

# Status of Nuclear Non-proliferation: Problems and Risks

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**Abstract.** The risks of nuclear proliferation are summarily discussed. First, we consider the risks of nuclear proliferation that are related to the structure of the Non-proliferation Treaty. Then we discuss the risks specifically related to the Middle East and to North East Asia. The uncertain status of the Iranian nuclear deal, and its implications for nuclear proliferation, are considered. There are also specific proliferation risks associated with the practice of deploying nuclear weapons on territories of non-nuclear-weapon states. Finally, the relation between the NPT and the Nuclear Ban Treaty is considered.

**Keywords.** Non-proliferation · NPT · JCPOA · Nuclear Ban Treaty · Middle East · North Korea · Nuclear Sharing

## Introduction

The Non-Proliferation Treaty (NPT) is quite obviously a very important treaty, having prevented significantly any increase in the number of nuclear-weapon states (NWS). We must not forget that, in the late 1940s and early 1950s, the general forecast was that most states of any significant size and political/military relevance would eventually acquire nuclear weapons. This did not happen. On the other hand, no one at that time would have predicted that either the US or the USSR would have arrived at such huge arsenals of nuclear weapons (32,000 the former, 45,000 the latter).

The two superpowers always believed that the number of NWS should have been kept to a “minimum”, also to preserve their nuclear supremacy. This was reinforced following the Cuban Missile Crisis (1962), where it took some exceptional good sense by the American and Russian leaders, and certainly a very significant amount of good luck, to avoid a nuclear catastrophe. It was obvious that any further crises similar to the Cuban Missile Crisis could have been, so to say, less fortunate. A larger number of NWS would have been a significant factor in increasing the nuclear risks. Hence, in the mid 1960s, there were intense discussions between the nuclear superpowers on how to shape a non-proliferation treaty. The structure of the NPT was finally defined, and the treaty opened for signature, in July 1968, and entered into force on 5 March 1970.

As we said, the NPT, in the years since its entry into force, has been extremely successful in limiting the number of NWS, which now stands at nine (five defined as such by the NPT itself, and four that are not party to the NPT). Now, all States—with the exception of the four mentioned above (India, Pakistan, Israel, and North Korea) and of South Sudan—are members of the NPT.

Nevertheless, the NPT is a very *imperfect* treaty. Not only does it discriminate between the “haves” and “have-nots”, but it contains articles and defines procedures that could possibly present serious problems in the future. Moreover, the set of NWS as defined by the NPT is the same set of permanent members of the UN Security Council (UNSC). In this way, the NPT identifies the prestige associated with being a permanent member of the UNSC, with the possession of nuclear weapons.

In general, the non-proliferation regime is under stress on various accounts. Here we would like to discuss the problems and the risks associated with the non proliferation regime.

## 1. Problems Directly Related to the NPT Text (and Practice)

- a. Article 6 requires that the NPT-recognized NWS (i.e. USA, Russia, China, UK, and France) should proceed to nuclear disarmament, without giving any time limit or defining any specific procedure. This is de facto interpreted by the said NWS as the right to maintain indefinitely the possession of nuclear weapons, and this creates resentment and tensions, particularly among some non-NWS. The situation has worsened as a result of the recently revived antagonism between the US and Russia, that has not only blocked the arms-control process, but created some nuclear “irritants” such as the deployment of US Ballistic Missile Defense near Russian borders, or the movement of Russian nuclear-capable missiles to Kaliningrad, etc.
- b. Article VIII (paragraphs 1 & 2), which defines the procedure for amendments, de facto makes any amendment impossible. So “improving the treaty” is not an option.
- c. Article VIII (paragraph 3) establishes that every five years a Review Conference of States Parties to the NPT Treaty should be held with the purpose of reviewing the operation of the Treaty. Of the nine NPT Review Conferences held to date, five have concluded with no final document, and four have concluded with a final document whose suggestions and recommendations have in general *not* been implemented. In particular, the 2000 Review Conference proposed 13 steps that have been not implemented, and the 2010 Review Conference proposed the convening of a conference on the establishment of a weapons-of-mass-destruction-free zone (WMDFZ) in the Middle East by 2012, a conference that has never been convened. The 2005 and 2015 Review Conferences concluded without a final document. The poor results of these quinquennial review conferences decrease the effectiveness and “prestige” of the NPT itself in the eyes of many member states.
- d. Article X of the NPT requires only a modest three months of advance notice for withdrawal from the treaty, a decision that can be made when a state decides that membership in the treaty jeopardizes its supreme interest. While this may be a standard rule for international agreements, in the case of the NPT, this means that there are, in principle, no insurmountable obstacles for a non-NWS to acquire nuclear weapons. And while North Korea’s withdrawal from the NPT has been a singular case, it is nevertheless a significant one.

## 2. Nuclear Energy for Peaceful Purposes and Nuclear-Weapon-Building Capability

The technological skills needed to build (simple fission) nuclear weapons are certainly not particularly sophisticated. The main problem for a State wanting to build nuclear weapons will be the acquisition of (weapon-grade) fissile material. The NPT defines the right to have a civilian nuclear program as an *inalienable right*. Now, 3.6% is about the minimum enrichment required for civilian (light water) nuclear reactors. Yet enriching uranium with centrifuges to a level of 3.6% U-235 is about half way (in terms of energy required) to enriching it to 90%. Moreover, using heavy water reactors that do not require uranium enrichment will produce significant amounts of plutonium (that certainly needs to be separated if one wants to use it for nuclear weapons).

So a possible military use of peaceful nuclear energy facilities can only be prevented by constant inspections and monitoring by international institutions such as the International Atomic Energy Agency (IAEA). An effective control of nuclear activities can be critically facilitated by instruments that provide additional tools for verification, such as the Additional Protocol, which is nevertheless a voluntary agreement between individual states and the IAEA. Furthermore, several states (such as Argentina, Brazil, Egypt) have refused to sign the Additional Protocol as a matter of principle, since it is an extra burden for non-NWS that already feel discriminated by the NPT.

Additional Protocol apart, some states have produced significant amounts of separated plutonium (Japan is the typical example) that could be used immediately to build nuclear weapons if such a decision were to be made. And the further spread of nuclear energy facilities worldwide could in the future facilitate several nuclear military options. The idea of building international fuel cycle facilities is certainly a very good idea that could be very helpful in avoiding proliferation risks. But this is a very slowly developing idea.

### **3. Nuclear Weapons in the Middle East**

One worrisome aspect of not having convened the aforementioned conference on the creation of a WMDFZ in the Middle East has been the influence of Israel (which is not a party to the NPT) in convincing the US, and possibly also the UK, not to convene it. This has only put more emphasis on the fact that the only nuclear weapons in the Middle East belong to Israel. How long other Middle Eastern countries will accept the Israeli nuclear monopoly in the Middle East is not clear. But certainly the presence of Israeli nuclear weapons is a worrisome factor in assessing the nuclear proliferation risks in the region.

### **4. The Iranian Nuclear Program**

Iran started working on nuclear energy at the time of the Shah, and took it up again well after the end of the Iran-Iraq war. With centrifuges acquired from Pakistan, Iran started enriching uranium in its own facilities, which it failed to report to the IAEA. When news about the Iranian enrichment facilities became public after 2002, Iran was referred to the IAEA. Following some meetings with European powers, Iran accepted to suspend its uranium enrichment and signed (but did not ratify) the Additional Protocol. Despite its suspension of uranium enrichment, Iran, on recommendations by the IAEA, was referred to the UNSC and sanctioned. At this point the new President, Mahmoud Ahmadinejad, suspended the implementation of the Additional Protocol and restarted work on uranium enrichment. The story was supposed to end with the signature and entry into force (2015) of the Joint Comprehensive Plan of Action (JCPOA), also known as the Iranian Nuclear Agreement, between Iran, the US, Russia, China, the UK, France and Germany. With the JCPOA, Iran accepted constraints on its nuclear program that are not applied to any other country (i.e., a limit on the number of centrifuges, a maximum enrichment level of 3.6%, the transfer outside the country of large quantities of already enriched uranium, the transformation of the Arak heavy water reactor, etc.). Iran also accepted full supervision of its nuclear program by the IAEA (including the Additional Protocol). Iran's main interest was its reintegration into the world market, and the end of the financial sanctions/constraints. The history of the Iran nuclear program and of the JCPOA is well known and well documented. Here we are interested in the possible (future) consequences of the Iranian nuclear program, and the impact on non-proliferation of the possible collapse of the Iranian nuclear deal.

The new US administration may decide to suspend the JCPOA and/or keep sanctioning Iran based on its nuclear as well as missile programs, denying (at least in part) Iran access to the international (financial) market. It could also pressure European countries by establishing secondary sanctions against those countries who are not aligned with the US. President Trump recently refused to certify that Iran is respecting the agreement, claiming that Iran is not abiding to the "spirit" of the agreement. Iran has claimed that it will stick to the JCPOA if the Europeans (and China and Russia) do so as well.

In any case, there are logically two main possibilities:

- a. Iran, despite its having been certified up to now by the IAEA as having respected the JCPOA, will lose the economic advantages it expects from the agreement, with the result that within Iran, there will be pressure to not respect the nuclear constraints and return to the pre-JCPOA situation.

- b. Iran will continue to respect the JCPOA, proceed with its limited nuclear program, and still have access to international markets, at least the European ones.

Things could be further complicated if sanctions against Iran were to be imposed not on the basis of the JCPOA, but on the basis of its missile program and its alleged support for so-called terrorist activities.

In any case, if Iran is able to retain its access to the international market, and if the JCPOA can be preserved, then Saudi Arabia, the UAE and others will be unhappy and may decide (as they have already announced) that they will carry on the exact—if not more—same nuclear activities that Iran is, thus bringing into the region a sort of nuclear competition in slow motion.

If, on the other hand, Iran is denied access to international markets, then, as we said, the pressure inside Iran for abandoning the JCPOA could grow, with the risks for nuclear proliferation in the region becoming very significant.

Needless to say, the best option for preserving nuclear non-proliferation in the region would be the preservation of the JCPOA in substantial terms. But at the same time, it would be useful to try to soften the regional antagonism between Saudi Arabia/UAE and Iran.

## **5. Problems Related to the Deployment of Nuclear Weapons on other Countries' Territories**

The US began deploying nuclear weapons in other NATO countries well before the entry into force of the NPT. There were several motivations for this decision. One was related to the issue of making the so-called US nuclear umbrella more visible and clear, and another was to persuade some NATO countries, particularly Germany, not to acquire nuclear weapons on their own. A further expansion of this idea took place in the 1960s with the proposal of creating a multinational (naval) NATO force, the so-called multilateral force (MLF), with direct control of nuclear weapons. The MLF was deemed to be unacceptable by Russia, so it was abandoned by the US in order to establish the NPT. But the de-facto agreement with Russia was that the previous deployments of US nuclear weapons on the territory of allied countries would not be considered an obstacle to the establishment of the NPT. US nuclear weapons deployed on the territories of allied countries were, and are, classified as “dual-key” (meaning the US retains possession of the nuclear weapons, while the host country provides the relevant delivery system in the case of use of such weapons), and as “single-key” (when both the nuclear weapons and the delivery systems belong to the US). Note that, mainly in the case of dual-key weapons, there is still a question concerning the compatibility of such arrangements with the NPT requirement that the control of nuclear weapons cannot be assigned to non-NWS. The dual-key arrangement is also referred to as “nuclear sharing”. The non-NWS that host US nuclear weapons are Italy, Germany, Turkey, the Netherlands, and Belgium. By any standard, the military utility of either the single-key or dual-key weapons deployed in Europe is absolutely negligible.

Such weapons are relevant only for political symbolism, but are nevertheless very problematic for many other aspects. The problems related to the deployment of nuclear weapons on the territories of other countries can be summarized as follows:

- a. The existence of a (ill-defined) nuclear umbrella gives the message that there are nuclear states, non-nuclear states, and some kind of intermediate category of non-nuclear states protected by nuclear weapons. This is, to say the least, confusing, and can become a specific proliferation problem.
- b. Nuclear weapons deployed on other countries' territories can, sooner or later, present specific security problems, especially if the host countries are located in critical neighborhoods. A typical

example is Turkey, which hosts US nuclear weapons on the Incirlik Air Base, which lies very close to Syria. The Incirlik Air Base has also been used for the anti-ISIS campaign, and was recently subjected to a power blackout. The US would like to withdraw these weapons for security reasons, but this is problematic since they do not want to possibly upset the Turks by singling out Turkey, perhaps inducing them to acquire nuclear weapons on their own. The US could alternatively, and more wisely, withdraw all nuclear weapons located in NATO countries, but then it would give a controversial message to those NATO countries that are more worried about Russia's intentions and most interested in maintaining a nuclear umbrella.

- c. Most importantly, from the point of view of proliferation risks, is the fact that if deploying US nuclear weapons in NATO countries is deemed compatible with the NPT, then it should also be deemed compatible with the NPT if some other nuclear-weapon countries (including Pakistan, India, etc.) deploy nuclear weapons on the territory of non-nuclear NPT parties. Thus, the NPT could be de facto circumvented if nuclear weapons were to be spread around the globe with arrangements similar to those established in NATO. One example often cited is the possible deployment of Pakistani nuclear weapons in Saudi Arabia, although this does not appear likely as of now.

## **6. The Situation in North East Asia**

The dangers related to North Korean nuclear activities are very serious in terms of a possible use of nuclear weapons. Even if the use of nuclear weapons by North Koreans would most likely imply the destruction of their country, the possibility of such use cannot be ruled out, as the North Korean leader may at some point even decide to “sacrifice” the country for the “cause”. Remember that in 1992 (30 years after the Cuban Missile Crisis), Robert McNamara, talking with Castro, learned that the Cuban president was ready to accept the destruction of the island if the US-USSR crisis was unable to be defused.

There is in any case also a significant dimension related to proliferation in North East Asia. President Trump suggested the possibility of re-deploying US nuclear weapons on South Korean territory. Moreover, even before becoming President, he had suggested that South Korea (and Japan), faced with the North Korean threat, should consider building their own nuclear weapons. Recent opinion polls<sup>1</sup> suggest that in South Korea, 60% of the population may support building nuclear weapons as a defense against the North Korean nuclear threat, and 70% of the population even support the reintroduction of U.S. nuclear weapons into South Korean territory. Faced with the possible spread of nuclear weapons on the Korean peninsula, Japan itself may very well consider the nuclear option.

A general argument could be made here that, if we were to ever again witness the use of nuclear weapons against cities or military targets, then the global non-proliferation regime would be shaken to its core.

## **7. On No First Use, and the Motivations to Acquire Nuclear Weapons**

The policy of no first use by states possessing nuclear weapons means that nuclear weapons will not be used against states that do not possess them. But unfortunately, very few states have a policy of no first use, India and China among them. Russia had a policy of no first use when, as the USSR, it possessed a large conventional superiority, but this is no longer the case. The US had made an effort to move towards a position of non-use of nuclear weapons against states that do not possess them, but in the 2010 Nuclear Posture Review, it added that the US will not use nuclear weapons against states that are members of the

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<sup>1</sup> *N.Y. Times*, October 28, 2017.

NPT and “in good standing” with it. The reference to Iran at that time was obvious. In this way, the US retained the right to decide which states are in good standing with the NPT and which are not. We should not forget that, in general, the motivation to acquire nuclear weapons is connected with a) the “prestige” associated with the possession of nuclear weapons (i.e., the fact that the permanent members of the UNSC are also the NPT-defined nuclear weapon states), and b) the sense of being under threat by some state possessing nuclear weapons. If NWS do not give up the possibility of threatening non-NWS with nuclear weapons, then the latter may sooner or later decide to go nuclear as an act of “self-defense”.

## **8. Nuclear Security and the Possible Use of Nuclear Material by Non-state Actors**

Nuclear security is generally intended as the definition of procedures and safeguards that could prevent the spread of nuclear material to non-authorized users (typically non-state actors or terrorist groups). These are reasonable goals aimed at preventing the possible spread of nuclear weapons and nuclear material in general. Four large Nuclear Security Summits have been held (2010, 2012, 2014, 2016), all attended by many world leaders, and while as a whole they were very useful initiatives, there were also some problems. First of all, these summits did not address the security of nuclear weapons per se (obviously a classified matter for each state possessing nuclear weapons). Secondly, there was “political discrimination”, as some countries like Iran, with civilian nuclear programs, were not invited. Thirdly, there was apparently no discussion on how non-state actors could exacerbate a nuclear exchange between NWS (like India and Pakistan), nor what initiatives NWS should take in order to avoid similar risks. In any case, it is unlikely that these Nuclear Security Summits will continue under the new US Administration.

## **9. The Nuclear Ban Treaty**

On 7 July 2017, the Nuclear Ban Treaty (NBT) was opened for signature. One-hundred-and-twenty-two countries approved the text of the treaty at the UN. It will enter into force after 50 countries have signed and ratified it (more than 50 countries have already signed it, and their ratification is expected soon). The NBT defines more clearly several points that are dealt with in the NPT. In particular, it does not distinguish between NWS and non-NWS. A State that becomes a member of the NBT renounces any possession of nuclear weapons. Any state party to the NBT will be committed to not hosting any nuclear weapon on its territory. NATO countries that rely on nuclear weapons will have to give up this reliance if (ever) they were to sign the NBT. NATO countries, NWS, and countries that rely on a “nuclear umbrella”, are in general not expected to sign the treaty, at least for now. Some NATO countries argued that the NBT is in contrast with the NPT since it does not acknowledge the existence of NWS. In reality, the NBT is the logical step forward with respect to the NPT. It takes the disarmament issue (Article 6) seriously since NWS would be required to disarm before becoming members of the NBT. The NBT does not allow confusion about the nuclear sharing issue: this will not be allowed. The NBT hence wipes out several controversial issues that we mentioned while discussing the NPT. What remains to be seen now is how many countries in the long run will become members of the NBT.