COOPERATIVE THREAT REDUCTION PLUS: BREAKING THE STALEMATE WITH THE DPRK

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At a time when denuclearization talks with the DPRK are stalled, the authors argue that: “alternative approaches must be explored. CTR Plus offers a new approach by proposing discrete, small to medium scale localized projects – with the potential for large-scale impact – which address the

DPRK's critical and urgent problems on energy insecurity, public health and the COVID-19 pandemic."

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II. NAPSNET SPECIAL REPORT BY JOEL PETERSSON IVRE, ELAINE NATALIE, AND SHATABHISHA SHETTY

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Executive Summary

This policy brief addresses a critical missing element in engagement with the Democratic People's Republic of Korea (DPRK), modelled on one of the most successful and enduring disarmament and non-proliferation initiatives: the Cooperative Threat Reduction (CTR) program. Among its many achievements, CTR enabled the dismantlement and removal of weapons of mass destruction (WMD), secured vulnerable weapons-grade material, and reemployment of scientists in the Soviet Union and its successor states.

Applying and tailoring the lessons from the CTR program to the DPRK's unique circumstances offers an opportunity – and pragmatic approach – for renewed engagement, reopening channels of dialogue and improving regional and global security. This approach is called CTR *Plus.*

The *Plus* refers to the need for a multilateral and multisectoral approach that focuses on security challenges in addition to the nuclear issue. APLN's CTR Plus project[1] examined key elements of this approach, such as chemical weapons disposal, energy cooperation, space cooperation, and public health engagement.

At a time when the gulf between the terms on which the DPRK, the US and others are willing to engage have stalled progress towards denuclearization and exacerbated Pyongyang's isolation, alternative approaches must be explored. CTR Plus offers a new approach by proposing discrete, small to medium scale localized projects – with the potential for large-scale impact – which address the DPRK's critical and urgent problems on energy insecurity, public health and the COVID-19 pandemic.

We propose and evaluate a diversified strategy for engaging the DPRK, while also tackling key concerns of the DPRK leadership, as well as those of the United States, the Republic of Korea (ROK), and China, Japan, and Russia.

A process that starts with concrete security-related initiatives such as chemical weapons dismantlement may help to build early US and broader international support for the program and provide momentum that enables all parties, including the DPRK, to overcome short-term obstacles to fulfilling their agreed obligations.

Keeping the projects specific, discrete and relatively modest reduces the risk that they could be diverted to support Pyongyang's military activities, including its nuclear weapons program. The benefits would accumulate both to the DPRK and the international partners, laying the groundwork for dialogue and expansion into other substantive areas including collective security.

The diversified nature of CTR Plus offers the flexibility to suspend or terminate individual projects as and when necessary, while others continue.

CTR Plus is not a panacea. There are many serious challenges and security concerns of all relevant parties that must be addressed to break the current stalemate and resume the denuclearization of the Korean peninsula. Nonetheless, the CTR Plus approach promotes a clear-eyed recognition that engagement is necessary precursor for the cooperative reduction of the DPRK nuclear threat in the context of the denuclearization of the Korean peninsula.

The following is a summary of the recommendations offered in this synthesis report:

Energy

- **Cooperative projects in the energy sector** will address some of the DPRK's energy security concerns and support energy intensive projects in other sectors such as public health. This approach could include the rapid construction of mini-grid systems powered by renewable energy for electricity generation.
- The **DPRK should be involved in future regional power grid talks** building on past bilateral dialogues with Russia and China on gridlines.

Sanctions

- A basic condition for engagement is **partial sanctions relief**. The Permanent Members of the United Nations Security Council should make a careful assessment of partial sanctions relief for the DPRK, considering conditions under which sanctions must be reimposed.
- **A new agreement could model key aspects of the Joint Comprehensive Plan of Action agreement** and include mechanisms for the reimposition of the sanctions, as well as monitoring, and verification.

Chemical

- **US-DPRK cooperation on chemical weapons disposal** could serve as a useful confidence and security building measure **modelled on initiatives such as US and German assistance to the Soviet Union** and its successor states or the **China-Japan cooperative chemical weapons disposal program**. This should include training DPRK engineers in proper disposal techniques.

Nuclear

- **The United States and the ROK should provide measures to assist the DPRK with converting its nuclear and space infrastructure to civilian use**. These measures would follow from an agreement between the United States and the DPRK to freeze the DPRK's nuclear program, and declare its uranium enrichment activities.

Public Health

- The ROK-led **Northeast Asia Cooperation for Health Security (NEACHS)** initiative – which currently includes the ROK, United States, China, Russia, Japan and Mongolia – could be expanded to include the DPRK to help address the DPRK's health security needs and build greater engagement and dialogue.
- **Developing research exchanges with the DPRK's bioresearch facilities** would improve biosecurity practices, reduce the diversion risk of biohazardous material, and provide employment opportunities for DPRK scientists. The research exchanges would mimic the International Science and Technology Center established during the original CTR program, and which remains operational in some Soviet successor states.
- To support the DPRK public health system**, the WHO Western Pacific should undertake a detailed cost-feasibility study for an inter-Korean biomedical cluster** that encompasses R&D, clinical activities, and industrialization at the Demilitarized Zone (DMZ) or other border areas.

Space cooperation

- **The DPRK should recommit to its moratorium on long-range testing of ballistic missiles**, in exchange for satellite data for weather and disaster monitoring, and resource exploration, provided by the United States and the ROK.
- Dismantlement of the DPRK's space and long-range missile program should be treated as a separate issue from the dismantlement of its nuclear program.

Introduction

As we approach the end of 2021, the risk of a new crisis on the Korean Peninsula remains. Since the failed Hanoi summit in February 2019, the Democratic People's Republic of Korea (DPRK) has avoided large-scale provocations such as nuclear tests and long-range ballistic missiles launches but continues to expand its nuclear weapon capabilities and delivery systems. In August 2021, the IAEA reported that the reactor complex at Yongbyon had been restarted with the likely intention of manufacturing more nuclear material for bombs.[2] Recently, the DPRK has unsuccessfully tested a hypersonic glide vehicle– aimed at circumventing US missile defences[3] – and continues to develop its sea-based deterrent through a test launch of a previously land-based ballistic missile (KN-23) from a submarine.[4]

Meanwhile, the US administration under President Joe Biden has not publicly disclosed the full

conclusions of its 2021 DPRK policy review. The fact that the US special envoy to the DPRK is also concurrently the ambassador to Indonesia suggests that the Biden administration has concluded that the DPRK is not a high priority at present. The only public effort in terms of diplomatic outreach has been an offer to hold talks with the DPRK "at anytime, anywhere," which has not satisfied the DPRK's stated demand for steps to end hostility.

It is clear that the DPRK is not willing to engage with the United States or anyone else under current circumstances, and equally clear that the current half-hearted attempts at engagement by the United States are not conducive to changing the status quo. Efforts such as the end of war declaration currently pursued by the administration of the Republic of Korea (ROK) are laudable and should be encouraged. Moreover, additional efforts by regional actors such as China, Russia, and Japan will be necessary, but the fact remains that it is the United States that is the DPRK's primary interlocutor and the US approach misses a critical elements in the engagement with the DPRK. One of these missing elements is a *comprehensive* engagement that facilitates the cooperative reduction of the DPRK nuclear threat in the context of the denuclearization of the Korean peninsula. Engagement that enables the DPRK to address critical and urgent problems such as energy insecurity, public health and the pandemic, access to space resources for economic and ecological management – to name a few – are the foundation stones that must be laid to support cooperative nuclear threat reduction with the DPRK. We call this approach Cooperative Threat Reduction *Plus*.

What is Cooperative Threat Reduction Plus?

In this synthesis report, we lay out a plan for Cooperative Threat Reduction (CTR) Plus for the United States and its partners with the DPRK.[5] We take inspiration from the precedent of the US-Soviet CTR program that helped secure, safely handle, and dismantle weapons of mass destruction, and facilitate the re-employment of scientists after the collapse of the Soviet Union.

To prevent the proliferation of weapons of mass destruction, CTR helped dismantle, consolidate and secure nuclear, chemical, and biological materials and infrastructure in the Soviet Union and its successor states. Many programs were implemented to reduce the threat posed by these capabilities via joint activities to use, dispose of and convert materials and facilities, and reskill the workforce.

These lessons can be applied to the DPRK but the differences must also be acknowledged. The Soviet/Russian WMD programs were much more extensive than the DPRK's present programs. At the time of its collapse, the Soviet Union possessed 27,000 nuclear weapons. The DPRK is believed to have fewer than 50 nuclear weapons today. Politically, the Soviet state collapsed from within, whereas the DPRK remains intact. The goals of a CTR program with the DPRK therefore differ from the original Nunn-Lugar program. In the DPRK's case, the ultimate goal of any nuclear agreement must be the elimination of its nuclear weapons and their means of production in the context of the denuclearization of the Korean peninsula – that is, from a DPRK perspective, ending of US nuclear threats aimed at the DPRK.[6]

With these differences in mind, a CTR program that is tailored to DPRK circumstances must be cooperative, incorporating elements that meaningfully engage both sides, especially personnel from the DPRK, such as engineers and scientists. The approach should prioritize clearly defined and discrete issues not linked to grand political objectives advocated by some such as democracy building or leadership change. Ideally it would have strong, sustained bipartisan support in the United States and the Republic of Korea that survives presidential transitions and shifting political winds. The DPRK's nuclear program was built over decades, so reducing or eliminating it will take time. Financial support will need to be secured and sustained to support the program. The current focus on early or immediate "denuclearization" may continue to be problematic in dealing effectively with the DPRK. Any proposal for the eventual elimination of the DPRK's nuclear weapons program

should entail assisting Pyongyang in converting its military nuclear and space programs to civilian use.

April 6, 1996 – US Secretary of Defense William Perry (left), Ukraine Ministry of Defense Mr. Schmarov (center), and Russian Ministry of Defense Itgen Grachov (right) celebrate the dismantlement of Ukrainian silos as part of the Nunn-Lugar / Cooperative Threat Reduction Program (PH1 Todd Chiconowicz, USN)

In this synthesis report, we focus on the *Plus* of CTR Plus. This refers to the need for a multilateral and multisectoral approach which focuses on security engagement in addition to the nuclear issue. APLN's CTR Plus project[7] examines key elements of this approach, such as chemical weapons disposal, energy cooperation, and public health cooperation. We evaluate the positive aspects of a diversified strategy for engagement with the DPRK and tackle key concerns of the DPRK, the United States, and the ROK (while acknowledging the concerns of other actors as well). Finally, we provide recommendations to policymakers to constructively advance the CTR Plus agenda, which include steps by the DPRK, the United States, and the ROK to build trust and start diplomacy. We also propose the commissioning of studies on specific projects that could become part of a future CTR Plus initiative.

Diversifying Engagement and Reducing Project Risks

Diversification is a common risk management strategy and is central to the CTR Plus proposal. Pursuing multiple concurrent projects intended to engender small, rapid wins for all sides, increases the prospects for early success and confidence building, and builds momentum for progress. Even if one project fails or encounters setbacks, other projects may continue unimpeded.

This approach can be contrasted with earlier initiatives, designed as grand bargains, such as the Korean Peninsula Energy Development Organization (KEDO). KEDO was a large-scale, multilateral project led by the United States to provide the DPRK with light-water reactors and energy assistance in the form of heavy fuel oil. The light-water reactor project was eventually terminated because of failures of both the United States and DPRK to follow through on their commitments (which were set out in the US-DPRK 1994 Agreed Framework). At that point, ten years of work and $5 billion dollars had been wasted.

It would be unwise however to conclude from KEDO's failure that energy cooperation with the DPRK is destined to fail. Cooperative energy initiatives as a part of the CTR Plus program would be smaller in scale with shorter timeframes. The entire program would not rise and fall with a single large flagship project. The diversity and small scale of the projects would build in redundancies. Over

time, the incremental achievements of separate, parallel short-term projects would become increasingly valuable to the DPRK leadership and population, and help build confidence between the DPRK and the international community. Keeping individual projects small would also reduce the risk that they could be diverted to support Pyongyang's military activities, including its nuclear weapons program.

By adopting this bottom-up approach, – whether through consistent supply of healthcare, vaccines, or electricity – CTR Plus projects would create positive results in-country and build confidence among the DPRK populace and its leadership. Experience in the DPRK over decades of engagement shows that localized projects are conducive to positive interactions between foreign experts on both a professional and personal level.

That the projects should be many, small-scale and localized is not to say that they must lack ambition or avoid difficult areas entirely. As will be mentioned in the next section, significant risk reduction can be achieved by initiating cooperation in chemical weapons disposal. And some suggested projects – for example, grid modernization using micro-grids – may be large-scale in terms of investment and impact.

Energy cooperation. Energy insecurity has been an important driver of the DPRK nuclear weapons program. The DPRK has attempted to obtain energy assistance from the international community in the course of negotiating the terms and conditions of denuclearization in the past.[8] The initial step of the CTR Plus program could focus on overcoming the DPRK's energy insecurity. Overcoming energy insecurity would mean prioritizing the installation of energy efficiency measures in the DPRK building sector and rapid construction of mini-grid systems powered by renewable energy for electricity generation. If deployed successfully, such measures could meet the requirements of a substantial pilot engagement project that would help kickstart other cooperative projects, for example on energy storage solutions.

The DPRK should also be involved in talks on the design and construction of a regional power grid linking Russia, China, the DPRK, the ROK, and even Japan. The fact that there are currently no existing regional frameworks for regional power grid cooperation should be considered an opportunity to bring the DPRK in as a founding partner in such a cooperative agreement, rather than treating it as a transit country for electricity exports between the ROK and Russia or China. It should therefore also be involved in future regional power grid talks, perhaps building on past bilateral dialogues on gridlines with Russia and China, or in sub-regional dialogues convened by ESCAP.[9]

Cooperation on disposal of chemical weapons. The focus on immediate and wholesale "denuclearization" likely will continue to be problematic for the DPRK. A palatable alternative such as a CTR program for chemical weapons elimination could pave the way for improving relations between the DPRK and the United States which is a necessary precursor for the eventual denuclearisation of the Korean peninsula. As the DPRK's alleged chemical weapons provide limited military utility their elimination would be at low or no cost to the Korean People's Army while serving as a valuable confidence building measure requiring external assistance and monitoring. Disposal of the DPRK's chemical weapons could be modelled on previous projects, such as US and German assistance to the Soviet Union and its successor states or the China-Japan cooperative chemical weapons disposal program.[10] There are also significant lessons to draw from the ongoing international effort to eliminate Syria's chemical weapons program. In addition, this project could include the training of DPRK engineers in proper disposal techniques. Raising the chemical weapons issue early could be a potential source of controversy for the DPRK, as it would first have to declare the possession of such weapons in the first place. It would therefore be conducive to this effort if the ROK took the first step to unilaterally declare historical information on its own chemical weapons stockpiles, over which some questions still remain.[11]

Inter-Korean and regional public health cooperation. As argued by Dr Sangmin Park, the DPRK suffers from a lack of healthcare financing which has led to a weakening of the public health system and increased privatisation of healthcare practices. These trends have been exacerbated by COVID-19, with the combination of prolonged border closures and sanctions resulting in limited access to medicine and healthcare. To address this need for healthcare financing, global health initiatives such as the Global Fund and Global Alliance for Vaccines and Immunization (GAVI) have provided millions of dollars in financial assistance. The problem is that medical financing is unsustainable and sensitive to external change. The result is that such assistance has proven unattractive to the DPRK.

To address the pandemic more effectively given the deficits of the DPRK public health care system, mutually beneficial cooperation between the two Koreas should be sought by establishing a joint national disease management system and constructing an inter-Korean Biomedical Cluster which includes research and development (R&D), clinical activities, and industrialization at the Demilitarized Zone (DMZ) or other border areas.[12]

Some experts have suggested projects aimed at improving DPRK public health, including provision of vaccines, can be pursued without delay, as it would not violate UN sanctions.[13] However, although the merits of public health support seem clear, however, the DPRK has shown little interest in receiving assistance during the pandemic, rejecting vaccines offered by China, Russia, and the ROK. This casts doubt over the viability of pursuing public health projects with the DPRK.

One reason for the DPRK's rejection of assistance during the pandemic could be that it is important to a small power to not be in a position of inferiority or weakness and at the same time, to not undermine its claim of successfully containing COVID. The DPRK may be more likely to cooperate in vaccine and public health programs if it is treated as a co-equal rather than as a supplicant state, and as a contributing member of the international community. Building on this insight, an alternative way to strengthen the cooperative aspect of public health exchange with the DPRK would be to promote the export potential of its traditional medicine, perhaps starting with a sustained scientific exchange to establish the medical benefits from such pharmacopeia.[14]

Another avenue for cooperation could be the ROK-led Northeast Asia Cooperation for Heatlh Security (NEACHS) initiative established at the end of 2020 "to strengthen joint response capacity for transboundary health security issues, including COVID-19 and other new infectious diseases".[15] [16] It includes the ROK, United States, China, Russia, Japan and Mongolia and could be expanded to include the DPRK. This would help address the DPRK's health security challenges, as well as build trust and dialogue to tackle hard security issues in other channels. At the most recent NEACHS meeting on 31 August 2021, ROK Vice Minister of Foreign Affairs Choi Jongmoon called on the partner countries to work to encourage the DPRK's involvement in the initiative. The inclusion of the DPRK would provide a platform for dialogue and equal standing with its regional neighbours and the United States, addressing DPRK concerns over perceived inferiority.[17]

Finally, developing research exchanges with the DPRK's bioresearch facilities would help improve biosecurity practices, reduce the diversion risk of biohazardous material, and provide employment opportunities for DPRK scientists. These research exchanges would mimic the International Science and Technology Center which was established during the original CTR program, and which remains operational in some Soviet successor states.[18]

Space cooperation. The DPRK has expressed a desire for "civilian satellites for communications, resource exploration, weather forecasts" – civilian capabilities that could aid its economic development.[19] Acquisition of such capabilities has been the alleged motivation for its past satellite launches. However, from the point view of the United States, the ROK, and Japan, the DPRK's previous space launches appear to be tests of long-range ballistic missile technology. The

test of an alleged intercontinental ballistic missile (ICBM) in 2017 have seemingly confirmed these suspicions.

For current and future engagement purposes, the reality that the DPRK's space and missile programs are closely linked together must be acknowledged.[20] In exchange for DPRK's continued abstention from long-range missile tests, the ROK and the United States could provide the DPRK with the kind of satellite information it needs weather forecasting, natural disaster monitoring, and resource exploration. Satellite data could also be used for monitoring crop yields, or as the basis for joint research on the impact of climate change on the Korean Peninsula. Providing the DPRK with accurate satellite data that it could use for economic or disaster management purposes, would remove some of the rationale for maintaining its own space launch program. Once sufficient progress has been made on the dismantlement of its nuclear warhead production complex, the two Koreas could then pursue an inter-Korean space program with joint launch capabilities.[21]

Creating the Right Conditions: Addressing Concerns Among Key Players

DPRK: Threat perceptions, sanctions, and incentives

Any sustained engagement with the DPRK requires the approval of Kim Jung Un, who is unlikely to cooperate unless he believes that doing so reduces threats to the DPRK's security. The CTR approach acknowledges that all parties have legitimate security concerns and focuses on pragmatic cooperation.

The DPRK will likely demand sanctions relief as a precondition to participation in CTR Plus. The current sanctions regime has had a deleterious impact on the DPRK economy which has been further compounded by the COVID-19 lockdown. Yet, while UN sanctions may have slowed down the DPRK nuclear program, neither sanctions nor the pandemic have halted, let alone reversed, the DPRK nuclear program. Moreover, the benefit of lifting sanctions must be carefully weighed against the potential implications such a move might have for the legitimacy of sanctions regimes as a means of coercion. Lifting sanctions as a precondition for engagement, rather than in response to any action taken by the DPRK, might undermine the effectiveness of future sanctions, and lead to additional demands from the DPRK.[22] Therefore, for CTR Plus to be acceptable to the United States and its partners, any agreement to lift sanctions must include an option to reimpose the lifted sanctions if the DPRK failed to achieve certain steps.[23] A benefit of CTR Plus projects is that they can be designed from the outset to provide clear and unambiguous results on which the removal or reimposition of sanctions can be conditioned.[24]

It is encouraging that in June 2021, the DPRK published, for the first time, a Voluntary National Review (VNR) on the implementation of the 2030 Agenda. The report sets up goals for sustainable energy implementation, bioresearch in support of agriculture, developing the medical industrial sector, and mitigating the impact of climate change. The VNR also gives priority to "strengthening bilateral and multilateral cooperation," a clear indication that if the concerns mentioned above can be addressed, the DPRK would be willing to engage with several aspects of CTR Plus included in this report.[25]

United States and the ROK: Building sustained bipartisan support

Just as CTR Plus requires political support from the DPRK's leadership, it will require strong and sustained bipartisan political support from US policymakers. Such support was a critical feature of the original CTR program, otherwise known as the Nunn-Lugar Program, named after its founders Democratic Senator Sam Nunn and Republican colleague, the late Richard Lugar. Their support ensured that CTR could be sustained across numerous budget cycles and administrations. The

current political polarization in Washington and Seoul, especially on DPRK policy, makes such bipartisan cooperation particularly difficult.

May 9, 2016, the Pentagon – Secretary of Defense Ash Carter (right) poses for a photo with Senator Sam Nunn (left) and Senator Richard Luger (center) following the 25th Anniversary of the Nunn-Luger Cooperative Threat Reduction Program (DoD photo by Senior Master Sgt. Adrian Cadiz)

It remains a fact that neither the uncompromising approach favoured by the Trump administration, nor the strategic patience approach adopted by the Obama and – so far – Biden administrations have yielded significant progress with the DPRK. CTR Plus is an opportunity to implement an option which has a proven track record of bipartisanship and results. As President Biden has emphasized bipartisan deals, the legacy of CTR in the former Soviet Union and its successor states and its promise for the DPRK should appeal to the US administration. The alternative is an unbounded DPRK weapons program that will only intensify partisan attacks on the administration. Given that prospect and the dependency of US allies in the region and their concerns over the expansion of the DPRK's military and nuclear capabilities, the United States simply cannot afford to ignore the DPRK nor rely solely on military containment and deterrence to hold the line at the DMZ.

Some will argue that "frontloading" initiatives such as chemical weapons dismantlement could help to build initial US support for the project. As discussed earlier, the diversified structure of CTR Plus would also reduce the perceived risks of capacity building in the DPRK before significant denuclearization is achieved. If needed, discrete projects can be suspended, without affecting other projects.

The ROK also has an important role to play in CTR Plus. During the course of the APLN CTR project, an ROK Ministry of Unification official stated that the ministry is willing to support cooperation between the DPRK and the international community on CTR Plus. Moreover, the ROK Minister of Unification, Lee In-young, emphasized micro-grids as a "creative solution" for addressing the DPRK's energy security.[26]

However, the 2022 March ROK elections may significantly alter Seoul's enthusiasm for engagement with the DPRK. The opposition has criticized the Moon administration for its "soft" approach to the DPRK. As Andrei Lankov has argued, the conservative presidential nominee Yoon Seok-youl is likely to "freeze all interaction with the North for the entire length of his term, extending the Cold War on the Korean Peninsula."[27] However, it is a positive sign that Yoon has not entirely ruled out summits with the DPRK.[28] In any case, whether there is a conservative or progressive

administration in the Blue House come March, it is worth addressing the concerns that ROK conservatives may have towards the CTR Plus program, to build sustained bipartisan support in the ROK.

Although it is clear that CTR Plus will also require political support from China, Russia, and Japan, the CTR Plus project has not yet explored in detail what form that support should take. China and Russia have both expressed their support for lifting sanctions, so the political will to address this DPRK precondition is present in these two UNSC members. China has long advocated for an "incremental approach" consisting of "phased, synchronized, and packaged solutions", which aligns with the basic design of CTR Plus.[29] In the next section we outline some tentative recommendations for involving these and other actors in CTR Plus.

Recommendations

CTR Plus provides a framework for constructive and pragmatic engagement with the DPRK. The program has the potential to provide value to the DPRK, the United States, and the ROK, as well as China, Russia, and Japan. The following section summarizes the main policy recommendations.

For discrete CTR Plus programs to be implemented some form of partial **sanctions relief** is required. To improve diplomatic conditions, the Permanent Members (P5) of the United Nations Security Council (UNSC) should make a careful joint assessment of the relative risks and benefits of partial sanctions relief for the DPRK, defining conditions under which sanctions can be reimposed, and how that reimposition could possibly be done without shutting down the CTR Plus program entirely. Any agreement to lift sanctions would likely include a "snap-back" option, which would immediately reimpose the lifted sanctions if the DPRK failed to achieve pre-agreed conditions, similar to the snapback provision in the Joint Comprehensive Plan of Action (JCPOA), endorsed by the UNSC. Even though the JCPOA has faced significant challenges, and the Iranian case differs in substantial ways from that of the DPRK, there are nonetheless valuable lessons which could be drawn and usefully applied in the DPRK case. These lessons include, but are not limited to monitoring imports and exports, and setting deadlines for access requests to relevant sites.[30]

Regarding **chemical weapons disposal**, the United States should offer the DPRK a cooperative threat reduction program to eliminate its chemical weapons. This chemical weapons disposal program should be modelled on the original CTR disposal program but could also take inspiration from the China-Japan cooperative chemical weapons disposal program, or the ongoing UN program to eliminate Syrian chemical weapons. Like the nuclear program, this program should also include training of DPRK engineers in proper disposal techniques and provide them with skills that can be put to use in the civilian sector. The DPRK should also demonstrate its good intentions by signing and acceding to the Chemical Weapons Convention. As a confidence building measure, the ROK could also unilaterally disclose historical information on its chemical weapons program.

The **energy sector** provides a broad range of possibilities for cooperation with the DPRK. APLN's CTR Plus project has already yielded one detailed study on the potential for micro-grids powered by renewable energy sources.[31] "Implementing energy projects early in the process could create positive knock-on effects and support energy intensive projects in other sectors, such as public health. Micro-grids would also create the opportunity for regional grid interconnection projects; the United Nations Economic and Social Commission for the Asia-Pacific (UNESCAP) should serve as a platform for discussion of a regional grid that would link together the DPRK with China, Russia, the ROK, and Japan.

To support the DPRK **public health** system, the WHO Western Pacific should undertake a detailed cost-feasibility study for an inter-Korean biomedical cluster that encompasses R&D, clinical

activities, and industrialization at the Demilitarized Zone (DMZ) or other border areas. An international organisation such as UNESCAP should also conduct a market survey, with DPRK participation and ROK or Chinese support, on the potential for selling DPRK traditional medicinal cures on the global market.

The ROK-led Northeast Asia Cooperation for Health Security (NEACHS) – which includes the ROK, the United States, China, Russia, Japan and Mongolia – is a promising mechanism for cooperation could be used as to address the DPRK's healthcare needs as well as build dialogue. To facilitate a regional public health initiative, further thought must be given to the differentiated roles among international organizations and NGOs, who currently operate in the DPRK, including WHO and GHSA for such an initiative.

Developing research exchanges with the DPRK's bioresearch facilities – mimicking the International Science and Technology Center established during the original CTR program – would improve biosecurity practices, reduce the diversion risk of biohazardous material, and provide employment opportunities for DPRK scientists.

With respect to its **nuclear** program, the DPRK should take concrete steps to roll back its ability to manufacture nuclear bombs and missiles. A practical first step would be an agreement to halt further production of fissile material in the DPRK, a so-called "nuclear freeze."[32] After corresponding positive gestures from the United States, within the scope of the CTR Plus program, the DPRK could follow with a declaration of its uranium enrichment facilities, which would facilitate verification of the freeze, and establish additional confidence. At this point, the United States and the ROK could offer measures to assist the DPRK with conversion of its nuclear infrastructure for civilian use.

Cooperative efforts to convert the DPRK **space** and **missile** programs into a civilian space program must be kept separate from any progress, or lack thereof, on denuclearization. A first step towards cooperation on space issues, would be for the United States and the ROK to provide the DPRK with satellite data for weather and disaster monitoring, as well as resource exploration, in exchange for the DPRK's recommitment to the moratorium on tests of long-range ballistic missiles which it revoked in January 2020.

Finally, the implementation of CTR Plus will require significant political and **financial support**, not only from the United States and the ROK, but also from a multilateral coalition including the EU, other states and international organizations. Many CTR Plus programs require the external provision of technical assistance, training, financing, and investment via public-private partnerships in the social and physical infrastructures of the DPRK. Initial ideas for a funding mechanism include a special trust fund modelled on the Palestinian Partnership for Infrastructure Trust Fund; a reimagined KEDO model (KEDO 2.0); and an expanded regional economic cooperation initiative, similar to the Greater Tumen Initiative. There also needs to be an assessment of how these mechanisms might relate to existing donors such as the IBRD, ADB, EU, and China's AIIB as well as thoughtful consideration and planning of the incremental lifting of sanctions to implement any CTR Plus arrangement via a funding mechanism. The APLN will explore funding strategies and political mechanisms to support a CTR Plus program in 2022.

The Soviet/Russian CTR experience has shown that the host country must help identify its training needs, rather than have these be imposed externally. The United States provided training assistance for Russia for nuclear materials protection, control, and accounting. Likewise, the DPRK must cooperate in identifying areas of need.

Conclusion

The original CTR program was created after the dissolution of the Soviet Union to provide financial assistance and technical expertise to dismantle, secure, consolidate and remove nuclear weapons and other weapons of mass destruction. The former Soviet Union was focused on the need to transition the nuclear weapons complex to non-nuclear weapons work, and to reduce nuclear risk from migration and materials leakage. These risks also exist within the DPRK, but the complex is much smaller; and the opportunities for gainful non-nuclear-related employment are very low. The need to supplement CTR-nuclear with other strategic benefits in the DPRK differs substantially from the former Soviet Union. Thus, the CTR equation and DPRK calculus are different, and energy, and access to space and public health are integral parts of that difference.

The purpose of the CTR Plus project is to look at what has worked in the past and apply those lessons to the DPRK by implementing discrete projects that are contextually and situationally appropriate. Engagement is not a gift to be offered in exchange for good behaviour; it is essential to collective security, and for the denuclearisation of the Korean Peninsula. CTR Plus offers a concrete way of working to improve security through a practical and pragmatic process.

The proposals offered here are not intended to constitute a comprehensive framework for a CTR Plus program in the DPRK. Rather they outline one possible approach and illustrate the need to think creatively on how to facilitate engagement, reduce risks, and ultimately address the security concerns of all the relevant parties. Political winds can change quickly and if there is no clearly articulated strategy for engagement when that happens, progress may stall or the opportunity will be lost. Some may argue that the inherent uncertainty of the political environment – particularly in the broader context of increasing tensions between the United States and China in the Asia-Pacific region – means that now is not the right time to pursue such an initiative. We would argue that, on the contrary, action is needed now more than ever. Failure to act will leave all parties involved woefully unprepared to take advantage of the next opportunity; action ought to be taken seriously by those who wish to build a lasting and stable a peace regime on the Korean Peninsula.

III. ENDNOTES

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