

**EU Non-PROLIFERATION CONSORTIUM**

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# Curbing missile proliferation in the Middle East: Options for a comprehensive policy

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## Background paper

Second EU Non-Proliferation Consortium Seminar to Promote Confidence Building and in Support of a Process Aimed at Establishing a Zone Free of WMD and Means of Delivery in the Middle East

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## Abbreviations

BM	Ballistic Missile
FATF	Financial Action Task Force on Money Laundering
HCoC	The Hague Code of Conduct
ICBM	Intercontinental Ballistic Missile
IGS	Inertial Guidance Systems
UNSC	United Nations Security Council
WMD	Weapons of Mass Destruction

## 1. Taking the development of ballistic missiles into account is becoming a priority

The dissemination of weapons of mass destruction and their means of delivery is a fact which could lead to a dramatic increase in threats to international security. The nuclear crisis in the Middle East could escalate to such a level that the existence of a large arsenal of ballistic and cruise missiles could actually provoke a full-blown war from a limited incident or crisis.

In the area of missiles, the development of more efficient, longer-range weapons is gaining pace as illustrated by the attempted (but failed) launch in April 2012 of a Taepodong-2 from North Korea. The fact that the Democratic People's Republic of Korea paraded what appeared to be mobile ICBMs – whose operational state was later questioned by several experts – demonstrated how important longer-range missile capabilities appear to be to this type of regime.<sup>1</sup>

But Pyongyang is also in possession of a large ballistic missiles arsenal mainly comprised of Scud type missiles as well as longer-range systems.<sup>2</sup> According to some assessments, North Korea is said to today possess between 300 and 400 Scud-B and Scud-C missiles as well as 60 mobile launchers deployed north of the demilitarized zone and capable of reaching most of South Korea and in particular Seoul. Moreover, worst case assessments give North Korea a total capability of about 200 Nodong missiles and some 10 to 15 mobile launchers.<sup>3</sup> More disturbing is the willingness of Pyongyang to procure such weapons for literally any state willing to pay for them. Its cooperation with Syria and its assistance to Iran's Shahab program must be considered one of the most worrisome trends in missile proliferation today.

Indeed, Iran's missile program has reached an unprecedented level of both sophistication and size for a proliferant country. Tehran is reported to possess a tactical arsenal comprised of several hundred Shahab-1 and Shahab-2<sup>4</sup> – equivalent to Scud-B and Scud-C<sup>5</sup>. The quest for longer-range systems reportedly started at the beginning of the 1990s with support from North Korea. The first flight test of the 1,300 kilometre range Shahab-3 in 1998 started a long series of tests and the official deployment of the missile in 2003.<sup>6</sup> It has also conducted the development of modern anti-ship cruise missiles, culminating with the announcement by Teheran of its anti-ship cruise missile tests in spring 2004 and again in 2007 and in 2011.<sup>7</sup>

Iran has also invested heavily in the development of long-range, solid-propelled missile capabilities culminating in two tests conducted in 2008 and 2009 of a two-stage system called Sajjil. It is, however, possible that the program was held back by several incidents including the destruction of the Bid Ganeh site in November 2011 where General Hassan Tehrani Moghaddam – head of the solid propellant program – and some of his staff were killed. The

<sup>1</sup> North Korea 'missiles' at parade were mock-ups: experts, in: *AFP*, (24 April 2012).

<sup>2</sup> Joseph S. Bermudez, A History of Ballistic Missile Development in the DPRK, in: *CNS Occasional Papers* N° 2, (1999), p.11-18.

<sup>3</sup> General B.B. Bell, Commander US Forces Korea, Statement before the Senate Armed Services Committee, (7 March 2006), p.7.

<sup>4</sup> The International Institute for Strategic Studies, *Iran's Ballistic Missile Capabilities: A net assessment*, (2010), p.117.

<sup>5</sup> The average production rate of Scuds in Iran is reported to be 3 missiles a month and to have started somewhere in 1988. As detailed in the IISS 2010 paper, it is unlikely that Iran is fully capable of producing all components and it thus still depends on its cooperation with the DPRK.

<sup>6</sup> Iran's missile show for domestic audience, in: *Asia Times*, (24 July 2003).

<sup>7</sup> Iran mass producing anti-ship cruise missile, in: *AFP*, (5 January 2012).

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important efforts made by the international community to enforce the sanctions decided by the United Nations Security Council resolutions targeting Iran's missiles programs (UNSCR 1747 (2007), 1803 (2008) and 1929 (2010)) could also account for difficulties Tehran may have encountered.<sup>8</sup>

Other states in the region possess or develop ballistic missiles. Saudi Arabia, for instance, received 2,500 km range liquid-propelled Dong Feng-3 from the People's Republic of China in 1987. Although these systems are now considered as non-operational due to the lack of proper maintenance and extreme storage conditions – detrimental in particular to the liquid propellant – they represent a unique ballistic capability in the region.<sup>9</sup> For some time, it has been rumoured that Saudi Arabia is negotiating with China for the replacement of these systems with a more modern solid-propellant ballistic missile. Most analysts suspected the discussions were centred on the acquisition of the shorter-range, more accurate DF-15B. Recently, news filtered out that Beijing had given a basic answer to the procurement of the solid-propellant DF-21. Several versions of that missile exist with ranges in excess of 2,000 km.<sup>10</sup>

Israel also possesses a large ballistic missile arsenal and capabilities. The Jericho family of solid-propellant, road-mobile ballistic missiles has recently grown to include a weapon with a range greater than 4,500 km, the Jericho-3.<sup>11</sup> The system, which was flight tested as recently as November 2011 and which was said to have been deployed in 2008, could have its range extended to become the first Israeli intercontinental ballistic missile.<sup>12</sup> That possible evolution of the range has spawned many questions concerning the final objective of Israel's ballistic missile arsenal.

Whatever the virtues of arms control are, one has to conclude from analysis of today's ballistic missile arsenals that the threat is very real and that there are only limited means available today for curbing it. Furthermore, everything tends to demonstrate a dramatic acceleration in the spread of missile weapons. Several trends are particularly worrisome:

- The rapid increase of short- to medium-range systems, not to mention very short-range rockets – less than 100 kilometres – such as the almost 4,000 rockets Hezbollah used against Israeli cities in the Lebanon conflict in the summer of 2006<sup>13</sup>
- The emergence of longer-range systems that have the potential to give countries a larger spectre of possible targets
- The modernization of short- and medium-range missile capabilities with conventional or unconventional warheads creates the possibility of use in conflicts and raises the spectre of possible escalation in areas where stability is questionable

<sup>8</sup> International Institute for Strategic Studies, Iran: Sanctions halt long-range ballistic missiles development, in: *IISS Strategic Comments*, Volume 18 – Comment 22, (July 2012).

<sup>9</sup> Jeffrey Lewis, *Saudi Missile Claims*, (8 June 2010).

<sup>10</sup> Saudis are buying nuclear-capable missiles from China, in: *Debka Files*, (4 July 2012).

<sup>11</sup> Duncan Lennox (ed.), *Jane's Strategic Weapons Systems*, Issue 50, Surrey: Jane's Information Group (January 2009), p. 85-6.

<sup>12</sup> Israel launches new missile that can reach New York and Tokyo, in: *Pravda*, (3 November 2011).

<sup>13</sup> David Makovsky and Jeffrey White, Lessons and Implications of the Israel-Hezbollah War. A preliminary assessment, in: *The Washington Institute for Near East Policy, Policy Focus*, N°60, (October 2006), p.41.

## 2. Combating the dissemination of ballistic and cruise missiles in the Middle East requires systemic analysis of proliferation in the region

Preventing missile proliferation in the Middle East is indeed important when one considers a typical worst case scenario where capabilities could be disseminated to non-state actors or, even worse, used in a region-wide crisis or conflict.

In order to do that, one would have to consider the precise characteristics of that phenomenon by conducting a complete systemic analysis to identify functions concomitant to it and how they are interrelated. Of course, such an endeavour would be so long and difficult that it would require accurate information that is, unfortunately, difficult to come by. Nevertheless, it seems possible to make some points that could be of use in structuring a response.

### 2.1 Making a rocket is complicated...

It is not by pure chance that only a limited number of countries have really mastered all the necessary technologies and skills necessary to develop and manufacture modern missiles including, but not limited to, chemical propulsion, advanced materials, guidance and control, stage separation, underwater launch...

Let us take a known example to illustrate that point: Iraq. When Baghdad decided to work on longer range missiles prior to the first Gulf War based on the technologies they had available, Scud, they explored two different ways:

Augment the burning time of the original engine while diminishing the payload mass (project 144). This solution was possible because the Scud engine was actually made to burn for a longer time than necessary to obtain the 300km range. Modifications made to the system were actually minimal and not always technically sound. I have looked at weldings made on Al Hussein and I can bear witness to their lack of quality.

Try to redesign a Scud engine and guidance and control system. That effort produced mixed results. While project 1728 was able to reproduce some of the pieces making up a Scud engine, design and production issues occurred with others: turbo-pumps, for instance, actually had to be produced abroad (by Thyssen) and injectors were of such inconsistent quality that a limited number of injector plates were usable in Iraqi-made engines. Finally, project 1728 was forced to cannibalize Soviet engines to produce some indigenous ones. Efforts to produce complete inertial guidance systems (IGS) unequivocally failed and Iraq was forced to import complete IGS.

Iraq did put a lot of effort and money into its missile program and the least that can be said is that the results were hardly there. After the Gulf war, efforts directed at SA-2 modifications or the design of solid-propellant engines were limited and were not very successful.

Other indigenous programs, for instance, the Egyptian efforts in the 1950s and 1970s ran into similar problems. Cairo did have German rocket scientists but lacked the experience and management capabilities to complete any operational missile.

However, even if making a rocket proved difficult time after time, it is not an entirely daunting task. North Korea is a perfect example of missile development success. This was probably achieved through a combination of several elements:

Pyongyang started work on ballistic missiles at the end of the sixties while trying to make copies of the Soviet-supplied SA2 and SS-N-2s. These retro-engineering programs were not successful but they laid the groundwork for very important cooperation with China. In 1965,

Kim Il Sung created the Hamhung Military Academy, which was to foster most of the country's technical capability. Cooperation with China on the DF-61 (a 1,000 km range BM) started in 1975 enabling the DPRK to gain more experience in liquid propulsion as well as inertial guidance. Cooperation lasted until 1978 when the program was cancelled by the People's Republic of China.

Its cooperation with Egypt on Scud technologies probably served as a second stage in the DPRK's efforts to obtain its own missile design and production capabilities. Transfer of complete Scuds systems as well as the probable transfer of knowledge and know-how from Egypt's own missile programs permitted the creation of a local copy of the Soviet Scud (although it is probable that the first missile launched in 1984 did use several pieces of the original missile).

The successes of the North Korean missile program may also have capitalized on possible informal contacts with Russian engineers at the end of the 1980s, just after the fall of the USSR. The design and production of Nodong is nonetheless a tribute to the Pyongyang missile industry's achievements in some of the technical fields necessary for rocket science.

## **2.2 ... but countries can cooperate with each other to reduce the difficulty**

Recent history has proven that cooperation between states is critical to obtain the capability to upgrade or create a ballistic missile inventory. Several examples can be quoted to exemplify the need to access outside assistance: Israel received help from France on the establishment of its missile program and the cooperation between the DPRK and Iran on liquid-propellant missiles was necessary for the latter to establish its own arsenal.

But in order to do so, because of their lack of skill and know-how in several domains and the existence of export control mechanisms, some countries may have to create and manage a complex network of banks, brokers, front companies and shipping lanes not only to be able to procure key components but also to exchange material and immaterial goods despite initiatives by several countries to limit exchange in this area.

With sanctions imposed on both the DPRK's and Iran's financial transactions or trade related to nuclear and ballistic missiles, the two countries have been obliged to devise ways of circumventing the awareness of the international community. Iran, in particular, can use a still very large fleet which is more and more operated by small front companies directed by Pasdaran-related CEOs and an important network of financial institutions to facilitate their efforts.<sup>14</sup> In fact, since they were first detected in October 2003 proliferation networks have adapted to sanctions when the BBC China was intercepted and AQ Khan exposed for selling nuclear technologies to several countries,<sup>15</sup> even if they have been impacted by them.

<sup>14</sup> Andrea Stricker, British bank accused of doing massive illegal Iran business: settles with New York authorities, in: *ISIS Report*, (15 August 2012).

<sup>15</sup> C. Baum & C. F. Chyba, Proliferation Rings, in: *International Security*, Vol. 29, No. 2, (autumn 2004).

### 3. A wide variety of options are available for combating missile proliferation

Creating a comprehensive policy for combating missile proliferation requires that all possible angles be explored from which the issue can be ‘handled’. This policy must (1) limit the number of countries that are willing to start programs of WMD means of delivery, (2) reduce the capability of existing programs to access the key technologies and goods that they need to thrive and (3) if necessary, ensure that peaceful countries are protected against the possible use of these missiles and the warheads they are carrying.

It is clear that whatever the future holds in the Middle East concerning weapons of mass destruction, it is necessary to build international and regional initiatives that could enhance the security of Middle Eastern countries in an area where hundreds of ballistic missiles are deployed.

#### 3.1 Combating proliferation networks should remain a priority

Efforts to address the proliferation economy have started in the wake of the revelations over the AQ Khan networks. They have since been focused on (1) disrupting the flows of ballistic missile-related equipment and knowledge to countries known to develop means of delivery for suspected WMD programs and (2) making it difficult for proliferants to use the international financial system to procure goods and technologies.

Economic globalization makes it necessary to coordinate the policies of states creating technologies and the countries sheltering service activities<sup>16</sup> that could be used by organizations involved in the trade of weapons of mass destruction. Progress has undoubtedly been made since 2003 following the launch of several initiatives meant to improve cooperation on export control. Yet, despite sanctions, as proven by the recent reports from the expert panels created under resolutions 1929 and 1874 (as well as by the group of experts of the FATF on proliferation financing<sup>17</sup>) both Iranian and North Korean procurement networks remain active.<sup>18</sup>

But genuine problems arise with the creation and use by states of **lists of goods and technologies** for which export and transit are generally subject to prior authorizations. Complete systems and their main components are usually relatively well controlled because their end use is not questionable. On the other hand, the establishment of a pertinent list of dual-use items can prove difficult considering constant changes in technology as well as the fact that proliferant networks often target components that are under existing technical specifications.<sup>19</sup> For a country with limited administrative resources, the volume of work involved in the management of export or transit applications (including transport documents) for dual-use goods may become such that it introduces dysfunctions in their processing including delays, superficial analyses, mistakes, etc. Similarly, ill-informed or uninformed

<sup>16</sup> Financing, transport/freight, transfer, brokering

<sup>17</sup> Financial Action Task Force, *Combating Proliferation Financing: A status report on policy development and consultation*, (February 2010).

<sup>18</sup> See as illustration, United Nations Security Council, *Report of the Panel of Experts established pursuant to resolution 1929*, (12 June 2012).

<sup>19</sup> United Nations Security Council, *Report of the Panel of Experts established pursuant to resolution 1874* (2009), 2011, pp. 38-39.

companies tend to submit incomplete or misleading demands to export control administrations.

A number of improvements can be considered for existing export control mechanisms:

- The universalization of ‘catch-all’ clauses. The purpose would not be to judge the intrinsic sensitivity of a product, but rather the intrinsic sensitivity of end users and the possible use they might make of it
- The possibility of creating lists of suspect final destinations could be considered and generalized as it exists in UNSC resolutions pertaining to Iran and North Korea. Such documents could be of genuine interest provided intelligence has made it possible to map their structure.
- It is urgent to create frameworks enabling the supervision of arms brokers because they play an important role in operations by networks by acting as the main relays for their procurement attempts abroad.<sup>20</sup> Only a few countries have introduced legal or political instruments that can be used to monitor brokers’ activities and operations.<sup>21</sup> For instance, the European Union adopted a common position on the subject in 2003.<sup>22</sup>
- The 2008 FATF initiative to include proliferation financing in its scope has already produced interesting results, yet the banking sector is still very much unprepared and sometimes unwilling to deal with proliferation as it does with money laundering. As some experts have noted, networks are still able to use the international banking system to complete their transactions.<sup>23</sup>

### **3.2 Universalizing confidence-building measures could limit the incentives to proliferate**

The development of missile capabilities is often the result of a perceived military disadvantage by some regimes. Although this does not mean that, if it is confronted with evidence to the contrary or it is demonstrated that its perception is false, such regimes would give up their ballistic missiles, it seems, nevertheless, helpful to discuss and if possible enter into a negotiation meant to enhance regionally or globally confidence between parties. Such negotiated instruments should not forbid the development of all categories of land attack missile but could go as far as banning some variants if their possession were to be regarded as unwarranted in a given environment. Of course, it is very doubtful that Middle East states would actually consider giving up their capabilities for the time being and one probably has to consider steps that would enhance transparency in arsenals and their use in the hope it could eventually lead to something else.

<sup>20</sup> B. Gruselle & G. Schlumberger. Proliferation networks. Between Sopranos and Supermarkets, in: *FRS notes*, (July 2006).

<sup>21</sup> Loretta Bondy, *The US law on arms brokering in 11 questions and answers. Presentation to UN workshop in preparation of consultations on illegal brokering*, (May 2005).

<sup>22</sup> EU Council, *Position on the control of intermediaries in armament*, 2003/468/CFSP, (June 23 2003).

<sup>23</sup> Sonia Ben Ouagrham-Gormley, Banking on Non Proliferation, in: *The Nonproliferation Review*, 19:2, (2012).

An instrument such as the Hague Code of Conduct (HCoC) is interesting because it is a politically binding instrument which recognizes ballistic missiles as possible means of delivery for WMD and as such considers their development as contrary *a priori* to regional stability. It encourages adherents to limit their development. But the code goes farther by making it compulsory for members to (1) make an annual declaration on their ballistic missile efforts and programs and (2) provide advance notification to other members of the test launch of its missiles. In itself, this measure would be useful in limiting the possibility of a test being mistaken for a combat launch and thereby provoking a response with deadly force that causes the entire situation to escalate.

Now, these would of course be modest steps. But in regions where the use of ballistic missiles could become so destabilizing because of the perceived level of ambiguity regarding the nature of their payload, modest steps could pave the way for more concrete advances. One also has to remain aware that taking these steps does not make missile defence programs or counter-proliferation efforts useless.