Since the late 1990s, North Korea’s development and deployment of ballistic missiles has been one of the major security concerns in Northeast Asia. Anxiety over this problem has been sharpened by the fact that North Korea has been a major exporter of ballistic missiles and related technology in the past. Its ballistic missiles could be used to deliver nuclear warheads, and Pyongyang has expressed its ambition to develop this type of weapon. Currently, North Korea deploys a large number of short- and medium-range ballistic missiles against Japan, South Korea, and U.S. forces in the two countries. And it is allegedly developing long-range ballistic missiles that could reach parts of the continental United States. Although North Korea’s ballistic missile capabilities may be exaggerated or overestimated, either intentionally or due to a lack of information, its ballistic missile activities deserve special attention because they have considerable impact on stability and security in Northeast Asia.

North Korea, however, is not the only country in the region that develops and deploys missiles. Other major regional actors also have a variety of missiles including ballistic, cruise, and/or other missiles in their arsenals. More importantly, the development and deployment of ballistic missiles by North Korea is, to some extent, a response to military pressures posed by the United States and its allies, namely Japan and South Korea, which in turn deploy a variety of missiles to deter North Korea.

Reducing this tension, therefore, could help to break the deadlock over North Korea’s ballistic missiles, although there are probably other factors driving its ballistic missile activities such as economic interests and domestic politics. But reality is apparently heading in the opposite direction. For example, there are ominous signs of a further expansion of missile arsenals in Japan and South Korea. The rationale behind this is that engagement with North Korea requires credible military capabilities to deter the country from blackmailing and military adventures.

In the meantime, the Governments of Japan, South Korea, and the United States continue the hitherto usual approach to the North Korean ballistic missile problem, even though this promises no satisfactory outcome. Against this background, the United States started initial deployment of missile defense systems in summer 2004 in order to protect its homeland, forward-based troops, and allies and friends against a ballistic missile attack. Missile defenses are meant to supplement the U.S. deterrents. But it is highly doubtful that U.S. missile defenses could enhance...
Moreover, at this time, the major re-
riously either at the government level
ments have not been pursued se-
problem and, more generally, to
curity of Northeast Asia.

In the following sections of this
s to regulate missiles and
arms race in the region. In short, U.S.
defense deployments could lead to increasing uncertainty and in-
and unnecessarily accelerate the
arm forces to maintain
strong enough to
issue of the U.S. missile defense
self- and collective defense forces and
in Northeast Asia.

This said, it seems very timely to
explore ways to regulate missiles and
related activities in Northeast Asia. Concerns about North Korean
ballistic missile activities could promp-
t the major actors to advance
regional missile control goals. By do-
ing so, they might be able to break
the current diplomatic stalemate. They
could also foreclose through regional
control the expansion of mis-
arsenals by other regional actors
that might be pursued even if the ba-
missile threat from North Korea
were reduced or eliminated. This
would reduce the overall missile
threat in the region, thus improving
the general political climate.

Despite these potential benefits,
regional missile control initiatives and
agreements have not been pursued se-
ously either at the government level
or by civil society in Northeast Asia.
Moreover, at this time, the major re-
gional actors do not even have a com-
mon understanding that regional mis-
sion control is desirable and feasible. It
is, however, a viable alternative to de-
terence and missile defense to cope
with the North Korean ballistic mis-
sile problem and, more generally, to
maintain the stability and security of
Northeast Asia.

In the following sections of this
paper, I examine past and existing
measures for missile control and their
effectiveness in the Northeast Asian
context, to argue that new regional
missile control arrangements that
could effectively address missile con-
cerns in the region should be estab-
lished. Then, I discuss several obsta-
cles to missile control in the region
and explore the possibility to over-
come them. Finally, I outline a model
road map for the establishment of a
regional missile limitation regime as a
concrete proposal to expedite missile
control processes in Northeast Asia.

Past and Existing Measures for
Missile Control

Major actors in Northeast Asia de-
ploy numerous missiles, and their
missile activities have already caused
occasional instability and even crisis
situations in the region. U.S. missile
defense deployments could increase
uncertainty and instability and unne-
cessarily accelerate the escalation of
missile arms buildup by major actors in
Northeast Asia.

Nevertheless, each major actor
in the region considers its missiles an
indispensable element of its military
self- and collective defense forces and
conducts various missile activities that
are supposedly in its national inter-
ests. As a consequence, there is no
common understanding between
them that regional missile control is
desirable and feasible today.

This, however, is not peculiar to
the region. As an report of a United
Nations expert panel points out,
“there is no norm, treaty or agreement
governing the development, testing,
producing, acquisition, transfer, de-
ployment or use specifically of mis-
siles.” On the other hand, it is also
true that some past and existing
agreements, whether bi-
lateral, multilateral, or regional, make
specific provisions for particular types
or aspect of missiles. And some of the
major actors in Northeast Asia even
committed themselves to such treaties
and agreements. Therefore, in order
to draw lessons for a new missile con-
trol concept in Northeast Asia, it
seems instructive and useful to exam-
ine those past and existing treaties and
agreements.

The aforementioned United Na-
tions expert panel report, for example,
listed a variety of past and existing
agreements, which can be
categorized roughly into four types
by their objectives. They are:

- Measures to limit and/or reduce
  the number of certain categories of
  missiles used to deliver weapons of
  mass destruction (WMD) such as the
  Strategic Arms Limitation Treaty 1
  and 2 (SALT 1, 1972, and SALT 2,
  1979), the Intermediate-Range Nu-
clear Forces Treaty (INF Treaty,
  1987), the Strategic Arms Reduction
  Treaty 1 and 2 (START 1, 1991,
  and START 2, 1993), and the Strategic
  Offensive Reduction Treaty (SORT,
  2002).
- Measures to limit the deployment
  of missiles to deliver WMD such as the
  Treaty on Principles Governing the
  Activities of States in the Exploration
  and Use of Outer Space (Outer Space
  Treaty, 1967), the Treaty for the Prohi-
bition of Nuclear Weapons in Latin
  America and the Caribbean (Tlatelol-
  co Treaty, 1967), and the Treaty on the
  Prohibition of the Emplacement of
  Nuclear Weapons and Other Wea-
 pons of Mass Destruction on the Sea-
  Bed and the Ocean Floor and in the Sub-
  soil (Seabed Treaty, 1971).
- Measures to control the export of
  missiles and missile related technology
  such as the Missile Technology Con-
  trol Regime (MTCR, 1987) and the
  International Code of Conduct
  against Ballistic Missile Proliferation
  (ICOC, 2002).
- Measures to implement the prior
  notification of missile launches such as the
  Agreement on Measures to Reduce
  the Risk of Outbreak of Nuclear War
  between the United States of America
  and the United Soviet Socialist Repub-
  lic (1971) and the Lahore Declaration
Although these treaties and agreements are not tailor-made for Northeast Asia, there are merits in making reference to some of them when thinking about missile control in the region. First, the participation of major actors in the region in some of the multilateral treaties and agreements would have positive effects on regional missile control, because such an expansion of membership means the further penetration into and consolidation in the region of a norm to regulate missiles and missile-related activities. The recent wish of China to join the MTCR is a positive step in that direction. Secondly, some of the treaties and agreements could become models for regional missile control arrangements in Northeast Asia. For example, a bilateral or regional agreement to implement the prior notification of missile launches could be adopted in Northeast Asia, considering the magnitude of psychological shocks in the neighboring countries as well as in the United States caused by the North Korean flight tests of a No Dong in 1993 and a Taepo Dong-1 in 1998.

Nevertheless, past and existing treaties and agreements on missile control are not necessarily effective to address missile concerns in Northeast Asia. To illustrate this point, I examine the effectiveness of the MTCR, which is the mainstay of the global missile export control regime. Then, I take up the INF Treaty as an example of a bilateral treaty that bans all the missiles in a certain category so as to investigate the effectiveness of a hypothetical regionalized INF Treaty, illuminating its limits in the Northeast Asian context.

The MTCR

The MTCR was established by the United States and six allies in April 1987 to prevent the proliferation of missiles and related missile technology. Initially, the MTCR guidelines banned the transfer of missiles with a payload over 500 kg and a range over 300 km, but today it prohibits the transfer of all missiles that could deliver weapons of mass destruction regardless of their payload and range. As a result of this supplier's export control measure, some missile programs have been stopped or delayed.

In Northeast Asia, Japan, Russia, South Korea, and the United States are members of the regime while China and North Korea have remained outside. The ballistic missile export practices of the latter two have accordingly been a matter of concern in the international community, especially in the United States. (China declared in 1992 that it would act in line with the guidelines and parameters of the MTCR in its export of missiles and related technology and is currently negotiating conditions of its participation in the MTCR).

In addition to the problem of membership, the effectiveness of the MTCR has been limited for several other reasons. First, the MTCR is not a legally binding agreement and there are no specific verification or enforcement mechanisms. Put differently, the implementation of its guidelines differs from one country to another. Thus, the MTCR cannot prevent that the United States transfer to Japan, for example, Tomahawk cruise missiles with a range over 1,000 km. Second, various shorter-range missiles are not subject regulated by the regime, leaving room for missile arms buildup by the major actors in the region.

In addition, the MTCR has a loophole that could allow missile proliferation through missile defense cooperation. The Standard Missile-3 (SM-3) interceptor that Japan is planning to purchase from the United States, for example, exceeds the range and payload limits mentioned above. Moreover, the MTCR does not address the issue of existing missile armaments, ignoring the asymmetry between “haves” and “have-nots.” Lastly, the MTCR cannot deal with political problems such as regional conflicts that create a demand for missiles. This point is especially relevant to Northeast Asia, where the divided Korea and China-Taiwan relations have been the major sources of tensions and arms races.

A Regionalized INF Treaty

The INF Treaty was signed by the United States and the former Soviet Union in December 1987 and entered into force in June 1988. Under the treaty, the two countries agreed to abolish all land-based ballistic and cruise missiles with a range between 500 and 5,500 km. The agreement was implemented within three years. The INF Treaty is a remarkable achievement in the history of missile control, because it, for the first time, bans all missiles of a certain category between the two States Parties. In Northeast Asia, there exists no such arrangements, and China and North Korea both possess and deploy land-based medium-range ballistic missiles. Thus, if major actors, including those two countries, concluded a regional agreement similar to the INF Treaty, these missiles would be completely abolished in the region.

Such a regionalized INF Treaty, however, has several drawbacks. First, it would not regulate various short-range ballistic missiles and other missiles possessed by Japan, North Korea, and South Korea. On the Korean Peninsula, even a large number of artillery and South Koreans, because they could be used to attack ground targets in densely populated areas and industrial centers. Besides, the treaty would not affect China’s deployments of short-range ballistic missiles against Taiwan. Secondly, China deploys a large number of land-based medium-range ballistic missiles that could reach Japan and U.S. forces in the country. It is unlikely to agree to renounce them, because Beijing regards them as the core of its deterrent against U.S. intervention in a future China-Taiwan conflict. It is not difficult to imagine that Beijing would see the regionalized INF Treaty as unfair and unacceptable, because it would not regulate, for example, numerous sea-launched cruise missiles (SLCMs) deployed by Russia and the United States in the Asian-Pacific area, thus altering regional strategic balance to the disadvantage of China. For these reasons, China and North Korea are very unlikely to agree to such negotiations.

Obstacles to Missile Control in Northeast Asia

The previous section does not intend to argue that past and existing treaties
and agreements on missile control were or are ineffective. They are, however, not necessarily attuned to deal with missile concerns in Northeast Asia. Therefore, one must identify factors that hinder missile control in that region and find ways to overcome such obstacles in designing effective regional missile control arrangements. This section thus focuses on four obstacles that complicate the promotion of missile control efforts in Northeast Asia and explores ways to surmount them. They include (1) the diversity of missile capabilities of major actors in the region, (2) the limitation of missile defense, (3) dual-use technologies, and (4) threat reduction, confidence building and verification.

The Diversity of Missile Capabilities
At present, China, Japan, North Korea, Russia, South Korea, Taiwan, and the United States deploy a variety of missiles in Northeast Asia (see Appendix). The United States supplies its Forces in Japan and Korea with a variety of missiles. Its Seventh Fleet is equipped with SLCMs and other guided missiles. On the Korean Peninsula, North Korea deploys short- and medium-range ballistic missiles that could reach most of South Korea as well as other guided missiles, and South Korea in turn is armed with short-range ballistic and other guided missiles as deterrent against North Korea. Japan Self-Defense Forces (JDF) are equipped with various guided missiles including anti-ship cruise missiles. China deploys short-, medium-, long-range and sea-launched ballistic missiles (SLBMs) as well as air-launched cruise missiles (ALCMs) and other guided missiles. On the other side of the Taiwan Strait, Taiwan has guided missiles including short-range ballistic missiles in its arsenal in defense against China. Finally, Russia fields short-range ballistic and other guided missiles in the Far East. Its Pacific Fleet is equipped with SLCMs and other guided missiles.

As this brief description illustrates, missile capabilities of the major actors in Northeast Asia vary considerably because of differences in their geographical and strategic positions in the region, their overall military capabilities, their defense and security policies, and so on. This diversity of missile capabilities makes it difficult to design regional missile control arrangements that could be acceptable to all states involved. Under these circumstances, for example, some of the major actors in Northeast Asia would not agree on the limitation of missiles in a certain category lacking other arms control and disarmament measures, for fear that strategic balance might be changed and their national security undermined. North Korea would likely not agree to a ban on medium-range ballistic missiles, which Japan and South Korea under the U.S. nuclear umbrella do not possess but North Korea has already deployed. Likewise, China would rebuff the limitation or reduction of land-based medium-range ballistic missiles, which Russia and the United States have already renounced from their arsenals under the INF Treaty. On the other hand, Russia and the United States would not agree to limit the deployment of SLCMs in Northeast Asia because such a limitation could place restrictions on their military strategies and operations. (For example, the Aegis cruiser Cowpens assigned to the Seventh Fleet in Yokosuka, Japan, fired Tomahawk cruise missiles against targets in Iraq in support of Operation Iraqi Freedom).12

It is, however, not impossible to overcome such a conundrum. The most pragmatic way would be to combine several missile control arrangements and other complementary measures so as to maintain strategic balance in the region and to balance the obligations of each State Party. Their obligations would not have to be the same but should be well balanced so as to improve the security of each one of them and avoid any feelings of discrimination. For instance, Japan and South Korea could refrain from developing, possessing, and deploying missiles with range over 300 km with North Korea dismantling such missiles in return. Security assurances by the United States, backed up by other states, may be an additional incentive for Pyongyang to agree to such a missile disarmament proposal as well as to the dismantlement of its long-range ballistic missile program and inventories. Besides, Japan, South Korea, and the United States could offer North Korea economic and technical aid as compensation for its cooperation on regional missile control. No doubt, it would not be easy to identify a set of missile control arrangements that is potentially acceptable to some or all of the major actors in Northeast Asia, but this could be attained through creative thinking and insightful examination of their respective interests and security concerns.

Limitation of Missile Defense
As mentioned before, U.S. missile defense deployments could become another obstacle to advancing missile control initiatives and agreements in Northeast Asia. Missile defense deployments in the region thus should be limited. In reality, however, the United States is heading toward the implementation of its deployment plan with the support of its allies. The Bush Administration’s decision of December 2002 to deploy rudimental missile defense capabilities received both positive and negative reactions around the world.13 In Northeast Asia, Japan, South Korea, and Taiwan supported the U.S. decision. Japan even decided to buy U.S. missile defense systems including SM-3 and Patriot Advanced Capability-3 (PAC-3) systems, while continuing a joint research program on missile defense technology with the United States that started in 1999.14 Taiwan also has expressed its interest in acquiring PAC-3 systems.15 On the other hand, China and North Korea, against which U.S. missile defenses are presumably going to be deployed, oppose U.S. missile defense plans and missile defense cooperation with its regional allies.16 Russia is also critical to U.S. plans.17 These negative reactions, however, had virtually no effects on Washington. The Bush administration went ahead with the initial deployment of missile defense systems in U.S. territory and other parts of the world in summer 2004.18 In Northeast Asia, the U.S. is planning to field Aegis and PAC-3 systems in 2004 and 2005.19 In addition, the Japanese Government aims at
completing initial missile defense deployment by 2007.20

It should, however, be emphasized that Washington and Tokyo could modify their current deployment plans before their completion. So far, the reliability of U.S. missile defense systems is highly questionable and criticism of the government’s missile defense policy from Congress and experts in the United States is mounting.21 Democrats, for example, claim to support the general notion of missile defense but charge the Bush administration is hastily deploying a system that has not been properly tested and is misallocating money and time dealing with a threat that is less urgent than a terrorist attack using means other than a ballistic missile.22 Therefore, despite the re-election of President Bush in 2004, it is not conceivable that the current Bush plan on missile defense deployments could be scaled down or cancelled in the near future. This then could seriously undermine the rationale of the Japanese policy on missile defense deployment and Japan-U.S. cooperation on missile defense.

Having said that, it may be naive to expect that the United States would initiate negotiations on missile defense limitation. Today, no other states have intentions and capabilities to compete with the United States in the missile defense field. Thus, it is reasonable to expect that the United States would find no merit in concluding an international agreement on the limitation of missile defense. This, however, does not mean that other states could not take an initiative to start talks on missile defense limitation with the United States. If they hope to promote the limitation of both “offensive” and “defensive” missiles simultaneously, they could use their existing and/or potential “offensive” missile capabilities as bargaining cards.

In doing so, then, they must come up with ways to link the limitation of missile defense to that of “offensive” missiles. For example, Beijing could propose a ban on multiple warhead ballistic missiles, which it is presumably developing, to start negotiations on missile defense limitation. Such a proposal from Beijing could be very attractive for Americans who hope to avoid an unnecessary arms race for two reasons. First, China’s multiple warhead ballistic missiles could neutralize the effect of U.S. missile defenses and would squander huge sums of money spend on missile defense development and deployment. Secondly, the United States already has overwhelming deterrent forces against China. Such an arrangement should therefore be considered as a part of a regional missile control scheme in Northeast Asia.

Dual-Use Technologies
Another obstacle to promoting missile control in Northeast Asia is the issue of dual-use technologies. It has been pointed out in relation to ballistic missile proliferation that the bulk of space launch vehicle (SLV) technologies are interchangeable with those for ballistic missiles. Therefore, it is difficult, if not impossible, to separate the development of ballistic missiles and that of SLVs completely and permanently.23 Accordingly, such dual-use technologies render the non-proliferation of ballistic missiles troublesome.

After the end of the Cold War, the proliferation of ballistic missiles came to be recognized as a major threat to international security. And the international community has made strenuous efforts to stop ballistic missile proliferation mainly through unilateral and multilateral export control of missiles and missile related-technologies. The MTCA has certainly played a central role in such non-proliferation endeavors. The effectiveness of the supply-side approach to the non-proliferation of ballistic missiles, however, has been limited by the nature of technologies used to manufacture ballistic missiles. In Northeast Asia, according to an expert analysis, Japan, which has an advanced space program, is technically capable to develop ICBMs independently, although it has refrained from acquiring them in line with the policy of Senshin Bōei (exclusively defensive defense).24 The possibility of further ballistic missile proliferation thus cannot be eliminated as long as a state seeks its own SLV launch capabilities. This is why the ICOC, which is expected to be a political and eventually legal foundation for the norm on ballistic missile non-proliferation, clearly states that “Space Launch Vehicle programmes should not be used to conceal ballistic missile programmes.”25 Nevertheless, each sovereign state has the right to pursue the peaceful use of outer space, and accordingly there are no legal justifications to deny a state the development of its own SLV launch capabilities. Apparently acknowledging that, North Korea alleged that the purpose of launching the Taepo Dong-1 in 1998 was to place a civilian satellite in orbit.26 Even if this was the case, North Korea as ballistic missile program would have benefited from such flight-testing. On the other side of the Korean Peninsula, South Korea is also developing a space launch vehicle to place a small satellite in low earth orbit in 2005.27 In January 2002, Seoul signed a Memorandum of Understanding with Washington under which South Korea agreed not to develop, possess, and deploy ballistic missiles with a range over 300 km without the consent of the U.S.28 But South Korea could acquire a potential to develop long-range ballistic missiles through its SLV launch development efforts. Therefore, it seems essential that measures to increase the transparency of national space programs of each state be incorporated as a part of regional missile control arrangements in order to close this loophole.

Then, as a flip side of the same coin, the promotion of regional cooperation in peaceful uses of outer space could induce a state to voluntarily give up its own development of an independent SLV launch capability. In the course of U.S.-North Korea bilateral missile talks at the end of the Clinton administration, Pyongyang suggested that North Korea would freeze development, production, deployment, and testing of missiles of over 500 km range in exchange for free launches of a few civilian satellites every year.29 A similar arrangement, bilateral or multilateral, deserves serious consideration by the major actors in Northeast Asia as a possible solution to stop North Korea’s long-range ballistic missile development.
Another more institutional option is to establish a regional consortium on space launches, under which states currently possessing launch technology such as China, Japan, Russia, and the United States agree to launch satellites at favorable rates for states such as North and South Korea that in exchange agree to forego SLV development. These measures would help maintain tight control over launch technologies and ensure the peaceful use of outer space at the same time.

Threat Reduction, Confidence Building, and Verification
Despite the above-mentioned obstacles, it is possible for major actors in Northeast Asia to find a common interest in regulating missile and missile-related activities cooperatively. Nevertheless, mutual distrust is so strong between some of them that they could shy away from committing themselves to any agreements on regional missile control, even if they were convinced that such an agreement, if implemented fully, would improve the security of their own. Some of them may agree to start negotiations on regional missile control, but decide not to commit themselves to any agreements in view of the risk of being deceived by the others. The others may refuse even to embark on regional missile control talks. Generally speaking, it is only a necessary, not a sufficient condition, for successfully concluding an agreement on arms control and disarmament that each state concerned respectively finds its own self-interest met in doing so.

This, however, does not necessarily mean that any such attempts are destined to be fruitless. An initiative by a major actor or a group of actors in the region to start missile control talks might stimulate the others’ interest in the issue and, consequently, all of them might come to commit to such talks. This then might facilitate the mutual understanding of each other’s threat perception and security concerns, alleviating mutual distrust between them. In this improved regional political climate, the chance to attain agreements on regional missile control would be increased. Moreover, if an agreement were reached and were implemented successfully, they would be encouraged further to pursue additional agreements. I emphasize the importance of threat reduction and confidence building measures in this context, because they could help bring about such a hypothetical scenario. For example, security assurances given to Japan, North Korea and South Korea by China, Russia, and the United States would serve as a threat reduction measure, softening Pyongyang’s attitude on its long-range ballistic missile development program. Confidence building measures such as the notification of missile flight-tests and the exchange of data on missile armaments would also be helpful to mollify tension and mutual distrust between major actors in Northeast Asia.

Moreover, effective verification systems should be installed as an element of regional missile control arrangements. In general, verification is a key issue in negotiating an arms control and disarmament agreement and the implementation of such an agreement, in turn, depends largely on the effectiveness and credibility of agreed verification mechanisms. Therefore, if major actors in Northeast Asia came to acknowledge the verification systems included in regional missile control arrangements as effective and credible ones, they would be encouraged to reach agreements on missile control measures. And such verification systems would serve to assure the implementation of agreed measures, moderating their concern for incompliance. Achieving an agreement on verification, however, would not be simple and easy. “Although verification is often considered primarily a technical problem,” Gallagher claims, “politics become important whenever suspicious states and contentious domestic groups have conflicting preferences about the amount and type of verification that would make the benefit of arms control outweigh the cost and risks.” Thus, “verification arrangements must be developed through bargaining, coercion, persuasion, coalition-building, and other political processes.” Nevertheless, it is also true that a variety of technical and non-technical means of verification exist to monitor missile control. Furthermore, major actors in Northeast Asia collectively have human, financial and technical resources to implement such means of verification. What is really needed today is detailed examination of verification measures adoptable for missile control in the region and, more importantly, the political will of major regional actors to seriously pursue regional cooperation for missile control as a viable alternative to deterrence and missile defense.

A Model Road Map for Building A Regional Missile Limitation Regime
On the basis of the foregoing observations and analysis, I propose a model road map for the formation of a regional missile limitation regime in Northeast Asia. The purpose of the regime is to comprehensively regulate missile armaments and missile-related activities in the region. China, Japan, North Korea, Russia, South Korea and the United States are expected to participate in the regime. The regime would consist of multilateral agreements on missile control, peaceful uses of outer space, threat reduction and confidence building measures, and verification systems. Each one of them could be negotiated separately or with others. The proposed plan then aims at creating a “non-offensive” missile posture zone covering the territories of Japan, North Korea and South Korea. Within the zone, each of the three countries would be prohibited from having military capabilities to attack ground targets in the other’s territories by missiles of any kind directly from its own territories. This is designed to be a regionalized solution to the North Korean ballistic missile problem. In order to achieve this goal, the process of setting up the regime would be gradual and incremental in view of the current political and military conditions in Northeast Asia. More specifically, the regime would be established step-by-step through three negotiation stages (see Table 1).

Stage 1 involves five measures to lay the foundation of a “non-offen-
sive” missile posture zone in Northeast Asia. First, Japan, North Korea, and South Korea agree to prohibit the development, acquisition, transfer, and deployment of any missiles with a range over 300 km. This measure, in effect, obliges North Korea to renounce its long-range ballistic missile program and inventories and to abolish short- and medium-range ballistic missiles. North Korea, then, would be forbidden to transfer such missiles to other states. This arrangement thus would supplement the MTCR, in which North Korea has not participated, and contribute to the non-proliferation of ballistic missiles. On the other hand, it would prevent the acquisition of missiles with a range over 300 km by Japan and South Korea, to stop the potential loophole of the MTCR, namely, the provision of missiles from the United States to its allies such as the transfer of Tomahawk cruise missiles from the United States to Japan. Moreover, Japan, North Korea and South Korea should refrain from acquiring missiles with a range between 100 km and 300 km, because such a missile arms build-up contradicts the objective of creating a “non-offensive” missiles posture zone.

Secondly, Japan, North Korea, and South Korea agree to prohibit the development, acquisition, and deployment of missile defense systems. If this agreement were attained, Japan would have to renounce deployed missile defense systems such as Aegis and PAC-3. The agreement would then forbid Japan to participate in the joint missile defense development program with the United States. Seemingly Japan is overburdened, but, if in fact North Korea renounced its medium-range ballistic missiles, a major justification for Japan to deploy missile defense systems would be lost at large. Besides, in any case, it is highly doubtful that those Japanese missile defense systems would become an effective shield against North Korea’s No Dong missiles let alone a large number of China’s medium-range ballistic missiles, against which Japan may hope to develop its missile defense capabilities in the long run. These two measures thus should be linked together so as to mutually facilitate reaching such agreements.

However, there is a major hindrance to such agreements. Japan, North Korea, and South Korea may find it difficult to agree on such missile control measures for fear of undermining their own security by doing so. Therefore, along with those two measures, China, Russia, and the United States should, individually or multilaterally, provide security assurances to Japan, North Korea, and South Korea to alleviate their security concerns. Such security assurances could conduce to reducing domestic and international pressure on the governments of the three countries to develop their own deterrent and/or missile defense. In fact, without a security assurance, at least, from the United States, Pyongyang may not agree to ballistic missile disarmament. On the other hand, Washington is reportedly contemplating to demand from North Korea the renunciation of its long-range ballistic missile program and inventories as well as nuclear weapon program and inventories in return for providing a security assurance.34 Thus, it is not totally unrealistic that these three measures are negotiated together as the initial goal of the proposed road map in the framework of the ongoing Six-Party Talks or at another forum.

In addition, the two other measures, which could help facilitate and implement agreements on the aforementioned three measures, should be pursued at Stage 1. As the forth measure, the six states agree to establish a regional organization for missile technology control, the prior notice of missile flight test, the exchange of data on missile armaments, and inspection and verification. This new entity would be funded, manned, and managed multilaterally and play a central role in confidence building and verification under the proposed regime. For example, this organization would monitor and verify the implementation of ballistic missile disarmament in North Korea at Stage 1. To enhance its surveillance capabilities, the six states could explore the establishment of a multilateral satellite agency that would help monitor the implementation of agreed missile control measures.35

| Stage 1 | – Japan, North Korea and South Korea agree to prohibit the development, acquisition, transfer and deployment of any missiles with a range over 300 km. |
| Stage 2 | – Japan, North Korea and South Korea agree to prohibit the development, acquisition, transfer and deployment of any missiles with a range over 180 km. |
| Stage 3 | – Japan, North Korea and South Korea agree to prohibit the development, acquisition, transfer and deployment of any surface-to-surface and air-to-surface missiles that are designed to attack targets on the ground. |

Table 1: A Model Road Map for Building a Regional Missile Limitation Regime in Northeast Asia
Finally, the six states declare principles on regional cooperation in the field of peaceful uses of outer space including the provision of satellite launch services. Thereafter, they would set up a standing committee to discuss concrete measures such as the establishment of a regional consortium on space launches in order to materialize such principles. This measure would guarantee North and South Korea the peaceful use of outer space, while avoiding the risk of ballistic missile proliferation on the Korean Peninsula. It, for example, could provide North Korea a face-saving justification to renounce its long-range ballistic missile program, making it politically easier for Pyongyang to agree to the first measure. On the other hand, South Korea could reconsider its rudimentary independent SLV launch program.

Throughout Stage 2 and 3, the creation of a “non-offensive” missile posture zone would be completed in the sub-region covering Japan and the Korean Peninsula. At Stage 2, Japan, North Korea and South Korea agree to prohibit the development, acquisition, transfer, and deployment of any missiles with a range over 180 km. Under the agreement, South Korea would be obliged to renounce its short-range ballistic missiles and some surface-to-surface missiles. Finally, at Stage 3, Japan, North Korea, and South Korea agree to prohibit the development, acquisition, transfer, and deployment of any surface-to-surface and air-to-surface missiles that are designed to attack ground targets. This agreement is in concert with Japan’s Senshu Boei policy and, in a sense, regionalizes it in the missile field. If implemented, this agreement would help reduce tension on the Korean Peninsula, even though both North and South Korea would still have numerous short-range missiles and artillery and they would have sufficient deterrent effects on each other.

Stage 2 and 3 also include missile control measures that are inherently in the nature of global rather than regional arms control, but would help enhance the stability and security of Northeast Asia. At Stage 2, China, Russia, and the United States should start negotiations on the limitation of development, transfer and deployment of missile defense, to conclude a new missile defense limitation treaty that replaces the abrogated Anti-Ballistic Missile Treaty. In doing so, Beijing and Moscow could offer a ban on multiple warhead ballistic missiles to bring Washington into such missile limitation talks. This linkage tactics could eventually pave the way for a grand bargain between the agreement to limit missile defense deployments by the United States and the agreement not to take countermeasures to break the U.S. missile defense shield by China and Russia. Such trilateral negotiations then would help address the issues of the Taiwan-U.S. cooperation on missile defense as well as China’s deployment of short-range ballistic missiles against Taiwan in a global arms control context. Furthermore, by initiating such talks, China, Russia, and the United States could demonstrate their determination to remove a potential cause of a new arms race that would have serious negative impacts on Northeast Asia. And this could encourage Japan, North Korea, and South Korea to pursue the establishment of a “non-offensive” missile posture zone in the region.

At Stage 3, China, Russia, and the United States should start negotiations on the limitation on the deployment of land-based short- and medium-range ballistic missiles as well as SLCMs in Northeast Asia. Expectedly, it would not be easy for them to reach an agreement on this matter mainly for two reasons. First, Beijing regards its short- and medium-range ballistic missile forces as a core of its deterrent against Taiwan as well as U.S. Forces in the region. Secondly, as mentioned before, Moscow and Washington would resist such an arrangement, which would pose constraints on their military strategies and operations. If an agreement were reached, however, it could contribute to alleviating tension on the Korean Peninsula and across the Taiwan Strait. Moreover, such an agreement could facilitate the pursuit of the “non-offensive” missile posture zone by reducing the missile threat to Japan, North Korea and South Korea. Such a development is obviously in the interest of China, Russia, and the United States as well. Moreover, such talks between China, Russia, and the United States would provide another venue to find a solution to the problem of China’s missile deployment against Taiwan in the context of regional missile control apart from the politically touchy issue of the China-Taiwan relations.

Finally, a comment should be made with regard to the implementation of this model road map. It focuses deliberately on presenting an idea to promote regional missile control processes in North Asia, but this does not mean other issues relevant to the maintenance of stability and security of Northeast Asia are negligible. On the contrary, the proposed regional missile limitation regime should be regarded as only an element of a new regional security framework to be constructed in the region. Therefore, it should be encouraged, if appropriate, that major actors in the region negotiate missile control arrangements flexibly and creatively in relation to the pursuit of, for example, other regional arms control objectives. A security assurance to Japan, North Korea, and South Korea by China, Russia, and the United States at Stage 1 could take the form of a pledge not to use nuclear weapons against non-nuclear weapon states, which is considered as an essential element in various past and present proposals for a Northeast Asia nuclear weapon free zone. Then, the goal of establishing “non-offensive” missile posture zone in Japan and on the Korean Peninsula could be pursued in the context of general disarmament in the region leading to, for example, the creation of an “exclusively defensive defense” or Senshu Boei zone, which is designed to multilateralize the concept of Senshu Boei, in the same geographic area. Such linkages, in turn, may facilitate the political and diplomatic processes to establish these regional arms control regimes.

Conclusion

At present, the proposed road map to establish a regional missile limitation regime may be viewed a conceptually attractive but politically distant idea. Certainly, the current...
political environment in the region is by no means apt for China, Japan, North Korea, Russia, South Korea and the United States to agree to any missile control measures. Despite the end of the Cold War, elements of tension, competition, and fundamental strategic disagreement are embedded and mutual distrust is strong in many of the bilateral relations between them. Especially, both the division of the Korean Peninsula and China-Taiwan relations remain formidable political problems, hindering regional cooperation in political and security areas and being sources of serious military confrontations. In this regional political environment, the missile capabilities of the major regional actors seem to constitute a threat to the stability and security of Northeast Asia and, in fact, their missile activities have occasionally destabilized the region. Moreover, as discussed above, U.S. missile defense deployments and its missile defense cooperation with its allies could increase uncertainty and instability in Northeast Asia and complicate or disturb the promotion of missile control in the region further. Such a development, if materialized, would be contrary to their self-interests and undermine their security.

Therefore, if major actors in Northeast Asia began talks on regional missile control, they should do so before the United States and its allies proceed on their missile defense deployments to the point of no return. Although it is hard to predict when this time would come, then, not much time would be left for them. This means that they may need to start such talks without waiting for the creation of the regional political climate favorable for pursuing regional missile control goals. Nevertheless, a unilateral initiative for regional missile control by one or more of them may help ameliorate the political climate in Northeast Asia, leading to the opening of serious negotiations on the issue. The continuation of such negotiations then may contribute to the further improvement of the regional political environment, increasing the chance of achieving agreements on concrete missile control measures. It is understandable that some major actors in Northeast Asia find risks involved in taking such an initiative as well as participating in regional missile control talks. In view of the aforementioned potential negative impacts of U.S. missile defense plans on the prospect of missile control in Northeast Asia, however, risks involved in inaction arguably outweigh those involved in exploring the possibility to promote regional cooperation for missile control in the region today.

It, however, should be noted that considerable groundwork would be needed to open regional missile control talks. Prior to official negotiations on specific arrangements, the states concerned may need to engage in intensive informal preliminary talks to get a deeper understanding of each other's threat perception and security needs. Only through such talks may they be able to find a mutual interest in regional missile control. They then need to come up with a set of missile control arrangements that is potentially acceptable to them. To do so, however, would not be easy, as mentioned above. Moreover, such a new design for regional missile control may not materialize immediately. When the time is ripe, however, such preparatory work may provide useful ideas on regional missile control for official and unofficial discussions, which thereafter might be negotiated and implemented in some way. Until such a time comes, the proposed model road map could serve as a starting point for policy discussions on missile control in Northeast Asia.

In actual political and diplomatic processes to attain the proposed regional missile control arrangements, then, major actors in Northeast Asia would have to tackle difficult tasks. State and non-state actors concerned have to elaborate concrete political and diplomatic strategies to launch, facilitate, and manage regime formation processes. To develop such strategies would require closer investigation of the domestic political system, policy-making mechanism, and structure of domestic interests of each major actor in the region. Moreover, State actors involved in actual negotiations would have to build firm domestic support for such an ambitious scheme, to engage in painstaking and complex diplomacy and to find ways to coordinate actions of multiple state actors with diverse strategic interests and domestic constraints. In doing so, they need to be patient to avoid being allured to recourse to such unilateral measures as deterrence and missile defense, even when any agreements on regional missile control seem infeasible in the near term. In spite of – indeed, because of – these challenges ahead, it seems imperative to start as soon as possible well-informed serious discussions on regional missile control not only at the governmental level but also in the civil society in Northeast Asia.

5 Paul Kerr and Wade Boese, China Seeks to Join Nuclear, Missile Control Groups, Arms Control Today, March 2004, pp. 37, 39.
8 Reportedly, the purchase of Tomahawk cruise missiles from the United States seems to have been considered by the Japan Defense Agency in view of the North Korean ballistic missile threat to Japan. See: Mainichi Shimbun, March 28, 2003; Asahi Shimbun, July 26, 2004.
Acronyms:

- ASCM: anti-ship cruise missile
- ICBM: intercontinental ballistic missile (>5,500 km)
- ICOC: International Code of Conduct against Ballistic Missile Proliferation
- INF: intermediate-range nuclear forces
- IRBM: intermediate-range ballistic missile (3,000–5,500 km)
- MRBM: medium-range ballistic missile (1,000–3,000 km)
- MTCR: Missile Technology Control Regime
- PAC-3: Patriot Advanced Capability 3
- SLCM: submarine-launched cruise missile
- SLV: space launch vehicle
- SM-3: Standard Missile 3
- SUGW: surface-to-underwater guided weapon
- USGW: underwater to surface guided weapon
Appendix: Missiles in Northeast Asia

### China

<table>
<thead>
<tr>
<th>System</th>
<th>Status</th>
<th>Service branch</th>
<th>Range/payload</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Range 50–100 km</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HY-1 (ship to ship)</td>
<td>Oper.</td>
<td>Navy</td>
<td>80 km</td>
</tr>
<tr>
<td>SY-1 (ship to ship)</td>
<td>Oper.</td>
<td>Navy</td>
<td>80 km</td>
</tr>
<tr>
<td>HY-2 (surface to ship)</td>
<td>Oper.</td>
<td>Navy</td>
<td>95–100 km</td>
</tr>
<tr>
<td>YJ-6 (ALCM, air to ship)</td>
<td>Oper.</td>
<td>Navy/Air Force</td>
<td>90–100 km</td>
</tr>
<tr>
<td>YJ-81K (air to ship)</td>
<td>Oper.</td>
<td>Air Force</td>
<td>50 km</td>
</tr>
<tr>
<td>AA-12 (air to air)</td>
<td>Oper.</td>
<td>Air Force</td>
<td>50 km</td>
</tr>
<tr>
<td><strong>Range 100–500 km</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HY-4 (surface to ship)</td>
<td>Oper.</td>
<td>Navy</td>
<td>150 km</td>
</tr>
<tr>
<td>SS-N-22 Sunburn (ship to ship)</td>
<td>Oper.</td>
<td>Navy</td>
<td>250 km</td>
</tr>
<tr>
<td>YJ8-2 (ALCM, air to ship)</td>
<td>Oper.</td>
<td>Navy</td>
<td>120 km</td>
</tr>
<tr>
<td>YJ-61 (ALCM, air to ship)</td>
<td>Oper.</td>
<td>Navy/Air Force</td>
<td>185–200 km</td>
</tr>
<tr>
<td>AA-10 (air to air)</td>
<td>Oper.</td>
<td>Air Force</td>
<td>70–170 km</td>
</tr>
<tr>
<td>M-7 (SRBM)</td>
<td>Oper.</td>
<td>*1</td>
<td>150 km/190 kg</td>
</tr>
<tr>
<td>DF-11 (SRBM)</td>
<td>Oper.</td>
<td>*1</td>
<td>300 km/400 kg</td>
</tr>
<tr>
<td><strong>Range 500–1,000 km</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DF-15 (SRBM)</td>
<td>Oper.</td>
<td>*1</td>
<td>600 km/500 kg</td>
</tr>
<tr>
<td><strong>Range 1,000–5,000 km</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Xia/JL-1 (SLBM)</td>
<td>Oper.</td>
<td>*1</td>
<td>1,000 km/600 kg</td>
</tr>
<tr>
<td>DF-21 (MRBM)</td>
<td>Oper.</td>
<td>*1</td>
<td>2,500 km/600 kg</td>
</tr>
<tr>
<td>DF-21A (MRBM)</td>
<td>Oper.</td>
<td>*1</td>
<td>1,800 km/2,000 kg</td>
</tr>
<tr>
<td>DF-3A (MRBM)</td>
<td>Oper.</td>
<td>*1</td>
<td>2,800 km/2,150 kg</td>
</tr>
<tr>
<td>DF-4 (IRBM)</td>
<td>Oper.</td>
<td>*1</td>
<td>5,500 km/2,200 kg</td>
</tr>
<tr>
<td><strong>Range &gt;5,500 km</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DF-5A (ICBM)</td>
<td>Oper.</td>
<td>*1</td>
<td>13,000 km/3,200 kg</td>
</tr>
<tr>
<td>DF-31 (ICBM)</td>
<td>Test/Dev.</td>
<td></td>
<td>8,000 km/700 kg</td>
</tr>
<tr>
<td>JL-2 (SLBM)</td>
<td>Test/Dev.</td>
<td></td>
<td>8,000 km/700 kg</td>
</tr>
</tbody>
</table>

*1 Second Artillery Corps

### Russia

<table>
<thead>
<tr>
<th>System</th>
<th>Status</th>
<th>Service branch</th>
<th>Range/payload</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Range 50–100 km</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SA-4A/B (surface to air)</td>
<td>Oper.</td>
<td>Army (a)</td>
<td>50 km, 55 km</td>
</tr>
<tr>
<td>SA-12A, B (surface to air)</td>
<td>Oper.</td>
<td>Army (a)</td>
<td>6–75 km, 13–100 km</td>
</tr>
<tr>
<td>SA-N-6 (ship to air)</td>
<td>Oper.</td>
<td>Navy (b)</td>
<td>45–90 km</td>
</tr>
<tr>
<td>SS-N-2C (ship to ship)</td>
<td>Oper.</td>
<td>Navy (b)</td>
<td>80 km</td>
</tr>
<tr>
<td>SS-N-14 (SUGW)</td>
<td>Oper.</td>
<td>Navy (b)</td>
<td>55 km</td>
</tr>
<tr>
<td><strong>Range 100–500 km</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SS-21 (SRBM, surface to surface)</td>
<td>Oper.</td>
<td>Army (a)</td>
<td>120 km</td>
</tr>
<tr>
<td>SS-N-22 (ship to ship)</td>
<td>Oper.</td>
<td>Navy (b)</td>
<td>250 km</td>
</tr>
<tr>
<td>AS-4 (air to surface)</td>
<td>Oper.</td>
<td>Army (b)</td>
<td>60–400 km *1</td>
</tr>
<tr>
<td>AS-11 (air to surface)</td>
<td>Oper.</td>
<td>Air Force (a)</td>
<td>120 km</td>
</tr>
<tr>
<td>AS-17 (air to surface)</td>
<td>Oper.</td>
<td>Air Force (a)</td>
<td>50–200 km</td>
</tr>
<tr>
<td>AS-18 (air to surface)</td>
<td>Oper.</td>
<td>Air Force (a)</td>
<td>115 km</td>
</tr>
<tr>
<td>AA-10 (air to air)</td>
<td>Oper.</td>
<td>Air Force (a)</td>
<td>70–130 km</td>
</tr>
<tr>
<td>SS-N-19 (USGW/ship to ship)</td>
<td>Oper.</td>
<td>Navy (b)</td>
<td>625 km *1</td>
</tr>
<tr>
<td><strong>Range 1,000–1,500 km</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SS-N-21 (SLCM)</td>
<td>Oper.</td>
<td>Navy (b)</td>
<td>3,000 km/150 kg</td>
</tr>
<tr>
<td><strong>Range &gt;1,500 km</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SS-N-18 (SLBM)</td>
<td>Oper.</td>
<td>Navy (b)</td>
<td>5,600 km/1,650 kg</td>
</tr>
</tbody>
</table>

(a) Far Eastern Military Command; (b) The Pacific Fleet; *1 Nuclear/conventional; *2 Nuclear

### Taiwan

<table>
<thead>
<tr>
<th>System</th>
<th>Status</th>
<th>Service branch</th>
<th>Range/payload</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Range 50–100 km</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hsiung Feng 2 (ship to ship)</td>
<td>Oper.</td>
<td>Navy</td>
<td>80 km</td>
</tr>
<tr>
<td>AGN-84 Harpoon (ship to ship)</td>
<td>Oper.</td>
<td>Navy</td>
<td>90 km</td>
</tr>
<tr>
<td><strong>Range 100–500 km</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nike Hercules (surface to air)</td>
<td>Oper.</td>
<td>Army</td>
<td>&gt;135 km</td>
</tr>
<tr>
<td>Tien Kung (Sky Bow)-1</td>
<td>Oper.</td>
<td>Army</td>
<td>100 km</td>
</tr>
<tr>
<td>Tien Kung-2 (surface to air)</td>
<td>Oper.</td>
<td>Army</td>
<td>200 km</td>
</tr>
<tr>
<td>MIM-104 Patriot-2 (surface to air)</td>
<td>Oper.</td>
<td>Army</td>
<td>&gt;100 km</td>
</tr>
<tr>
<td>Ching Feng (Green Bee) (SRBM)</td>
<td>Oper.</td>
<td>Army</td>
<td>130 km/270 kg</td>
</tr>
<tr>
<td>Tien Chi (Sky Spear) (SRBM)</td>
<td>Dev.</td>
<td></td>
<td>300 km/500 kg</td>
</tr>
</tbody>
</table>

*Oper = Operational; Test/Dev. = Tested/Development; t.b.d. = To be delivered*

Sources:
### South Korea

<table>
<thead>
<tr>
<th>System</th>
<th>Status</th>
<th>Service branch</th>
<th>Range/payload</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGN-84 Harpoon (ship to ship)</td>
<td>Oper.</td>
<td>Navy</td>
<td>90 km</td>
</tr>
<tr>
<td>AIM-7 Sparrow (air to air)</td>
<td>Oper.</td>
<td>Air Force</td>
<td>&gt;54 km</td>
</tr>
<tr>
<td>AGM-88A/B HARM (air to surface)</td>
<td>Oper.</td>
<td>Air Force</td>
<td>&gt;48 km</td>
</tr>
<tr>
<td>AGM-142 (air to surface)</td>
<td>Oper.</td>
<td>Air Force</td>
<td>75 km</td>
</tr>
<tr>
<td>NHK-1 (SRBM, surface to surface)</td>
<td>Oper.</td>
<td>Army</td>
<td>180 km/500 kg</td>
</tr>
<tr>
<td>NHK-2 (SRBM, surface to surface)</td>
<td>Oper.</td>
<td>Army</td>
<td>260 km/450 kg</td>
</tr>
<tr>
<td>Hyunmoo (SRBM, surface to surface)</td>
<td>Oper.</td>
<td>Army</td>
<td>180 km/500 kg</td>
</tr>
<tr>
<td>ATACM (SRBM, surface to surface)</td>
<td>Oper.</td>
<td>Army</td>
<td>165 km/560 kg</td>
</tr>
<tr>
<td>Nike Hercules (surface to air)</td>
<td>Oper.</td>
<td>Army/Navy</td>
<td>180 km</td>
</tr>
</tbody>
</table>

### Japan

<table>
<thead>
<tr>
<th>System</th>
<th>Status</th>
<th>Service branch</th>
<th>Range/payload</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASM-1 (air to ship)</td>
<td>Oper.</td>
<td>Air Force</td>
<td>50 km</td>
</tr>
<tr>
<td>AGN-84 Harpoon</td>
<td>Oper.</td>
<td>Navy</td>
<td>90 km</td>
</tr>
<tr>
<td>MIM-104 Patriot-2 (surface to air)</td>
<td>Oper.</td>
<td>Air Force</td>
<td>70–160 km</td>
</tr>
<tr>
<td>ASM-2 (air to ship)</td>
<td>Oper.</td>
<td>Air Force</td>
<td>100 km</td>
</tr>
<tr>
<td>SM-1 (ASCM, surface to ship)</td>
<td>Oper.</td>
<td>Army</td>
<td>180 km</td>
</tr>
<tr>
<td>SM-1B (ASCM, ship to ship)</td>
<td>Oper.</td>
<td>Navy</td>
<td>150 km</td>
</tr>
</tbody>
</table>

### North Korea

<table>
<thead>
<tr>
<th>System</th>
<th>Status</th>
<th>Service branch</th>
<th>Range/payload</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSS-C-2 (ASCN, surface to ship)</td>
<td>Oper.</td>
<td>Navy</td>
<td>80 km</td>
</tr>
<tr>
<td>SS-N-2 Styx (ship to ship)</td>
<td>Oper.</td>
<td>Navy</td>
<td>80 km</td>
</tr>
<tr>
<td>FROG-7 (surface to surface)</td>
<td>Oper.</td>
<td>Army</td>
<td>70 km</td>
</tr>
<tr>
<td>Scud-B (SRBM)</td>
<td>Oper.</td>
<td>Army</td>
<td>300 km</td>
</tr>
<tr>
<td>(a variant of Scud-B, SRBM)</td>
<td>Oper.</td>
<td>Army</td>
<td>330 km/1,000 kg</td>
</tr>
<tr>
<td>Hwasong-5</td>
<td>Oper.</td>
<td>Army</td>
<td>500 km/700 kg</td>
</tr>
<tr>
<td>Hwasong-6 (Scud-C, SRBM)</td>
<td>Oper.</td>
<td>Army</td>
<td>1,300 km/750 kg</td>
</tr>
<tr>
<td>No Dong-1 (MRBM)</td>
<td>Oper.</td>
<td>Army</td>
<td>1,500 km/770 kg</td>
</tr>
<tr>
<td>No-Dong-2 (MRBM)</td>
<td>Dev.</td>
<td>Army</td>
<td>2,000 km/1,000 kg</td>
</tr>
<tr>
<td>Taepo Dong-1 (MRBM)</td>
<td>Test/Dev.</td>
<td>Army</td>
<td>5–6,000 km/1,000 kg</td>
</tr>
</tbody>
</table>

### United States

<table>
<thead>
<tr>
<th>System</th>
<th>Status</th>
<th>Service branch</th>
<th>Range/payload</th>
</tr>
</thead>
<tbody>
<tr>
<td>RIM-7 Sea Sparrow (ship to air)</td>
<td>Oper.</td>
<td>Navy (c)</td>
<td>50 km</td>
</tr>
<tr>
<td>AGM-88A/B HARM (air to surface)</td>
<td>Oper.</td>
<td>Air Force (a,b)</td>
<td>&gt;48 km</td>
</tr>
<tr>
<td>AIM-7 Sparrow (air to air)</td>
<td>Oper.</td>
<td>Air Force (a,b)</td>
<td>&gt;55 km</td>
</tr>
<tr>
<td>AGN-84 Harpoon (ship to ship)</td>
<td>Oper.</td>
<td>Navy (c)</td>
<td>110 km</td>
</tr>
<tr>
<td>SM-2 MR (ship to air/ASROC)</td>
<td>Oper.</td>
<td>Navy (c)</td>
<td>45–110 km</td>
</tr>
<tr>
<td>SM-2 ER (ship to air)</td>
<td>Oper.</td>
<td>Navy (c)</td>
<td>75–115 km</td>
</tr>
<tr>
<td>MIM-104 Patriot-2 (surface to air)</td>
<td>Oper.</td>
<td>Army (b)</td>
<td>70–160 km</td>
</tr>
<tr>
<td>AGN-94 Harpoon (air to surface)</td>
<td>Oper.</td>
<td>Navy (c)</td>
<td>110 km</td>
</tr>
<tr>
<td>AGM-154 (air to surface)</td>
<td>Oper.</td>
<td>Air Force (a,b)</td>
<td>24–200 km</td>
</tr>
<tr>
<td>AIM-54A/C (air to air)</td>
<td>Oper.</td>
<td>Navy (c)</td>
<td>184 km</td>
</tr>
<tr>
<td>BGM-109 Tomahawk (SLCM, ship to surface)</td>
<td>Oper.</td>
<td>Navy (c)</td>
<td>1,350 km non-nuclear</td>
</tr>
</tbody>
</table>

(a) U.S. Forces Japan; (b) U.S. Forces South Korea; (c) The Seventh Fleet

---

**Impressum**

INESAP Coordinating Committee
Prof. Dr. Anatoli Diakov (Russia)
Dr. George Lewis (USA)
Dr. Morton Bremer Maerli (Norway)
Dr. Zia Mian (Pakistan)
Prof. Kathryn Nixdorff (Germany)
Prof. Dr. Dingli Shen (China)
Prof. Dr. Fernando de Souza Barros (Brazil)

Published by INESAP; Printed at IANUS
Layout Clemens Beier

This Briefing Paper is sponsored by IANUS.