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Research report

Forum: Security Council
Issue: Addressing the escalating threat posed by private nuclear programs
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Introduction

Ever since the emergence of nuclear weapons in the 1940s, there have been increasing efforts by governments and organizations regarding the acquisition of nuclear capabilities. Nuclear programs that do not fit under defined treaties and agreements can be considered private programs, the likes of such pose a significant threat to global security often due to their secrecy. Since the 1940s a multitude of treaties (an example being the NPT) have been put into place to limit the number of countries that can develop and detonate nuclear weapons, any country or political group that violates these treaties by manufacturing and proliferating atomic weapons can be considered to be running “private nuclear programs” and are at the centre of the problem at hand. Examples of such situations could be the alleged Iranian nuclear program, controversies regarding the DPRK and Pakistan and any cases of nuclear terrorism. These problems are addressed by tackling the sources of the problem i.e. the nuclear black market or by improving the security of nuclear fuel trade and transport. The IAEA confirmed that in the last 12 years, there have been 1266 cases of nuclear material being stolen, lost or used incorrectly, 18 of which are reported cases of HEU and plutonium being stolen. These large numbers reflect the gravity of the situation at hand and the amount of work that has to be done to prevent the emergence of additional private nuclear programs.

Definitions of key terms

HEU – Highly Enriched Uranium – A popular source of fuel for nuclear weapons

IAEA – International Atomic Energy Agency – “world's central intergovernmental forum for scientific and technical cooperation in the nuclear field”

NPT – Nuclear non-proliferation treaty – signed in 1968 and came into power in 1970

NSG – Nuclear Suppliers Group

MAD – mutually assured destruction – “principle of deterrence founded on the notion that a nuclear attack by one superpower would be met with an overwhelming nuclear counterattack such that both the attacker and the defender would be annihilated”

IND – improvised nuclear device – a homemade improvised nuclear device often referred to as a “dirty bomb”.

General overview

This report summarizes the current climate regarding the threat posed by private nuclear

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programs In the modern world. It will contain a brief history of the topic accompanied by a timeline of key events. Additionally, this report goes over the current situation and the major parties involved in the problem. It will conclude with any previous solutions to the problem and possible solutions going forward.

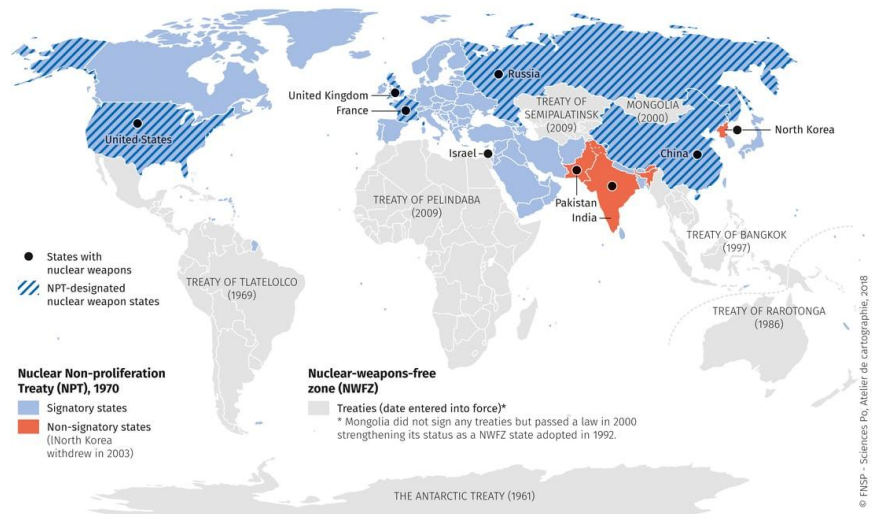
Background

As mentioned previously, a private nuclear program is one that is not recognized internationally due to its lack of adherence to a previously signed treaty. The first example of an important

treaty that defines the nuclear capabilities of countries today is the NPT which was signed in the heat of the Cold War in 1968 and came into power in 1970. It states that all signing countries must abstain from ever producing nuclear weapons and only current nuclear powers (being the US, UK, Soviet Union, France and China at the time) could keep producing weapons of mass destruction. The only countries that didn't participate were India, Pakistan, Israel, South Sudan (which hasn't joined since its creation) and the DPRK which acceded to it in 1985 but withdrew in 2003. This treaty is very significant in preventing private nuclear programs as it established global recognition of a few nuclear powers which instantly made other organizations or countries planning to make nuclear weapons globally illegal solidifying the definition of a private nuclear program

Nuclear black market

Sources for private nuclear programs are not connected to the legal global trade of nuclear fuel e.g via the NSG therefore sources for their fuel are from illegal origins, the most prominent being the nuclear black market. As mentioned previously, there have been over 18 reported cases of stolen nuclear fuel by the IAEA and many more reported losses. In addition to this, there have



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been documented cases of corrupt behaviour among nuclear officials. An example is Dr. AQ

Khan (considered to be the father of the Pakistani nuclear program) admitted in 2004 to have shared nuclear secrets with Iran, Libya, and the DPRK. The black market is not simply the monetization of nuclear fuels but also the sharing of nuclear secrets to non-nuclear powers that have signed the NPT or extremist political groups leading to nuclear terrorism. Furthermore, many nuclear isotopes can be stolen from nuclear power plants which are not restricted in any country unlike nuclear weapon production although the isotopes used are very similar e.g. uranium-235 or HEU.

Threat at hand

Private nuclear programs pose a large threat to global security due to their often secretive and possibly ill-intentions. It is well known that among nuclear power today a doctrine of MAD is followed which was developed in the cold war. Principally, it ensures that nuclear weapons and nuclear production are mainly used as deterrents and never used practically. Doctrines like this could not be followed especially when dealing with extremist groups like the Taliban, ISIS or Al Qaeda leading to a serious threat to global security, this is known as nuclear terrorism. Furthermore, in areas of high political tensions in the modern world e.g. the Middle East or the South China Sea the last thing you would want is the introduction of nuclear weapons to various opposing parties.

Major parties involved

The Institute of Nuclear Materials Management (INMM)

The INMM has the main goal to ensure “safe, secure and effective stewardship of nuclear and other radioactive materials and related technologies” and is working towards ensuring that nuclear materials do not end up in the wrong hands by ensuring correct use, transport, handling and protection of nuclear materials mainly used to generate nuclear power. In addition to this, they authorize the use of nuclear isotopes in medicine and research.

Iran

The Islamic Republic of Iran is a signatory of the NPT should be banned from producing nuclear weapons which they claim they haven't despite their production of 9 kg of enriched uranium-235 every month as of December 26, 2023 (according to the IAEA) which is 166% the amount that

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they were producing in June that same year. They claim this surplus of uranium is used to fuel their singular nuclear power plant that generates 28.7 TWh a month which according to the mathematics, only requires approximately just over 1kg of HEU a month, not 9. They have also recently switched to uranium enriched at 60% which can easily be enriched to 90% which is suitable for nuclear weapons. Mohammad Elsami (the head of the Atomic Energy Organization in Iran) stated that the report produced by the IAEA was propaganda. This reflects a dangerous threat to global security and security in the Middle East due to the high tensions in the area. Unshrouding the secrecy of Iran's nuclear program would significantly reduce tensions created by private nuclear programs.

Non-national extremist political groups

These extremist groups are among the most dangerous to get a hold of nuclear weapons using a private nuclear program. As stated professionally President Obama when referring to Al Qaeda stated that they would be determined to “buy, build or steal” nuclear weapons, and they “would have no problem using them”. Although there have not yet been any recorded cases of nuclear terrorism, the threat is still present. Terrorist groups have showcased considerable coordinated feats with the backing of large financial budgets e.g. the September 11th attacks. This highlights the capability of such groups suggesting that the fabrication of a nuclear weapon is not necessarily outside their bounds. A main problem with nuclear terrorism and private programs is that the whereabouts of nuclear fuel cannot be tracked leading to increased uncertainty and threat.

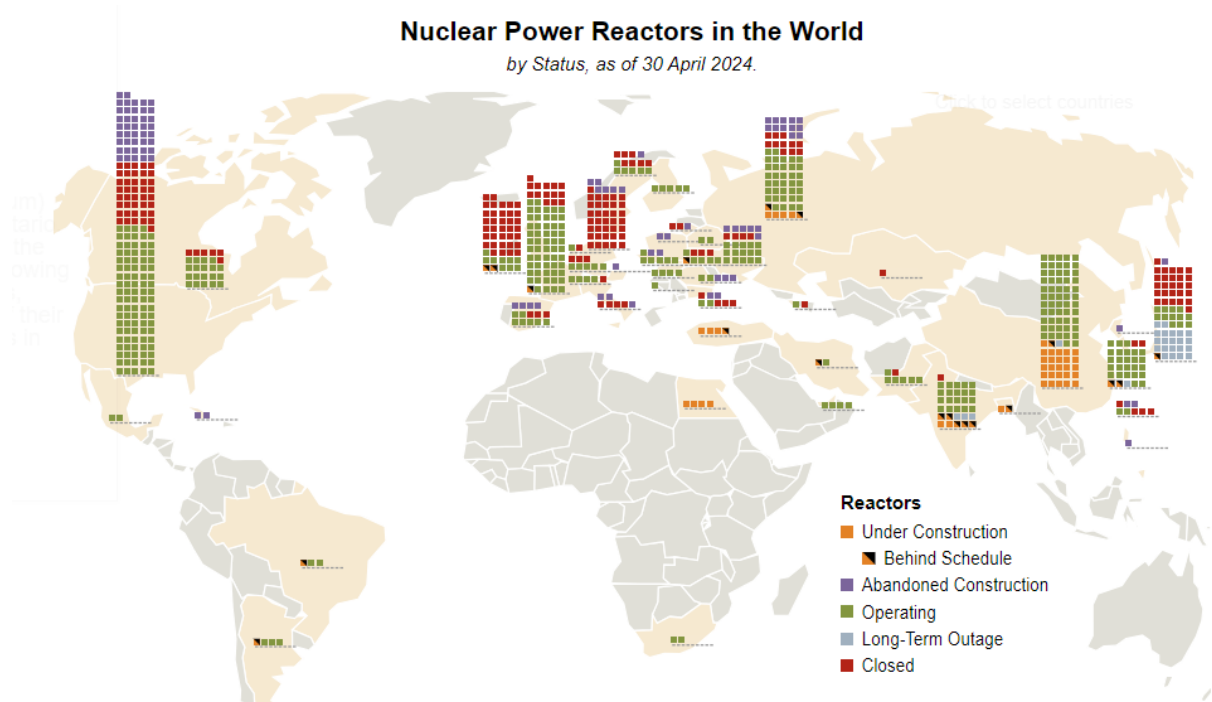
Countries with nuclear capabilities

Countries with nuclear capabilities are defined as countries with the ability to use nuclear fuel as power and/or have nuclear weapons, currently, this number sits at 32 countries with an additional 11 countries planning to build or build a plant (pictured). Unlike nuclear weapons there are little to no restrictions on constructing nuclear power plants, in fact, they are promoted in the modern world due to the increased efforts to phase out non-renewable sources of energy. Even though they use similar nuclear fuels like HEU to nuclear weapons and require countries to buy/transport or produce nuclear isotopes. If not secured correctly could lead to increased opportunities for the black market. Many countries have already banned nuclear power stations e.g. Ireland, Denmark, Germany, Austria, Italy, Uruguay and Georgia highlighting a possible solution to the problem.

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Nuclear Power Reactors in the World

by Status, as of 30 April 2024.



Timeline of Key Events

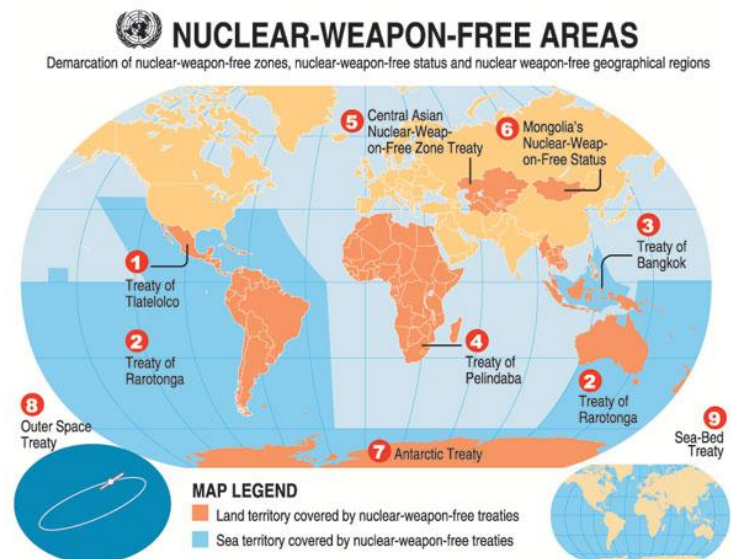
1940s	The first nuclear program and nuclear weapons were created
1954	The first nuclear powerplant opened in the USSR
1958	The emergence of the Nuclear weapon-free zone (NWFZ)
1968-1970	The NPT is forged and put into action
1985	The DPRK ratifies the NPT
2003	The DPRK abandons the NPT
2004	Founder of Pakistani nuclear program admits to sharing nuclear
2012-2016	Nuclear security summits take place
2012-present	Sanctions are put on Iran for pursuing its nuclear program

Previous attempts to solve the issue

Nuclear security summit

Nuclear security summits have been going on since the Obama Administration in 2012 with the aim of “securing all vulnerable nuclear material” with the goal of strengthening overall global security. During their time they were able to encourage states to minimize stockpiles of nuclear fuel and hold training for nuclear security personnel, all of which helped decrease the threat posed by private nuclear programs by reducing loopholes into the black market. Despite these achievements, the summits ended in 2016 after 4 summits haven take place since.

Nuclear weapon-free zone (NWFZ)



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The nuclear weapon-free zone (pictured) was started in 1958 and are area that are restricted from housing nuclear weapons. Countries that fall under the zone have committed to not acquire, test, manufacture or possess nuclear weapons. It can almost be thought of as a reinforcement to the NPT. The zones are a result of multiple treaties in different contents which have all vowed similar things. This agreement can last indefinitely as new treaties can always be signed and subsequently new reasons can be added to the zone

Sanctions

Sanctions are always a viable path to reduce resources or the economy of a country. An example is, during the height of the Iran nuclear deal in 2012, there have been heavy sanctions on Iran's nuclear program until this very day which has worked effectively to slow down the progress of the development of nuclear isotopes and therefore nuclear weapons. Despite this, Iran persists with its nuclear program reflecting a lack of utility in sanctioning. Sanctioning is also very costly for the country. The US reportedly froze 8.1 billion dollars in assets and also imposed a trade embargo which would have affected their economy.

Possible solutions

Improving security

As mentioned previously, the main way to prevent nuclear terrorism is to remove illegal sources of nuclear fuel which end up on the black market. These isotopes are often stolen from vulnerable nuclear containment facilities often used to fuel nuclear power plants. There is also an extensive network of legal nuclear trade which is currently being guaranteed by organizations like the NSG. This trade can also be intercepted illegally, and the contents could easily end up on the black market. Improving security could include training personnel, upgrading security systems (like using a tracker) or creating defined trade routes.

Weakening the black market

Removing the black market altogether would be a challenge. But uncovering the main sectors is not too far-fetched. There are two main areas to look at when uncovering black markets. The first is identifying key players and their activities. This is followed by determining the network of customers. Establishing an organization or reinforcing an existing one to accommodate these standards would greatly help uncover black markets and therefore ease the threat posed by private nuclear programs.

Nuclear talks

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Nuclear talks like the one mentioned previously (the nuclear security summit) have proved to work very well in preventing the access of nuclear fuel to governments or organizations that are planning a private program. The nuclear security summit was aimed at nuclear security and did very well in that regard. However, there are still many more factors that affect the threats posed by private nuclear programs such as the black market, nuclear weapons states or the network of nuclear power plants. Which could all have their respective summit. On top of this, It was mentioned previously that the nuclear security summit had ended in 2016, despite its achievements. Extending this summit could also provide a possible solution to the problem.

Unshrouding nuclear secrecy

Private nuclear programs are often known to be quite secretive likely due to their illegality. This level of secrecy can lead to high international uncertainty about the whereabouts and use of nuclear fuel. Unshrouding this level of secrecy could help reduce the threat posed by private nuclear programs. This could be done by hiring/training specialized workers who track the whereabouts of nuclear fuel within private nuclear programs. This could be done as an initiative with an established organization e.g. IAEA.

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