's Stuxnet attack. However, he cautioned that some countries like North Korea are less susceptible to such an attack because they are so isolated. He ended with the unappealing option of military action, especially vis-à-vis North Korea, noting that even the use of "red lines" had not been very effective in the past.

Spector ended his comments by examining future prospects. Despite some successes in Iran and elsewhere, illicit WMD programs continue to grow. Export controls have a hard time keeping pace with these efforts. He predicted future constraints on shipping, including new obligations on registry states. He also saw slow improvement of the implementation of sanctions and resolutions such as 1540, which will curtail illicit efforts as states begin to tighten their national laws and enforcement. In the U.S., he predicted the discussion of further sanctions on Iran, which may include an attempt to universalize a ban on crude oil purchases. He also could not rule out consideration of "direct action" against states seeking weapons of mass destruction (WMD).

Joshua Pollack took the reins next, detailing his recent study of North Korea's missile exports. He finds North Korea to be the single most important supplier of ballistic missile technology to Iran and Syria, and noted suspected ties to Myanmar. However, in the 1980s-1990s the DPRK exported to a wider client-base including Iran and Syria. Today, he said, these relationships have become more collaborative and Pyongyang has seemingly shifted to technology transfer rather than the shipment of complete missile systems. Pollack described North Korea's missile trade as a funnel, in that it both illustrates North Korea's ability to collect materials, components, and technologies from around the world and funnel them to select client states, as well as its narrowing client-base as North Korea transitioned from selling completed missile systems to technology transfer to collaborative development.

While we don't know the complete story of North Korea's missile development, Pollack found that North Korea's program was designed for its own needs rather than for export. Despite its assertions that the missiles were 100 percent indigenous, the design heritage was primarily Soviet and Chinese with inputs such as dual-use tools, parts, and materials coming from Japan, China, and other foreign sources.

Pollack also asserted that the way we think of North Korea's missile trade is outdated. He

examined years of the Congressional Research Service's annual report on arms transfers to developing nations. By comparing versions year to year he was able to reconstruct a picture of North Korea's exports albeit with some caveats such as the fact that numbers are often rounded off and the destinations are named by region rather than state. However despite this, a sharp pattern emerged. Based on these reports, he found that North Korea no longer ships completed missile systems all over the world, but rather has shifted more toward conventional arms.

He identified three distinct time periods of North Korea's missile trade. The first one from 1987-1993, saw North Korea as the single biggest exporter of missiles, even surpassing the Soviet Union/ Russia and China. In fact, this period comprised over 80 percent of North Korea's total exports, suggesting that while they are not out of the business it may peaked. 1994-2000 was a low point of sorts. Pollack explains that the DPRK's customers began to demand the ability to build their own missile systems, and so North Korea shifted toward technology transfer rather than the shipment of completed systems. Seizure reports during this period also show that shipments were now leaning heavily toward manufacturing equipment or components. Thus, while it showed the fewest number of shipments of completed systems of the three periods, it also had the greatest number of seized shipments of components. Finally, North Korea's customer base also shrunk down to only five customers. Pollack found 2001-2010 to be the most dramatic of the three periods with shipments dwindling and now being almost exclusively comprised of conventional arms. Even North Korea's two remaining client states Iran and Syria are achieving new levels of self-sufficiency according to the most recent U.S. national intelligence estimates to Congress.

In terms of anti-proliferation efforts, Pollack described four major policy trends since the 1980s: export control diplomacy, sanctions and interdiction, pressure on buyer states, and ballistic missile defense (BMD) development. While export control diplomacy and pressure on buyers were both partly effective in their disruption of North Korea's missile trade, he found that sanctions and interdiction were not effective in reducing supply, and that BMD was actually counter-productive. In terms of improving policy effectiveness, Pollack called for greater cooperation from other states such as China and Russia, however noted that North Korea had proven itself to be highly adaptable in the past.

Jeffrey Lewis expanded the conversation by analyzing Myanmar's nascent activities in the nuclear field. He found this case particularly interesting because there is so little information available on the subject and felt that it revealed a great deal about how patterns of proliferation have changed over the decades. In the past, states relied on the belief that those interested in a nuclear weapons program would pursue the plutonium route, which is slow and visible through national technical means. The rise of gas centrifuges and widely available

dual-use technology challenges this perception.

Lewis points out that there is very little information about Myanmar's nuclear program, and many of the assertions made about it come from politically-motivated dissidents. However, he finds that a set of unsettling facts still remain. First, Myanmar openly sought a research reactor from Russia for the stated purpose of establishing a nuclear science center with a focus on medical isotopes; however the program ran into complications. Additionally, a large number of researchers were sent to Russia to study fields that seem out of place for Myanmar's stated intentions such as uranium production and spent fuel reprocessing. Second, the Burmese junta enjoys an unusually close relationship with Pyongyang. In addition to the missile shipments that were discussed earlier, Lewis drew attention to a 2008 trip report secured by a Burmese dissident group, which indicated that a military delegation visited North Korea's final assembly factory for scud missiles, and contained images of the head of Myanmar's army meeting with Jon Byong Ho who played the leading role in North Korea's nuclear and missile exports up until recently. Third, he noted Myanmar's declaration of at least five deposits of uranium ore, and the lack of transparency around its potential extraction, as Myanmar has yet to sign the Additional Protocol.

Finally, Lewis described two workshops that contained specialized high-grade machine tools from Germany and Switzerland for the declared purpose of training of non-military personnel. However, when the German company sent follow-up delegations, they found only military-aged men working at the facilities in uniforms that could indicate a connection. Additionally, Burmese dissidents obtained a document that linked one of the machine tools to the Number (1) Science and Technology Battalion, a military encampment that is being built in an isolated part of northern Myanmar and is adjacent to a large ore processing facility. This equipment is described by former director of the International Atomic Energy Association (IAEA) Robert Kelley as being used in a uranium enrichment program. Dr. Ko Ko Oo, who is the director of Myanmar's Department of Atomic Energy signed the end-user certificate for the equipment from the German company and is pictured showing the workshops to company officials and at the construction site of the Number (1) Science and Technology Battalion. Lewis said that while the evidence is puzzling, there is no smoking gun. In particular he commented on Kelley's assessment of the dual-use equipment, which has caused vigorous debate. One alternative explanation that Lewis favors is that the equipment is used to extract rare earths, however he does not find this explanation to be exculpatory as the extraction of rare earths has been used as a cover for nuclear activities by India in the past.

From a policy perspective, Lewis argues that Myanmar needs to show a higher degree of transparency around its activities. He pointed out that even while a senior official had told Senator John McCain earlier this month that they were abandoning their nuclear research

program because it was too expensive, he felt the world needed a level of verification to build trust. He suggested that Myanmar fill out the IAEA/ OECD questionnaire on uranium production and resources, sign the Additional Protocol, and allow members of the Bangkok Treaty to send technical experts to verify Myanmar's claims, which is their right under the treaty. Lewis ended by asking participants to think about a more macro-level consideration of Myanmar's role in proliferation activities. Namely, that Myanmar may be a client state much like Syria, or that it may be acting as a front or transshipment point for North Korea, which has procured dual-use items for Myanmar in the past.

Leonard Spector closed the session by drawing attention to the possible research that could be done on political relationships between the four countries and inviting questions from the audience.

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