

CHAPTER II

NON-PROLIFERATION OF NUCLEAR WEAPON

A. The History of Nuclear Weapons

A nuclear weapon is a detonative device that creates its destructive power from the atomic reactions. Atom is the basic unit of a chemical element. The word “atom” is originally from the Greek, *atomos* means indivisible. Although it is such a tiny mass, but it has enormous energy within it. A group of scientists at the University of Chicago had conducted researches that lead to the creation of the first nuclear reactor named Chicago Pile-1 in early 1942. Since then, the world had entered the nuclear age (U.S Department of Energy, 1994).

The first country who had ever used nuclear energy for making a weapon was the United States. In July 1945, the U.S. Army under the code name of Manhattan Projects tested their first atomic bomb at Alamogordo, New Mexico (U.S Department of Energy, 1994). The nuclear bomb was claimed by U.S President at the time as the greatest attainment in the science's history. It was more powerful than 20,000 tons of TNT or thousand times of British Grand Slam which was known at the time as the greatest bomb ever used in the armed combat (Walker, 1946).

A nuclear weapon slowly changed global security and strategy. The spread of this weapon had become the major international concern since the Cold War era. The

nuclear tragedy in Japan became the turning point of states in the world for pursuing nuclear weapons (Muhammad, 2015). In the beginning of the nuclear age, U.S. planned to monopolize nuclear weapons, but the formula and technology to create nuclear weapons were spread quickly (Reif, 2016).

Four years after U.S. dropped the atomic bombs on Japan, several states followed conducting the nuclear test as well. The Soviet Union conducted the first nuclear testing in 1949, the United Kingdom in 1952, France in 1960, and China in 1964. Thus, U.S. initiated to establish legal agreements to prevent further spread of nuclear weapons (Reif, 2016). The availability of nuclear technology drove many states in the world to acquire nuclear weapons. As long as they can afford the financial or technical cost, every state is capable of making such weapons.

From 1945 to 1980, Many states in part of the world frequently conducted the nuclear test. It caused the rise of nuclear concern around the world, particularly related to the impact of nuclear testing on human health and environment. Various studies had been conducted in order to examine the possibility of nuclear hazard. Not only the lands were destroyed but also it can cause the death of thousands or even millions people. People who got contaminated even just small amount of radiation will live shorter with complex problems of health like dysfunctional organs, cancer, infertility, blood disorder, and many others (Atomicarchive, 2005).

Nuclear weapons today have been developed into more advanced forms including its explosives composition and its carrier system. The destructive power can be more

powerful than the U.S. atomic bombs when they were dropped in Japan in 1945. In the past, the nuclear weapons states carried nuclear bomb using bomber aircraft, but this method was considered ineffective due to its limited range of attack, minimum time to respond toward approaching attack, and the limited possible number of weapon that was able to be carried out at the same time.

The nuclear carrier has been developed into the more advanced system. The explosive materials can be attached into missiles and become nuclear warheads. Missiles combined with ballistic trajectory are able to deliver the warhead anywhere over the horizon, from short range to intercontinental range. Missiles also can be launched under the sea by the submarine launcher and the more advanced system is multiple warheads from one missile that can be shot to different targets (Siouris, 2004).

States have various reasons why they are going after nuclear weapons. It can be national interest's reasons such as foreign defense, domestic policy objectives, and economic interests. Political and military conditions are also able to stimulate some states to come into proliferation decisions. Nuclear weapons can be a tool of deterrence. It is considered as war-winning weapons. It can prevent intervention from other states as well. Other may be pursuing nuclear weapon to increase the bargaining power in the table of international affairs. Nuclear weapons are seen as the most modern technology advancement. Thus, who seek nuclear weapons, they will follow the path as the big five states of nuclear possessor (Muhammad, 2015).

Imagine if this weapon of mass destruction possessed by so many countries in the world. The world will be left unsecured. It may threaten the international and domestic security of the states. When one possessed nuclear weapons, the rests will try to pursue it as well. Having more nuclear weapons states will reduce global security, increase the risk of accidents, escalate the tension and even cause the nuclear war. Thus, restricting the possession of this weapon is the important task to do.

B. Non-Proliferation of Nuclear Weapon

Over 70 years, the international community had struggled to restrain nuclear destructive impact while utilizing its peaceful potential. Since the world had entered the nuclear age, International communities had put long effort to limit the proliferation of nuclear weapon. This had known as the global non-proliferation regime (U.S Department of State, 2010).

In 1953, U.S President Dwight D. Eisenhower proposed to establish an international organization for regulating the application of nuclear energy and controlling the fissile materials universally. Then, the International Atomic Energy Agency (IAEA) was established. The enactment of IAEA was approved on October 23, 1965 and came into force on July 29, 1957 in Vienna, Austria (Fischer, 1997). IAEA was established as an autonomous organization and served as an intergovernmental forum for peaceful nuclear science and technology. IAEA encourages the member states to develop safe, secure and peaceful application of

nuclear weapons and provide international safeguards toward the misapplication of nuclear materials and technology with nuclear security standard (IAEA, 1998).

The main duty of IAEA is to guard the fissionable materials, services, equipment and information under its supervision. The objective of IAEA is to detect and prevent any misuse of nuclear materials. IAEA will begin its function after the agreement between IAEA and the member states is concluded. After the contract is signed, the member states must give the information about its nuclear program relate to the location, identity, quantity, and nuclear composition. After that, IAEA will conduct routine and special inspections by sending some inspectors to the countries and verifying the information relate to the states' nuclear program (Muhammad, 2015). As defined in IAEA's statute on Article II:

The Agency shall seek to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world. It shall ensure, so far as it able, that assistance provided by it or at its request or under its supervision or control is not used in such a way as to further any military purpose (Muhammad, 2015, p. 320).

Generally, IAEA has three main missions. First, they contribute to the progress or growth of the peaceful uses of nuclear energy. Second, they apply safeguards to verify that nuclear materials and technology is not used for military purposes. Third, they promote high standard of nuclear safety (IAEA, 2000). IAEA focuses on the nuclear program in the areas such as electricity, health, biodiversity, industry and agriculture. IAEA gives assistance to its member states through training, expert missions, exchange

program, and supplying the nuclear equipment (IAEA, 2012). Since 1960, many initiatives had been made in order to restrain states who pursuing nuclear weapons:

- In 1963, The Partial Test Ban Treaty was created in 1963 to restrict all of the nuclear testing and to minimalize the risk of radiation from nuclear testing (Vertic, 2006).
- In 1968, The Nuclear Non-Proliferation Treaty was created. This treaty sought to restrict nuclear activities of its member under IAEA safeguards and permit states to transfer nuclear technology in respect toward non-proliferation (UNODA, 1995).
- In 1996, many states in the world established Comprehensive Test Ban Treaty, which bans all of nuclear weapon testing. This treaty put substantial impediment toward any members developing nuclear arms. However, this treaty had not been implemented effectively because it still required the ratification from some member states (CTBTO, 2010).
- A nuclear weapon has also been restricted by the multilateral agreement between countries. Many states had established Nuclear Weapon Free Zones where production and deployment of nuclear weapons are forbidden in those areas.

C. The Nuclear Non-Proliferation Treaty (NPT)

One of the nuclear proliferation treaties with the highest number of membership is Treaty on the Non-Proliferation of Nuclear Weapons or (NPT). NPT is the widest adherence of any arms control agreement in history. It is international binding

agreement that provides global barrier toward nuclear weapon proliferations (U.S Department of State, 2010). In 1965, the draft of NPT is formulated in the Geneva Conference. It was opened for signature on July 1, 1968, and come into force on March 5, 1970. The Treaty established a safeguards system under the responsibility of the IAEA and was reviewed in every five years (Muhammad, 2015).

1. NPT Participators and Non participators

Until 2016, 191 states has been joining the treaty (US Department of Defense, 2013). NPT acknowledges five states as the nuclear weapons states that are United States, Russia, United Kingdom, France, and China. NPT legalizes their nuclear arsenals. However, they still have to conduct negotiations with each other to pursue complete disarmament. The rest of the member are the non-nuclear weapons states who are agreed not to develop or pursuing nuclear weapons (Reif, 2016).

Nuclear Weapons States must continue to engage in negotiations to achieve nuclear disarmament. These five states are agreed not to transfer nuclear explosive devices and not to supply technology for produce fissile materials to any party or state. They forbid the action of assisting or persuading any party or state to develop nuclear weapons but they are obliged to help the non-nuclear weapons states by exchanging the informations, the equipments, and the nuclear material related to nuclear for peaceful purposes (Muhammad, 2015).

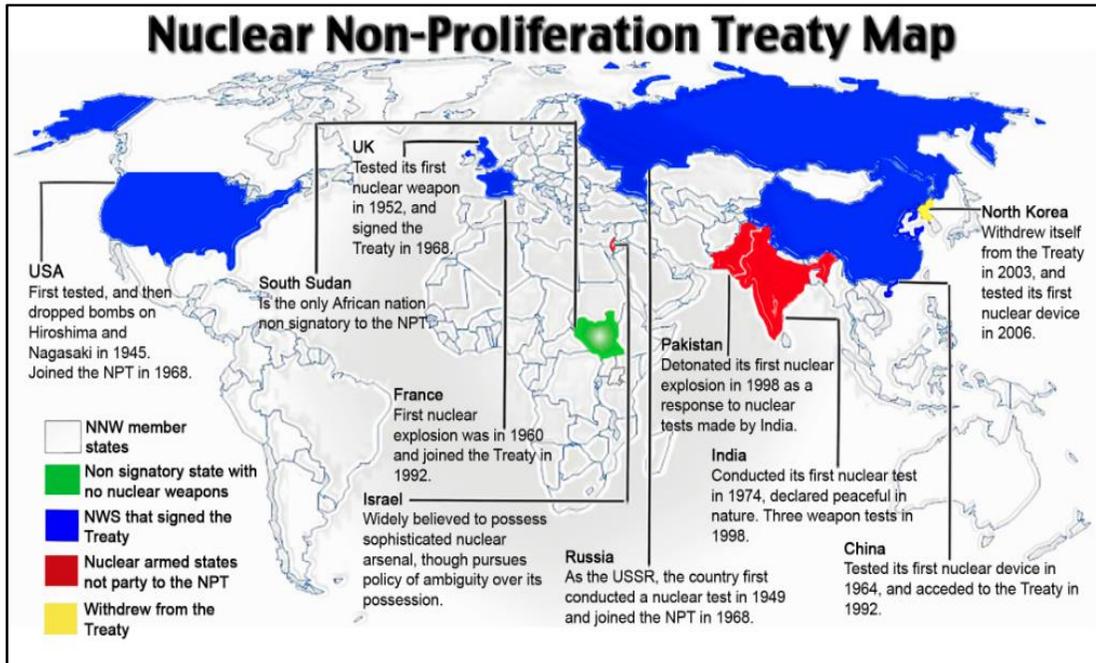


Figure.2.1 World map showing nuclear weapons states by British American Security Information Council

Outside the NPT, there are four states in the world that are well known for having nuclear weapons. They are India, Pakistan, North Korea, and Israel. India, Pakistan and North Korea have publicly tested and acknowledged their possession of nuclear weapons. Israel had ambiguity policy concerning their nuclear program. India, Pakistan, and Israel refused to sign the NPT while North Korea once withdrew from being the NPT membership in January 2003. (Graham, 2004).

According to Arms Control Association (ACA), those Non-NPT nuclear weapons states possessed the high number of nuclear arsenals. India was estimated possessing nuclear warheads around 100-200. They had conducted the first nuclear test in 1947. Pakistan was estimated to have 110-130 nuclear warheads in their

possession. They began their nuclear program after India conducted their first nuclear test. Both India and Pakistan had openly demonstrated their nuclear weapon capabilities in May 1998. While Israel who still maintained its ambiguity policy had been estimated to have 80 nuclear warheads with 200 fissile materials. The last was North Korea. Their nuclear arsenals were unheard. There was no data that could give specific estimation about how many their nuclear arsenals. However, North Korea had been conducting several nuclear testing since its withdrawal from NPT in 2003 (ACA, 2016).

2. The Treaty Structure

NPT consists of one preamble and eleven articles. The treaty is mainly built from three pillars: non-proliferation, the peaceful use of nuclear energy and disarmament. Each pillar are interdependent to each other and reciprocally reinforcing (U.S Department of State, 2010).

a. Non-proliferation

Non-proliferation is one of those pillars which is clearly stated in Article I and Article II of the NPT. This article constrains the Nuclear Weapon States not to transfer nuclear weapons or other nuclear devices to any state or party. They forbid to give assistance, advocate, or persuade any non-nuclear-weapon state to acquire nuclear weapons. In Article II, non-nuclear-weapon states forbid to exercise control over nuclear weapons or other nuclear devices. They also forbid to receive

or search for assistance to make nuclear weapons. In Article III, NWS must accept IAEA safeguards (U.S Department of State, 2010).

b. Peaceful Uses

This pillars is mainly stated in NPT Article IV. In this article, NPT has acknowledged and encouraged the right to develop nuclear energy for peaceful purposes and benefited from international cooperation in this area. These pillars allow the parties to transfer nuclear materials and technology as long as they can demonstrate that their nuclear programs are not for developing weapons (U.S Department of State, 2010).

c. Disarmament

Under Article VI of the NPT, all parties had been being encouraged to pursue good-faith negotiations on effective measures relating to cessation of the nuclear arms race. The Nuclear Weapon States had been being encouraged to conduct nuclear disarmament process both in general to complete disarmament. These pillars represent the goal of disarmament and desire to strengthen international trust to achieve success global non-proliferation regime (U.S Department of State, 2010).

3. The Success of NPT

Since the creation of NPT, it had created some positive progress toward global non-proliferation regime as the followings:

- a. The group of states who had conducted nuclear program without international controls such as Argentina, Brazil, and South Africa were agreed to dismantle their nuclear explosive device. Argentina and Brazil had signed the bilateral agreement for peaceful use of nuclear energy and accept IAEA inspections. South Africa also decided to join NPT as non-nuclear weapon state (Muhammad, 2015).
- b. NPT was seen by many countries as a tool serving their interest. It prevented new nuclear weapon states to emerge and promoted the growth of peaceful use of nuclear energy (Muhammad, 2015). The number of states with peaceful nuclear programs has grown up. They bring peaceful benefits of nuclear energy to improve the life of societies (U.S Department of State, 2010).
- c. In the 40 years of NPT establishment, there has been a large number of states that use nuclear energy for benefits of society. More than 60 countries consider civil nuclear programs. Nuclear has been used in many civil sectors such as in food security, disease prevention, medicine, electricity etc. Until 2010, more than 30 countries has supplied 15% of the world electricity from their nuclear reactors (U.S Department of State, 2010).
- d. NPT has encouraged the states in the world to pursue total absence of nuclear weapons in their regional territory. As a result, there have been five nuclear weapons free zones created. This effort will enhance individual and regional security as well as the global security. The treaty diminishes the incentives of states to acquire nuclear weapons (U.S Department of State, 2010).

- e. All ex-member of Soviet Union except Russia do not willing to possess nuclear weapons and give all of the nuclear weapons deployed in their territory to Russia. They joined the NPT as non-nuclear weapons states (Muhammad, 2015).

4. The Challenge of NPT

The nuclear non-proliferation treaty is designed to prevent the spread of the nuclear weapon's possession but its effectiveness has been challenged. Here are some problems that have occurred in the implementation of NPT:

- a. Israel, India, and Pakistan persisted in refusing to be the member of NPT and did not want to give up on their nuclear weapon programs. Western countries especially the United States initially accepted the possession of nuclear weapons by Israel. India and Pakistan also enjoyed the impunity regarding their nuclear program. UNSC did not press these countries to be a member of NPT or giving them sanctions for not being a part of non-proliferation regime (Muhammad, 2015).
- b. Article X of NPT allowed a state to leave the treaty if extraordinary events relate to the subject matter of the treaty have threatened the supreme interests of the state. They obligated to give three months' notice of its withdrawal. This provision had been abused by North Korea to withdraw the NPT membership and produce nuclear weapons. The withdrawal from the NPT is meant to

terminate the NPT's mandate for safeguards agreement (U.S Department of State, 2010).

- c. North Korea decided to withdraw the NPT membership in 2003. Since then, North Korea continues in conducting nuclear tests. The withdrawal had weakened the NPT and non-proliferation regime. It also blocked the effort to create nuclear weapon free zone in Korean Peninsula. North Korean nuclear weapon was seen as a threat to East Asian security and it might stimulate South Korea and Japan to go nuclear weapon as well (Muhammad, 2015).
- d. In 2002, Iran was suspected by Western countries for pursuing nuclear weapons because there were some undeclared nuclear facilities in Iran. U.S put strong pressure to impede Iran's nuclear program by bringing the case into UNSC and passing the resolution to put sanctions on Iran. In another side, Israel, India, and Pakistan are allowed not to be the parts of the non-proliferation regime without any serious sanction on them. The U.S different attitudes toward Iran was seen as the U.S double standards and inconsistency toward global non-proliferation (Muhammad, 2015).
- e. NPT also has been being criticized for the slow progress of nuclear disarmament by the nuclear weapon states. It has been stated in Article VI of NPT, which obligates the NWS to liquidate their nuclear stockpiles and pursue the complete disarmament. However, it does not explicitly require NWS to disarm their nuclear weapons completely in the limited time, but it rather only requires them to negotiate in good faith (Rademaker, 2005). As a result, the five

authorized nuclear weapons show the unwillingness to disarm further their nuclear arsenals.

- f. Some NPT Nuclear Weapon States have conducted nuclear deal with some non-NPT nuclear weapon states. In July 2005, The U.S. President George W. Bush met The Prime Minister of India, Manmohan Singh and made U.S-India nuclear deal. They planned to conduct trading in civilian nuclear technology (CNN, 2005). In 2010, China also believed have signed civilian nuclear deal with Pakistan (BBC, 2010). It can be interpreted that U.S and China nuclear deals with non-signatories of NPT have violated the NPT by facilitating the nuclear program with states who are not the parts of the non-proliferation regime.

From both success and challenge in the NPT implementation, the member of NPT must cooperate in strengthening the treaty. Transparency and confidence among the members should be improved. The access toward the nuclear supply and technology should be tightened as well (Kimball, 2008). The role of international communities is also important in strengthening the non-proliferation regime. They need to effectively deal with rising demands of nuclear weapons and engage in comprehensive approach to remove the trigger of conflict between the states because nuclear weapons look more attractive for the states who are in unsecured condition (Kimball, 2008).

Some member states of NPT have been disobedient toward the nonproliferation obligations. Thus, the rest of the member must continue to pursue international efforts to bring non-compliant states back into compliance. In case of the North Korea

withdrawal, they may take advantage of the information and the technology gained from their membership's right when they joined NPT to produce their own nuclear weapon. In order to prevent the misapplication of nuclear materials, every NPT's member should disclose all of their nuclear activities and authorized inspections by IAEA. It also imposed on the ex-member as well. Serious violation shall be brought into IAEA Board Governors. Climactically, it will be brought to UNSC (Rhineland, 2005). UNSC with IAEA must be fair in carrying out their duty, just, and assertive. There are no double standards like punishing some but let others go nuclear.

D. Peaceful Application of Nuclear Energy

Beside creating weapons, the nuclear energy can be also used for civilian and industrial purposes. The scientist's research found that the nuclear energy could generate electricity better than natural gas. U.S. have used nuclear energy to create electricity in 1991. It had supplied 22% of U.S electricity at the time (U.S Department of Energy, 1994). In medical, radioisotopes are used by doctors to identify the causes of disease and to enhance traditional medical treatments. In industry, radioisotopes are used for measuring microscopic thicknesses, detecting irregularities in metal casings, and testing welds. Archaeologists also use nuclear energy to make accurate date for prehistoric objects and to locate structural defects in statues and buildings. In the food industry, te nuclear energy can help the process of preserving food. It causes less vitamin loss than the usual food process such as canning, freezing, or drying (U.S Department of Energy, 1994).