University Ss "Cyril and Methodius"

Faculty of Philosophy

UNESCO Chair in Intercultural Studies and Research

Interdisciplinary MA program in International Relations – Conflict resolution, Diplomacy and Human rights

MA MASTER WORK

INTERNATIONAL CONFLICT MANAGEMENT THROUGH PREVENTION OF PROLIFERATION OF NUCLEAR WEAPONS OF MASS DESTRUCTION

МЕЃУНАРОДНО МЕНАЏИРАЊЕ НА КОНФЛИКТИ ПРЕКУ СПРЕЧУВАЊЕ НА ШИРЕЊЕ НА НУКЛЕАРНОТО ОРУЖЈЕ ЗА МАСОВНО УНИШТУВАЊЕ

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Skopje, 2018

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INTRODUCTION

Wars and conflicts did not appear yesterday, they are following us throughout the history. So much progress and still wars and conflicts are present everywhere around us where some are fighting for a freedom, human rights, independence and others are fighting for more power, resources, geostrategic territories hidden under the shadow of democracy and world peace. So where is the progress, when we are acting same as people acted 1000 years ago, just using different methods, weapons, technology.

In this study, I will talk about that how far the human progress went, that far that now we have to create and find instruments to stop that progress and pull it back, and yes , a progress in knowledge, technology, modernization, progress for better tomorrow is always welcome, but why would it need us a progress in weapons, a progress that reached and maybe overtook all the limits, so that we created something and now we have to destroy it, to forget that it exist, to forget that we made it. Why would someone create a weapon that can destroy the whole planet? Everything looks so easy if that weapons, a "nuclear weapons" did not give to some countries power, which can control other countries, keep them submissive, in fear, control them, use them and convinces them that everything they do, they do it for the good of everybody.

Today, 21st century, the image of war is losing under the shadow of international conflicts, which slowly but sure in the last 25 years occupy an important position in the international arena. The nature of international conflicts dramatically changed, especially on the field of international conflict management and it continues to be redefined. Many of the researches marked the dissolution of the USSR as end of the Cold War, but nowadays Russia takes a significant place in the international arena in any sphere starting from economic, political and military. On the other hand, this is not the only concern, if we mark that there are new actors on this international arena that we cannot ignore. China, India, Pakistan, North Korea, Israel are the new members of the nuclear team. After WWII, the world is living under deterrence, fear from weapons of mass destruction, fear which started with bombing Hiroshima and Nagasaki and marked the beginning of Cold War and the arming race between two main blocks. In this study, we will talk about the developing of nuclear weapons, control instruments of nuclear weapons during the history, disarmament treaties and also we will put emphasis on nowadays situation regarding nuclear weapons and control instruments.

Today, the world is populated by nine countries that possess nuclear weapons and these numbers are going to grow as years goes by, which is opposite of all treaties for Non-proliferation of Nuclear weapons. Those countries are the United States (1945), Russia (USSR 1949), United Kingdom (1952), France (1960), China (1964), Israel, India (1974), Pakistan (1998) and North Korea (2006) . The last four countries never joined the NPT (Non-proliferation treaty) Hence, about nineteen other countries are possessing technology and capabilities to produce plutonium, from which later produce, test and use nuclear warheads. These countries are called "Virtual nuclear weapons states" because they are willing and able to produce nuclear weapons within a few months if they are determined to do so. This is the reason why the higher percentage of the population believe that our planet will become more dangerous and unpredictable place as this trend of spreading nuclear weapons is not decreasing, but increasing. There is a popular sentence " if you hang around the barbershop long enough.... sooner or later you're gonna get a haircut", but with negative sense, where we get to the point that " the bigger number of countries that possess nuclear weapons, the higher are chances of nuclear war".

In modern history, of all technological innovations, the nuclear weapons made the biggest impact on the course of international relations. The control instruments and treaties for nuclear disarmament exists, but as the facts speak, in reality they are not efficient, which means they are only a form of excuse of great powers to show to the international community that they advocate for reducing the number of the nuclear warheads and nuclear tests which are causing serious consequences on environment and the whole population on this planet. There are many arguments which came out throughout the history and are for or against using and producing nuclear weapons. Many politicians and military figures are claiming that using the nuclear weapons on Hiroshima and Nagasaki was necessary and the best option to finish the war, much faster than to use the alternative plan of ground invasion, in the same time counting lower number of casualties, than the ground invasion. All this would be justified if the consequences were only from instantaneous character, but unfortunately we can see consequences from nuclear weapons and its damage even today. Despite the current execution of 200 000 people, also thousands of others died as a result of radiation, and nowadays most of the population is affected by various diseases, disabilities and so on. In short, the bombing of Hiroshima and Nagasaki by America made irreparable, permanent damages and losses. This distant experience infused fear among the population and was critically attacked by the majority of world public and

international community. For ensuring that will not be repeated this action and using nuclear weapons, after knowing the consequences of it, there were created many institutions, agencies whose role was to control the production of nuclear weapons, it's proliferation, to set limits on great powers and make pressure to reduce the production of nuclear weapons, nuclear tests, and to start reducing until reaching final outturn of nuclear free countries. Also United States and USSR as leaders in production of nuclear weapons were "engaged" just theoretically for nuclear disarmament for which were enacted various treaties, but never ratified.

Many historians believe that the second force working for peace in the Cold war, was exactly the nuclear weapons, because the cost of producing it seem pretty high and many of the leader states were discouraged to start any wars that might lead to the use of nuclear weapons. The main producers of nuclear weapons are USA and USSR (nowadays Russia), and the mere possession of such dangerous weapons have helped to maintain the peace between the two blocks, simultaneously halt the other possessors into military adventures. Throughout the history, other states started their nuclear programmes which caused widespread fear. People are afraid of the fact that nuclear weapon exist and if it wasn't used in the past, it is likely to happen in the future. Nowadays such weapons might be found in wrong hands of the terrorists or in the hands of some sick mind leader.

Through this study I will clarify my thesis where will be explained the control instruments for nuclear weapons and nuclear disarmament, institutions which are bond to commit the control of countries which possesses nuclear weapons, all the Nuclear disarmament treaties, how they are fulfilled in practice, are they efficient or just a puppet for the public. Also there will be a comparative research in the last 70 years how the nuclear weapons were developed and growing number of nuclear industries, nuclear warheads, the number of cases of sick people from cancer as result of radiation, all in all will be presented all the consequences from nuclear weapons. Nuclear weapons must be understood as a serious problem, not just as a tool for deterrence between the states. Fifty years ago there were only two main blocks with nuclear weapons, nowadays the number of states that possesses nuclear weapons is higher and it is very likely that this weapons for mass destruction could fall into the hands of wrong people. The topic has been debated and discussed by historians, military experts, diplomats, politicians and many others.

United Nations as a leading international organization has sought to eliminated such weapons ever since its establishment and has the main role in control and prevention of proliferation of nuclear weapons. In this study we will explain the role of United Nations in order to control the proliferation of nuclear weapons and its strategy too. European Union also is taking significant place in resolving the problem with the proliferation of nuclear weapons. Here we will analyze the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), as the most important key agreement to control the proliferation of nuclear weapons enacted at the United Nations which entered into force in 1970. The ultimate goal of this contract is to lead to total nuclear disarmament, but it does not move exactly in that direction. If guided by the practice, then we can conclude that this agreement is not effective, even to complete the basic goals to prevent the spread of nuclear weapons and weapons technology, to promote co-operation in the peaceful uses of nuclear energy and to further the goal of achieving nuclear disarmament. Also, here I will add the participation of the Former Yugoslav states in the NPT Treaty and how Balkan States today participate and cooperate in the process of Prevention of Non-Proliferation of nuclear weapons.

Lastly, we will show the nuclear situation today, i.e., the conflict between NATO (under the auspices of America) and North Korea, where tensions are rising between this the two sides and are on the brink of war, which can easily grow into a nuclear war. In case of a nuclear warfare, the consequences will be felt everywhere in the world, especially in the region where the warfare is happening. People saw the consequences of the nuclear weapons, and the world doesn't want the history to be repeated. Thousands of dead people are just a reminder how dangerous and powerful is nuclear weapon, followed by various diseases. People know that there is no benefit from nuclear weapons to anyone, but only destruction, disease, death, regression and countless other consequences for all life on the Earth. All this should be resolved by institutional way, i.e., by international agreements between the countries, where nuclear countries will advocate to reduce the quantity of nuclear weapons with final goal, where no country should have nuclear weapons or produce one. There are many Treaties for prevention of proliferation of nuclear weapons, but these solutions are only theoretical. For example I will take America (NATO), a State that has signed numerous agreements on nuclear disarmament in the last 50 years, but no agreement is implemented in practice.

This fact shows us that international organizations and institutions should strive more and make more pressure on the countries that possesses nuclear weapons in order to start improving the agreements in practice. It is time, the leaders of the Great powers to put this problems on the table and to start cooperate in order to start reducing the number of nuclear weapons where final goal will be the world to be nuclear weapons free throughout our lifetime. In this study, the main goal is to prove that these control institutions and organizations are not efficient in practice, which is evident, but here the thesis will be corroborated by many facts, analyzes, and other documents.

***** Problem definition:**

Producing Nuclear weapons began with the Second World War, where the first bombs were produced in America, then Russia and so on, thus dramatically increase the threat against humanity, and everything just because of the continued production of nuclear war heads and increasing the states that poses and produce nuclear weapons.

It should take into account the indirect effects on health arising from the production, storage and testing of nuclear weapons. Already 60 years have passed since the leak of carcinogens and mutagens isotopes in the environment as a result of accidents that occurred in nuclear power reactors and civilian nuclear industries. In areas of island Three Mile and Chernobyl, there is a few times increased percentage of diseases from cancer and radiation which constantly spreading around Europe and North America.

The rate of increasing of cancer as consequence of radiation which is spreading from the nuclear tests is increasing all the time. There is a number of 430,000 patients which get sick from fatal cancer until 2000, a number which now stands at 2.4 million people and all that because of the nuclear atmospheric tests.

The nuclear industry has a major impact on the environment, and it can be seen in huge amounts of contaminated soil and water from the factories which produce nuclear weapons and nuclear power. Plutonium, uranium and other substances that are carcinogens and mutagens are substances that never die, in other words, it takes 250000 years to get clean plutonium, and today there is no technology that has been developed to do this with a specific process.

***** Target of the study and the Research questions**

The main goal of this study is a research study that will try to explore, develop, compare and explain the direction that moves the production of nuclear weapons, whether the institution or an instrument to control the production of nuclear weapons. If we see historical monitoring, today there are many agreements for nuclear non-proliferation, but some of the countries continuously produce nuclear warheads.

-->This study will guide two main research questions which are:

*** Does the international community has real control instruments for developing nuclear weapons?**

SUBQUESTIONS:

- What is the situation regarding the control of nuclear weapons?
- How the countries that possess nuclear weapons cooperate, compete or oppose each other?
-Does the international community is committed in the process of nuclear disarmament and is there any success till now?

- Historical comparison in the last 70 years how much is increased and developed the nuclear power of the countries that possess?

- Why nobody speaks anything about today's Cold War, but we all see that is happening everywhere around us?

***What are the consequences of the use of nuclear weapons including nuclear tests?**

SUBQUESTIONS:

- Are there likely current instruments for destruction of plutonium and uranium, including nuclear weapons?
- Does the rest of the world is familiar and taking actions in confronting the development of weapons of mass destruction?
- Does the development of weapons of mass destruction have end?

CHAPTER 1

INTERNATIONAL CONFLICT MANAGEMENT AND THE RELATIONSHIP WITH NUCLEAR WEAPONS

1. International Conflict Management

1.1. How can we define International conflict management?

Most of the people are not making difference between "International conflict management" and "international conflict resolution", which is wrong. We will explain this difference during this chapter which is quite important to really understand International conflict management. Of all the subjects which are enough grown for inquiry in the study of international relations, the most enduring is the collective employment of armed violence. As the other kinds of conflicts, also international conflicts are just another form of social conflicts carrying all of its hallmarks. This type of conflicts arises from a mutual recognition of competing material interests including basic values. Not only international conflicts, but also most of the other conflicts in the social sphere are more dynamic than static in their nature and they are evolving with many interactions between the damaged parties. On certain type of social conflict of interest here (in this case international conflict) is distinguishable from other types only because of the involved parties. Throughout the human history and its historical development conflicts have been fought between state actors, within states, and Non-state actors. [1]

Since the existence of the conflicts, there are considerations of how the third parties can help, mediate, involve, "manage" and limit these social conflicts between actors in the international field. There is much more that we can do with implications of these efforts. Attempts of the third parties to manage and limit the use of armed violence can deliver positive results, outcomes in form of stability, order and in some cases, even peace. Conflict management is not just an ordinary receipt to resolve the conflict, the third party have to give full efforts to manage the situation, in other case bad conclusions, not at the right time actions or half-hearted

[1] Michael J. Butler. 2009 International Conflict Management p.30

efforts at conflict management can deteriorate the conflict, which could generate a greater danger, suffering and death for more people. [2]

1.2. Difference between International Conflict Management and International Conflict Resolution

Many historians, politicians and scientists confuse international conflict management with international conflict resolution, which in fact, it is a big mistake. Therefore, the study of international conflict management sometimes could be really confusing, and there is a reason why. It means, main problem and confusion occurs with imprecise using of lexicon, trying to describe and clarify various mechanisms for conflict management. As an example where clearly can be notice this imprecision, with final result "confusion", we can present the relationship between conflict resolution and conflict management. Also, some other terms as termination, continuity, conflict resolution, transformations and many others are confused with the term of conflict management. This mixing or confusion is not identifiable only for the readers, young researches, but also very often professional analysts, commentators and scientists are making wrong interpretation on the conflict management term.

Hence, all misrepresentations work and lead to a misunderstanding of what constitutes management conflicts and also simplifying of a range of approaches and concepts that contain violence defining the main subject of managing conflicts. Managing Conflict presents the activities and efforts of the third party which in cooperation with the involved parties are trying to limit the spread of the conflict in order to bring suffering to a minimum and to create an environment for interaction, where violent activities are excluded. [3]

Hence, we can note that managing conflict is completely different concept from the concept of conflict resolution.

Therefore conflict resolution aims at promoting reconciliation in the basic level of conflict by addressing the underlying wounds of a conflict, where will be expressed satisfaction by all

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[2] Alagappa, Muthiah and Takashi Inoguchi. 1999. *International Security Management and the United Nations*. New York, NY/Tokyo: United Nations University Press.

[3] Michael J. Butler. 2009 International Conflict Management p.31

parties which are involved in the conflict, while managing conflict remains at superficial basis. Managing conflicts focus on managing the adverse effects of the conflict, not resolve the underlying causes of conflict.

1.3. Main elements and approaches that define International Conflict Management

In the text above we explained the difference between managing conflicts and conflict resolution and it is important to note that this topic deals specifically with the practice of managing conflict, in response to international conflicts which today are substitute for war. The method of warfare has undergone various changes over the past thirty years, where today on the same scene perform conflicts (international conflicts, conflicts between state actors, conflicts between non-state actors, conflicts within the states) . [4]

Conflict management can be explained as effort to control or maintain the ongoing conflict between two opposing politically motivated parties which are working in the state or under the state level, mostly through the involvement of a third party (Burton and Dukes, 1990), which acts as mediator. Usually, the third party or etc. mediator is one of the major countries that has authority in the international arena, and at the same time to be trusted by opposing sides in order negotiations to be recognized and accepted by all the included actors. Conflict management centrally is directed to the construction of a situation, while using various mechanisms, which would be less damaging to the parties directly involved in the conflict. [5] Hence, conflict management starts from the point where intensifying and worsening the conflict is not inevitable picture and the aim is to deny the victory of the aggressor or in other words, to deny the usefulness of aggression. Third party or mediator is the one who can act to stem the tide of escalating conflict in various ways, in the case where it is very likely to happen intensification of the conflict because of the absence of any authority to rule.

Bercovitch and Regan, two leading scholars in the field of international management of conflicts differ four wide categories of approaches of conflict management:

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[4] *Encyclopedia of Conflicts and their Management, 1945–1995.* Washington, DC: Congressional Quarterly.

[5] Michael J. Butler. 2009 International Conflict Management p.32

* Threat - based (the threat of force and various other tools for forcing)

* Deterrence - based (various instruments of coercive diplomacy aimed to deter other countries)

* Adjudicatory (legal and regulatory institutions and approaches to achieve legal agreements with other countries)

* Accommodationist (other traditional and non-traditional diplomatic mediation agreement between the parties)[6]

The first two approaches are based on the threat of force, intimidation, deterrence and the use of force, or so-called "hard power" in order to achieve an agreement that will be beneficial to all parties involved in that conflict. Whereas "Adjudicatory" approaches rely on a system based on rules and regulations, or using so-called soft power as a means for meeting a mutual interests. Each of these approaches, brings various effects, consequences, cost and requires different resources, which in the end the result can be successful (and can not), depending on many different circumstances.

1.4. The importance of international conflict management

Today, conflict management and conflict resolution are driving themes of the agendas of various international organizations, institutions, agencies and represent a major challenge that the world faces the late 20th century until today. This need arose from the fact that the traditional conflict management from the period of the Cold War between regional and global powers it supposed to adapt to the new security environment, in which states are daily confronted and where this environment is filled with non-traditional threats and challenges to security. The policy of international organizations for crisis management was recognized one of the possible responses to such threats and challenges, where international organizations were forced to adjust their approaches in order to deal with violent conflicts. Managing conflict is determined by different positions. Two general positions describe the conflict management as a policy and instrument to act in direct case of organized violence and its possible escalation (this includes close view) and the second, which aims to more broadly understand for the conflict management

[6] Bercovitch, Jacob and Patrick Regan. 2004. 'Mediation and International Conflict Management: A Review and Analysis,' in Zeev Maoz, Alex Mintz, T. Clifton Morgan, Glenn

which though it relies on instruments and policy which should aim towards decreasing and stopping violence - conflict and quell the parties which are involved, but also to engage in finding a solution to various aspects of the complex conflict situation. These efforts and commitments were recognized through intensive academic interest, early warning and conceptualization of prevention. Hence, Gur developed a model for easier identification and monitoring of ethno-political mobilization and conflicts, Carment establish a project that could help to be backed theoretical assumptions for unsuccessful and vulnerable countries. [7]

A number of different scientists, analysts, experts in the field of peace and conflict believe that conflict prevention should be a central concept in terms of practice and analysis. While political representatives in international relations do not reflect the same level as experts but with a minimal degree of enthusiasm. Some 4,200 articles related to the conflict use the term conflict prevention. Instead, conflict management as more comprehensive and broader concept is transferred to the narrow definition of managing crises, which often is redefined as intervention in crisis and short-term engagement.

1.5. New way to achieve global peace - Conflict management and collective security

After changing the way of warfare or with the appearance of conflict warfare, followed changes or advances, improvements, keeping up with all the processes of transformation in terms of strategies for prevention, prevention, management and resolution of international conflicts. We are familiar that managing conflicts is a new concept in the international political arena, which occupies an important place in all international agendas. As phenomena of the twentieth century we can put the efforts of a third party (the mediator) aimed at restricting international conflicts, interstate conflicts and the emergence of high extent of adverse effects. There appears collective security, which is the main motor force behind the management of conflicts, which is valuable for research in order to come to a greater knowledge, new principles, strategies and concepts which indicate the importance of managing international conflicts. Collective security and conflict management have one thing in common and that is a kind of common origin in preserving and respecting certain norms that are important for regulating the behavior and interactions between state and non-state actors in the international arena. As the most important

[7] Contemporary Macedonian Defense, 2014 Defense Ministry of the Republic of Macedonia p13-17

of all these common values which are sharing collective security and conflict management highlights the refusal armed conflict be used as a means of settling disputes, as common position on collective responses to limit the threat of security, threats that are coming as a direct return of armed conflict. It is useful and worth looking at the origins and development of collective security and its relation to the conflict management.[8]

With the appearance of conflicts and clashes, so began the attempts of the great powers to build a common security system, and as a first attempt to build a collective security system of the institutional framework arose in the form of the League of Nations in 1919, which was based on international conflict management. As a major, major excuse for the establishment of the League was massive destruction in World War II. After the First World War, the devastating results of the conflicts, losses that were unheard of until then, were a trigger for the formation of the League of Nations as an institution for the preservation of stability and order. To overcome this situation, the League of Nations extended beyond the borders of Europe, where the important role-played America or Woodrow Wilson. Woodrow Wilson performed with his fourteen points, after The Hague Conventions of 1899 and 1907, and his idea was that conflicts can be managed, limited and resolved.[9] Hence, as the basic function of the League of Nations was prescribed Managing conflicts, which at the outset was justified, because the League of Nations in its initial phase decisively and effectively carried out its obligations. But despite several successive stages, such as Danzig and Upper Silesia, the League of Nations faced several failures, inefficiency which further were a major factor in the dissolution of the organization. As such appear: ineffective response to the League of Nations regarding the invasion of Manchuria by Japan in 1931 and the attack on Ethiopia by Italy in 1935. The main reason for the inefficiency of the organization is the lack of political will to act and the available resources.[10]

-> All those who lived until the end of the Cold War had predicted a bright future for the collective security system in the world, predicting drastically decreasing of conflicts and certainly exclusion the biggest "threat" to peace, and that is the dissolution of the Soviet Union.

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[8] Haas, Ernst B. 1993. 'Collective Conflict Management: Evidence for a New World Order?' in Thomas G. Weiss (ed.) *Collective Security in a Changing World*. Boulder, CO: Lynne Reinner.
[9] Michael J. Butler. 2009 International Conflict Management
[10] Matthews, Robert O., Arthur G. Rubinoff, and Janice Gross Stein. 1989. *International Conflict and Conflict Management: Readings in World Politics*. Scarborough, ON: Prentice Hall. Princen, Thomas. 1992. *Intermediaries in International Conflict*. Princeton, NJ: Princeton University Press.

Since then, people began to believe that the United Nations finally settling down, following the change in the foreign policy of the Soviet Union and most experts and historians expected to be removed the inconsistencies of interest between the great powers. But, the cases of Bosnia and Somalia again highlighted the ineffectiveness of the United Nations in the prevention, management and resolution of conflicts.

The concept of collective security is based on two main principles which are: all countries that are members of that organization has to promise that they will never show aggression against each other. The second principle states that all member states must commit to collective sanction against aggressors, regardless of who is the aggressor with which would spread fear among the other states not to think of taking any military adventures. As many advantages, also occur disadvantages of this system and that: requires a major commitment of the Member States, respect and activation in operations to maintain peace, the joint command of the force. The concept of collective security of the United Nations was undermined by free riders, i.e. large countries, because of personal interests, they went into military adventures, on the other hand not participating of all member states in relief operations to the countries that are in crisis regions.

-> Constructivism has become an academic trend that emphasizes norms and ideas as determinants of behavior of states. Constructivists observe that the ideas and norms have a significant role in international relations in terms of power and interests of the states. Three major authors that stand out are:

* First, Michael Barnett, who writes about the boundaries of peacekeeping operations where due to the problematic nature of collective action, big states are at all times ready to send their armies in order to establish stability in areas considered to be high risk, areas called " spheres of influence ". As an example, we can quote three cases: Russian reaction in Georgia, France in Rwanda and the United States in Haiti that clearly indicate their "spheres of influence" and the boundaries of peace. Major powers tried to intervene on multilateral plan and wanted the international community to legitimize their behavior, or hide under the umbrella of international organizations. So Barnett tells how important and what impact has the legitimacy of the United Nations in the era after the Cold War.

* Bruce Cronin as constructivist, suggesting that changing norms of sovereignty defined forms of multilateral intervention throughout the history of the twentieth century. Cronin makes tests of three multilateral institutions: the United Nations after the Second World War, the League of Nations after the First World War and the Congress of Europe after the Napoleonic Wars where it appears that the subject of protection were royalty, national minorities and human rights and claims that in the course of the changing international norms different behaviors were different legitimized and promoted.

* Martha Finnemore, third constructivist focus on military interventions after the Cold War, i.e. the new era. It is important to say that the majority of military interventions that are implemented today, they are implemented in areas where the main proponents do not have major economic and geopolitical interests. Here there is resistance or confrontation by realists. Martha notes that normative changes in the international scene allows states to more optimistically and with greater efforts to commit, that anti- exceeded humble expectations, which were in line with realistic forecasts. Cambodia and Somalia are the main examples where Martha tested her hypothesis.

The above-mentioned constructivist inserted a new bright spot of the collective approach to security studies. But approach from the constructivists greatly weakened due to the lack of major examples and rigorously formal modeling. [11]

1.5.1. Global response: Collective conflict management

Different moments in the history of geopolitical changes often give result of new international institutions, in response to changes in the late nineteenth century. First appeared the League of Nations after the First World War, which came out as a failed organization with many shortcomings and failure of the main goal - to create international cooperation in the field of security. Then, after the Second World War appeared several international institutions that are in function until today: United Nations, NATO, the World Bank, the IMF and the European Union with its predecessors.

[11] Harvard International Review, Collective Conflict Management, by Hikaru Hayashi, May 6, 2006, accessed on April 2017 http://hir.harvard.edu/article/?a=878

These international organizations in the last 20 years trying to adapt in terms of their missions, doctrines and to expand their membership. The progress in the management of the financial sector largely exceeded and does not match with the progress made in the field of international security. First, during the 80s and 90s was expected to be marked a new era, a new start of the United Nations as the main international mechanism for monitoring, prevention, management and resolution of conflicts. United Nations marked several notable successes as Namibia, Cambodia, El Salvador, Mozambique, but inefficiency in Bosnia, Rwanda and Somalia have left a negative imprint of the international picture. Like oil on fire, attached American adventures in Afghanistan and Iraq, where the end result reached level of appeals for termination and reform of the Organization. Hence followed serious reforms that resulted with humble progress. After numerous efforts to establish the right reforms which will be aimed to cope with challenges and to fill the gaps, and of course monitoring and adaptation in relation to the different challenges that appear every day, in the United Nations there was doubt as to whether organization cannot understand the nature of the challenge well enough to design institutions capable of handling the itself challenge.

There are three reasons for this:

* First, there are major political obstacles for real reforms (each state drag on its side toward the direction of its national interests)

* Second, there are obstacles to the achievement of consensus and practically remains unrealized, and without consensus, the organization can not act.

* Third, some of the states - members believe that the current institutional organization becomes weak and has many shortcomings.[12]

Hence arises the conclusion that rather than looking ahead to a new institution, we need to recognize that new models of behavior have become apparent in the field of managing conflicts. These engagements have taken place from few different reasons, some less encouraging, some more encouraging and in the end results occur with varying degrees. Therefore, it is important to

[12] *The United Nations in the 21st century* (Waterloo, Ont.: Wilfred Laurier University Press, 2005); Paul Kennedy, *The parliament of man: the past, present, and future of the United Nations* (New York: Random House, 2006).

understand these informal models of collective management of conflicts in order to analyze why they would be successful or not, and is there any potential for restructuring the strategy for conflict management.[13]

1.6. Nuclear weapons and international conflicts

Today, the world is witnessing the results and achievements that have been achieved in the last 100 years of industrialization and modernization, enormously rapid development of technology, especially in the last 30 years. As the main driver and the holder of these achievements are wars or conflicts today. All inventions and achievements, their first purpose found in the army, or for military purposes, then with modernizing of the technology, as the technology becomes obsolete, it is run for extended usein everyday lives.

Of all the technological advances, there is no technological innovation in recent history that has greater impact on international relations, than the creation of nuclear weapons. The dilemma of the nuclear age began with the first use of nuclear weapons, the attacks on Hiroshima and Nagasaki or: how to bring the destructiveness of modern weapons into some moral or political relationship with the objectives undertaken. (Kissinger, 2009). It is clear that any use of nuclear weapons, surely brings a high level of casualties and destruction beyond any permissible foreign policy and goals set by the great powers.

Kissinger said that in the world of two great powers of the Cold War, America and the Soviet Union somehow managed to avoid this dilemma. The only cases where this dilemma was questioned was the Cuban Missile Crisis, where the Soviet Union authorized the use of nuclear weapons to defend itself, but this step would lead to mass destruction of the world, or war without a winner. The two blocks led by the US and USSR, step by step set various safeguards to prevent misunderstandings, unauthorized use of nuclear weapons or any other kind of incidents.[14]

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13 Collective conflict management: a new formula for global peace and security cooperation?, by CHESTER A. CROCKER,FEN OSLER HAMPSON, PAMELA AALL - Published: 19 January 2011

[14] Henry Kissinger on Nuclear Proliferation, Published in Newsweek, by Henry Kissinger, February, 2009, (accessed on April 2017) http://www.newsweek.com/henry-kissinger-nuclear-proliferation-82557

After the Cold War, when the United States had no longer gloomy global enemy, was expected to finish or start to reduce production and modernization of nuclear weapons. But, the result was quite paradox because the spread of technology, improvement of technology was in constant growth, especially the technology to produce nuclear energy, which simultaneously increases the chances of getting a nuclear weapons.

Over the years, even during the Cold War, the number of nuclear actors slowly increased, and in that line moved the changes in the map of spheres of influence in the world. As accessory, come to the fore unresolved regional and international conflicts and the tightening of ideological dividing lines, where rogue states or non-state actors are willing to manufacture and possess nuclear weapons. In this modern world, the proliferation of nuclear weapons became a comprehensive strategic problem. America could not maintain control of the world, to remain the only nuclear actor, despite the then weak Russia.

The possibilities for nuclear conflict are gradually multiplying by any further spread of nuclear weapons and thus increase the possibility of use of nuclear weapons in case the nuclear weapons to be found in the hands of some of the non-state terrorist actors, rogue state leaders - the current case with North Korea. Then, after already well-known opposing actors, the US and the USSR, on the scene comes Great Britain as nuclear actor in 1952 with its first nuclear test "Hurricane." Eight years later, in 1960, France tested its first nuclear weapon named " Gerboise Bleue ". Several years later, in 1964, China tested its nuclear weapons, named "596". These five countries are now signatories to the Treaty on Non-proliferation of nuclear weapons, agreement for which later in the study we will analyze how much is successful in the practice and the results until now or it is only one kind of coverage of the Great powers. [15]On the list of nuclear actors, we will add four other countries, who are not members to the Treaty on Non-Proliferation of Nuclear Weapons. India, with the first nuclear test in 1974, Pakistan joined the "team" in the mid-80s and finally North Korea is thought that made a successful nuclear test in 2006. Finally, Israel is regarded as a country that has nuclear weapons, but in the public it has not been proved.

It is Interesting the fact that all countries that are possessing nuclear weapons, at least those that are signatories to the Treaty on Non-proliferation of nuclear weapons, commit for peace in

[15] Nuclear Weapons: Who Has What at a Glance, Published in Arms Control Association, January 2017, (accessed on April 2017) https://www.armscontrol.org/factsheets/Nuclearweaponswhohaswhat

the world, control and reduction of nuclear weapons, but the facts says that that commitment is only to reduce nuclear weapon of the opponent (enemy), where practice talking that countries which possess nuclear weapons do not easily give up its nuclear weapons.

1.7. Nuclear deterrence

-> Among experts, political analysts and historians also there are two blocks. One block are those that justify nuclear weapons and the other block are those who are against the production and use of nuclear weapons. Many believe that nuclear weapons during the Cold War played a leading role as a means of deterrence and intimidation, or some kind of mediation, which was the reason America and the Soviet Union not to begin any conventional war. Here reappears Henry Kissinger, who during the Cold War was one of the biggest supporters of nuclear deterrence, in order to keep the peace between the two blocs, but today Kissinger argued that as it was useful nuclear weapons during the Cold War, nowadays is a global threat and instability in the international arena.

Experience to date in the history of nuclear weapons showed that nuclear deterrence as a theory and in practice so far yielded positive results. Here as the first and main actors will mention the USSR and the USA, where during the Cold War, in two occasions, the situation was completed by the outbreak of nuclear war, that is known as the Cuban Missile Crisis in October 1968 and the blockade of Berlin on 4 June 1948 year. (for these two cases, we will speak wider in other parts of the study). Then, as a second case where by the formula of deterrence, was avoided a big conventional war, appears the conflict between India and Pakistan for the Kashmir region. This war zone is also called the Kargil area. This conflict is rooted in ideological, cultural, historical and religious differences between the two countries after their independence in 1947. India was first that demonstrated the nuclear weapons on the border with Pakistan in order to send a warning to Pakistan for the territory of Kashmir. In my opinion, the power of deterrence, power in international relations, with the mere possession of nuclear weapons is especially evident with the launch of the nuclear program of Pakistan. The leaders said to the Pakistani people, that if necessary, they will eat grass for years, only to produce nuclear weapons, so that they can confront their enemy - India. So Pakistan launched its nuclear program

and with the help of France in May 1998 they made the first nuclear test. After the successful nuclear test made by Pakistan, the topic in the international arena changed and everybody spoke about nuclear conflict, not about conventional warfare.

Another example of nuclear deterrence is the Middle East, or Israel and its Muslim neighbors. Many believe that small Israel possesses nuclear weapons, and its large neighbors are not possessing nuclear weapons. This fact leading to a balance or calm the situation despite many conflicts between them. [16]

As the newest and freshest example to calm passions, but also stirring up is conflict between the US and North Korea. In 2006, with the first successful nuclear test, North Korea has become a major threat to America. Today, we are witnessing the constant verbal bickering and threats from both sides and the fears of North Korean leader Kim Jong Un, who has repeatedly threatened the US with nuclear attack, in case if America decides to intervene in North Korea. Like all previous US presidents, and even Donald Trump after all is eager for a new military adventure, or their known preventive warfare. The American President, Donald Tramp stated that he is looking to solve the problem with North Korea on diplomatic way, but if necessary, United States is ready for any military action, in order to deal with North Korea.

This last example clearly shows that the theory of deterrence successfully worked during the Cold War until the early 21st century, where states are held to the concept of "Mutually assured destruction(MAD)," military doctrine which states that if two contestants settle for use nuclear weapons, the end result would be the total destruction of both sides. Today when the number of countries that are possessing nuclear weapons is multiplied and we can add another nineteen other states that have the capacity and ability to manufacture of nuclear weapons if there is a need, and also non-state actors -(terrorists), the possibility of nuclear weapons being in the wrong hands, or the possibility of nuclear accidents or ordinary misunderstanding, can lead to disastrous nuclear war. It is important to mention that nuclear weapons are managed by human beings, who knew back in history to misrepresent, and the same could happen today.

[16] An analysis of the influence of nuclear weapons on international conflict , by Kearney, Kevin, March 2014

CHAPTER 2 - NUCLEAR WEAPONS

2.1 NUCLEAR WEAPONS OF MASS DESTRUCTION

Although nuclear weapons are not used already 70 years since the attack on Hiroshima and Nagasaki, concerns of its potential use is increasingly present on the global stage. Les Aspin, Secretary of Defense under President Bill Clinton said: "The Cold War is over and the Soviet Union no longer exists, but the world after the Cold War does not mean post - nuclear world." Despite many efforts to bring to full reduction of nuclear facilities in order in the near future to live in a world without nuclear weapons, however nuclear weapons are still present and not only not reduced after many multilateral and bilateral agreements, but constantly upgraded and sophisticated. According to some experts and former military officers, the possibility of a nuclear attack in the next 10 years is 29%, while others say the risk reaches 50% - 50%. These facts tell us that the leaders of the great powers must seriously approach on this issue, because the degree to which weapons of mass destruction are developed today, all that progress and development that has reached so far, humanity can be destroyed instantly.

The proliferation of nuclear weapons of mass destruction today remains one of the greatest threats to the world and global peace. The development of nuclear weapons came out of the boundaries of the known nuclear states, which to some extent they were controlling and making balances on the proliferation of nuclear weapons. So today and other countries, so-called " disobedient states", are possessing and developing nuclear weapons. This fact clearly indicates that we are living in a new era of regional or global nuclear arms race.

The threat of nuclear conflict is becoming more and more important to international community and are fundamental to relations between states. The spread of nuclear weapons to other state actors could be the spark or trigger for two potential side effects:

-> The first effect of the spread of nuclear weapons is the threat of possibility of nuclear weapons, in the near future to be found in the hands of terrorists, when the big capitals of the great powers can easily become the target of a nuclear terrorist attack. Analysts believe that New York and London are the primary targets of the terrorists. Also, according to analysts who study nuclear weapons, the possibility of terrorists to create nuclear weapon is on a really high level,

i.e. with a small amount of enriched uranium, a small team of terrorists and equipment that is now available online, terrorists could make a nuclear bomb in a few months.

=> The second effect of the spread of nuclear weapons is itself an increasing number of threats, which lead to further complication of global security and when it starts this effect, it is very difficult to regain it back. More countries, in order to overcome the uncertainty in which they are and to improve their position in the international arena, joining the club of nuclear countries. The fact that starting a nuclear program to produce nuclear weapons is a financial investment that most states can not realistically afford, the lack of guarantee for the success of the program itself, but the great desire of countries to join the so-called nuclear club is still alive, says the uncertainty felt by countries in today's world. Examples of such countries are Pakistan and North Korea.

Today, according to previous findings, nine countries possess around 27,000 nuclear weapons. First on the list is United States (1945), followed by Russia (1949), China (1964), United Kingdom (1952), France (1960), India (1975), Pakistan (1998), Israel (N / A) and North Korea (2006). But it is also important to note that about nineteen other states possess the technological capability to build nuclear weapons within a few months if necessary. So far they have not started nuclear programs because of practical and political reasons, but these countries should not be forgotten or removed from the list, because very quickly they can change the international security environment. Finally, non-state actors, repeatedly trying to get nuclear weapons, and in contrast of other countries that aspire to produce nuclear weapons in order military deterrence and intimidation, terrorists tend to use the nuclear weapons in the true sense, in order to cause fear, panic and certainly destruction.

In this chapter will be discussed topics such as: What is a weapon of mass destruction; What is nuclear weapon? A brief history of nuclear proliferation and nuclear states; The development of nuclear weapons; Efforts to control nuclear weapons; Specific number of nuclear weapons, Nuclear terrorism and in the end the possibility of a nuclear attack in the next 10 years.

2.1.1 What is weapon of mass destruction (WMD)?

According to the Regional Center for Peace and Disarmament of the United Nations (UNRCPD), weapons of mass destruction is defined as a particular weapon that has the potential and power for just a moment to kill millions of civilians, to destroy the environment and completely change the world and the lives of future generations through its devastating effects. From the very start of the production and proliferation of weapons of mass destruction, the United Nations advocated for its reduction and elimination. This task from the start was given to the First Committee of the General Council in order to deal with disarmament, global challenges and threats to peace and security that affect the international community. Also other United Nations bodies were engaged in the process of reduction and elimination of weapons of mass destruction such as the Conference on Disarmament and the Disarmament Commission. [17]

According to Britannica, weapons of mass destruction are defined as weapons with the capacity to cause death and destruction on a grand scale and indiscriminately, that the presence of such weapons in the hands of the enemy country can be considered as a serious threat. Modern weapons of mass destruction can be nuclear, biological or chemical weapons and often are named by the abbreviation as NBC weapons. [18]

According to the Federal Bureau of Investigation (FBI), weapons of mass destruction are defined as:

* Any explosive, incendiary or poison gas weapons, including the following: bomb; grenade; missile having an explosive more than four ounces; launcher; mine; or device that is similar to any of the previously described devices.

* Weapons designed to cause death or serious injury through the release, dissemination of toxic chemicals.

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[17] Weapons of Mass Destruction, published in United Nations Regional Centre for Peace and Disarmament in Asia and the Pacific(UNRCPD), September 2013 (accessed on May 2017)
http://unrcpd.org/wmd/

[18] Weapons of Mass Destruction, published in Encyclopedia Britannica, (accessed on May 2017)
https://www.britannica.com/technology/weapon-of-mass-destruction

* Any weapons that cause disease organism.

* Any weapon that is designed to release radiation or radioactivity at levels that are dangerous to human life. [19]

The term WMD has been used since before the world is familiar with nuclear weapons, or the first time this term was used in 1937 when they described the mass formations of aircraft - bombers. At that time, these high-flying warships were seen as unstoppable threat to civilians that were located near the battlefields. During the attacks on the cities of Tokyo and Hamburg, tens of thousands of civilians died in one night. Several years later, with the atomic bombing of Hiroshima and Nagasaki in Japan, the power of conventional weapons fade before the destructiveness of nuclear bombs that destroyed entire towns and 66,000 thousand people died immediately from the heat and blast proliferation. The bombing of Hiroshima and Nagasaki was a shock to the entire world that had never seen such a huge weapon of devastating proportions. There is not exact number of casualties from the nuclear bombing on Hiroshima and Nagasaki and on different documents or books, there are different numbers, but rounded, there were around 200,000 casualties in both nuclear attacks. [20]

Then, during the Cold War, the major powers led by the Soviet Council and the United States built huge nuclear facilities in which kept thousands of nuclear bombs and missiles, but at the same time as they advanced technological, in addition to the modernization of nuclear weapons, the great powers amassed stockpiles of chemical and biological weapons representing two other types of weapons of mass destruction. The fact that biological and chemical weapons today in the 21st century is easy to produce, it should increase our fears, that this kind of dangerous weapon can easily become a weapon of terrorists.

Since the start of production of such weapons, a number of different agreements are made in order banning several types classes of weapons of mass destruction. These efforts to control the production and proliferation of weapons of mass destruction are contained in bilateral,

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[19] Weapons of Mass Destruction, published in Federal Bureau of Investigation(FBI), July 2006 (accessed on May 2017) https://www.fbi.gov/investigate/wmd

[20] Weapons of Mass Destruction, published in Encyclopedia Britannica, (accessed on May 2017) https://www.britannica.com/technology/weapon-of-mass-destruction

multilateral and international agreements, where the multilateral agreements aimed at progress in the disarmament of nuclear weapons. Such agreements are: Agreement on Non-Proliferation of Nuclear Weapons (NPT) Treaty banning the testing of nuclear weapons in space, the Partial Test Ban Treaty (PTBT), Convention on biological weapons since 1972, the Chemical Weapons Convention 1993, Comprehensive Banning Nuclear Testing sinc Treaty since 1996. [21]

Types of Weapons of Mass Destruction:

Experts distinguish three types of weapons of mass destruction which are: nuclear, biological and chemical weapons of mass destruction. Here, the author will say a few words for each type of WMD, but further in research, the focus will be on nuclear weapons of mass destruction.

-> **Nuclear Weapons of Mass Destruction** - this type of WMD is the biggest and most dangerous threat, unlike the other two types. At this point, as the author repeatedly mentioned in previous articles, today nine countries participating in the nuclear club and about thirty others are counted that they have or had in the past, biological and chemical weapons. Today, with the technological development and modernization, there are more ways to get nuclear weapons, it is highly risky to those weapons get into the hands of terrorists. For example, the robbery of nuclear weapons or materials from nuclear facilities by combining radiological materials with conventional explosive device, smuggling of nuclear weapons in America or in any of the capitals of the other great powers, by producing chemical weapons can be use against a huge crowd of people and so on. But for now, the terrorists haven't used those weapons for several reasons: financial resources, knowledge, material and technological support, production, distribution to the target and organizational abilities. This does not mean that countries should not worry about this threat, but rather to push and to make more efforts for the safety of citizens through various preventive measures of control, because as technological progress is going forward and growing the number of countries possessing nuclear weapons, thus the possibility of

[21] W. Seth Carus, "Defining 'Weapons of Mass Destruction' " , February 2006, Center for the study of weapons of mass destruction - National Defense University Press , Washington, D.C.

those weapons get into the hands of terrorists who have no doubt if they gonna use the nuclear weapons in order to cause death of thousands of people, as a kind of ideological revenge. [22]

-> **Biological Weapons of Mass Destruction** - is the plague which is a bacterial biological weapon, anthrax, hepatitis, bird flu and other toxins such as botchalism, ricin, etc. are some of the types of biological weapons. There are three ways of how the biological weapons works: pulmonary, gastrointestinal, and through contact with the skin and it is important to note that such weapons can easily be made and used. For example, an attack with biological weapon on United States or London, England, will not cause disease and death only at the central level where is derived the attack, but will spread globally, depending on how is transferred. For the first time, biological weapons of mass destruction was used by the US in 1763, when British officers planned to distribute blankets that were infected with measles. Today, the biological weapon is used mostly by individuals, not by groups or state actors, but that should not be the reason why we should be concerned.

-> **Chemical Weapons of Mass Destruction** - works by consuming or if in case to get in contact with skin. Chemical weapons are less dangerous in terms of biological weapons, because of tardiness, fewer victims and the need for large quantities of chemicals to which it is difficult to get. Some of the types of chemical weapons are: blood agents, choking agents, nerve agents, blister agents, vomiting and psychiatric compounds. However, to have a large effect, chemical attack must have a sophisticated delivery system. Chemical weapons are used before 1000 years BC, when the Chinese used arsenic smoke. Also, chemical weapons, was largely used in the First and Second World War. More recently, chemical attack was carried out on a train in Tokyo in 1995 and also we were all witnesses of attack with chemical weapons this year in Syria, which ended with are around hundred victims, which most of whom were women and children. [23]

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[22]Types of Weapons of Mass Destruction, published in Eastern Kentucky University, (accessed on May 2017) http://hlsonline.eku.edu/hls-101-weapons-mass-destruction-wmd

[23] Weapons of Mass Destruction, Canadian Security Intelligence Service, October 2013 (accessed on May 2017) https://www.csis.gc.ca/ththrtnvrnmnt/prlfrtn/index-en.php

2.1.2 What is Nuclear Weapon?

According to the United Nations office for disarmament affairs, nuclear weapons are the most dangerous weapons that the world today is confronted, a weapon that has enough power to destroy an entire city, where there would have been millions of victims and the total destruction of the environment. Nuclear weapons not only cause immediate consequences, but all living things, including humans are doomed to long-term catastrophic consequences. The danger of such weapons appears from its mere existence and already seventy years later, as a result of technological development, the power of nuclear weapons is significantly increased by several thousand times more than the production of the first atomic bombs. The fact is that the project for the creation of nuclear weapons was launched to prevent the expansion of Nazi Germans and the scientists who were involved in the project were motivated and hard advocated the create another powerful weapon, which would prevent Germany and end the suffering. But since Germany surrendered before atom bombs be made, next target to test this new weapon was Japan. [24]

The bombing of Hiroshima and Nagasaki is the first time when were used nuclear weapons in order warfare, but 70 years later, despite the horror of the world knowing the consequences of using such weapons, however, the international institutions have failed to control and disarm it. Disarmament is the best way to prevent such weapons, but this so-called "project" is very difficult to accomplish completely. [25]

According to Thomas B. Cochran and Robert S. Norris, a nuclear weapon is defined as a device that is designed to release energy on explosive manner as a result of nuclear fission, nuclear fusion or combination of the two processes together. Nuclear weapons which are result of nuclear fission, commonly refers to the atomic bomb, while those resulting from nuclear fusion, are called thermonuclear bombs or hydrogen bombs. Strictly speaking, when the neutron Strike in the nucleus of the isotope uranium 235 or plutonium 239, it causes dividing the core into two fragments that each independently represent nucleus with protons and neutrons left over from the original core. In the process of splitting the nucleus, it's releasing a large amount of

[24] Nuclear Weapons and Nonproliferation, Second Edition, by Sarah J. Diehl and James Clay Moltz,, Denver, CO, USA 2008 p.1-18
[25] Nuclear Weapons, United Nations Office for Disarmament Affairs, (accessed on May 2017)
https://www.un.org/disarmament/wmd/nuclear/

energy in the form of heat and gamma rays followed by two or more neutrons. Escaped neutrons striking and in that way fission occurs in the surrounding nuclei, which then emit more neutrons, which lead to the division of more cores. This whole process of rapid multiplication fissions leading to a chain reaction which consumes all fissionable material and the process of generating such an explosion, arises from the atomic bomb that is familiar to the world today.

Nuclear weapons produces a huge explosive energy and to best display of its size, experts are using the words kiloton - a 1000 tons and megaton - which is 1,000,000 tons. This way it can be described and compared the explosive energy equivalent to the weight of conventional explosive TNT. As an example, we can take the first atomic bombs that were used for the bombing of Hiroshima and Nagasaki, Japan. The atomic bomb dropped on Hiroshima contained 64 kilograms of highly enriched uranium which released energy equivalent to 15 kilotons of conventional chemical explosives.

The explosion which occurred as a result of the atomic bomb, produce strong wave of shocks, enormous amounts of heat and deadly radiation. Flow caused dust and other debris, was created cloud in the shape of mushroom. This cloud was photographed by American bombers and from the first use of nuclear weapons, the cloud mushroom-shaped become synonymous with nuclear explosion. Until the attack on Hiroshima and Nagasaki, the world had not seen a weapon with such power that can suddenly cause enormous destruction, death of hundreds of thousands (with today's nuclear bombs - millions of victims) and diseases incurred as a result from radiation. [26]

From 1945 onwards until today, with the technological development, the countries have developed nuclear weapons that are several hundred and thousands times more dangerous and destructive than the one used in Japan. Also, it is important to mention that the first nuclear weapons were atomic bombs that were delivered by plane and were discharged just above the target until later warheads of nuclear weapons were developed for various strategic ballistic

[26] Nuclear Weapon, published in Encyclopedia Britannica , (accessed on May 2017) https://www.britannica.com/technology/nuclear-weapon

missiles. Then, nuclear weapons were developed for artillery rockets, torpedoes for submarines and battleships, earth mines, ballistic missiles with a smaller range and cruise nuclear missile. [27]

2.1.3. Difference between nuclear and conventional weapons

The main and fundamental difference between conventional and nuclear weapons is that nuclear explosion can be thousands to millions of times more powerful than the largest explosion of conventional weapons. Also, one of the differences is in the temperature that achieves the explosion; e.g. nuclear explosion creates a lot more heat than conventional and a big nuclear energy is released in form of light, especially from thermonuclear explosion. The energy released by a nuclear explosion is able to cause burns and fuels from big distance.

Then, another difference between this two types of weapons is that the nuclear explosion, despite the ongoing effects released, is also followed by the release of radiation, discharge that last shortly after the blast, but remains dangerous consequences for a long time. In percentage terms, at nuclear explosion, 85% of the energy is in the form of an air blast, while another 15% of the energy is released in different types of radiation. Of those 15% of radioactive energy, 5% contains the initial nuclear radiation, which produces most of the dangerous gamma rays, while the remaining 10% of nuclear energy represent one delayed part of nuclear radiation, which then years and years causing terrible consequences for all living world, including us, people. [28]

Cold War or with a different name, the "Arms Race " between the two blocks of the United States and the Soviet Union was the main driver for the development of nuclear weapons after the Second World War. During this period, from the end of World War II to the collapse of the Soviet Union (1991) which marked the 'end' of the Cold War, were produced about 32,000 nuclear warheads of various types. In the late twentieth century, after the collapse of the Soviet Union, a number of warheads were dismantled and destroyed, and one of the credit for this modest success in reducing nuclear weapons are numerous negotiations to control nuclear weapons, treaties on non-proliferation of nuclear weapons and various unilateral initiatives.

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[27] Atomic bomb, published in Encyclopedia Britannica , (accessed on May 2017)
https://www.britannica.com/technology/atomic-bomb

[28] Joseph M. Siracusa, Nuclear Weapons - A very short introduction , 2008 New York p.1-9

2.2. Nuclear states -> Brief history of the birth of nuclear proliferation

2.2.1. United States - The birth of the atomic bomb

After the outbreak of World War II in Europe, in October 1939, then-American President Franklin D. Roosevelt received a letter from physicist Albert Einstein and his colleague Leo Silard, where they both sought his attention, to announce him that a bomb of unprecedented proportions for the present world is possible to be done through the interrogation of the forces of a nuclear fission. [29]

Einstein and Silard, who fled Europe to avoid Nazism, feared that Germany was already working on a similar project and that in case, Hitler came first to such weapons, or an atomic bomb, no one would be able to stop his ruling in the world. To avoid this unwanted nightmare, Einstein and Silard urged the US President and the U.S government to join the race, and to be the first that is going to build an atomic bomb. President Franklin D. Roosevelt agreed and in the next four and a half years a huge secret project was launched in cooperation with the UK government. [30]The codename of this project was "The Manhattan Project" and it was spread across the America, from Washington to Los Alamos, New Mexico. For this project, were hired 200,000 workers and several thousand scientists and engineers from all over the world. This program was run by American physicist Robert Oppenheimer and General Leslie R. Grove and involved over 30 different research, manufacturing and testing cities. These centers included both, facilities with plutonium and facilities with enriched uranium, which worked in parallel to ensure the success of the project and accelerate the program itself. [31]

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[29] The Manhattan Project, published in American Museum of Natural History, (accessed June 2017) http://www.amnh.org/exhibitions/einstein/peace-and-war/the-manhattan-project/

[30] The Development and Proliferation of Nuclear Weapons, published in Nobel Prize, June 2003 (accessed June 2017) https://www.nobelprize.org/educational/peace/nuclear_weapons/readmore.html

[31] Nuclear Age Peace Foundation "A brief history of nuclear proliferation" By Volha Charnysh, January 2010

By the summer of 1945, was produced a sufficient amount of plutonium -239, which could produce a nuclear explosion, and the development of the design of the weapon was successfully improved, and finally the first nuclear test was scheduled.

The first atomic bomb exploded in the morning at 5:30 am on July 16, 1945, on the Alamogordo aerospace base, 193 kilometers south of Albuquerque, New Mexico. The blast appeared as an intense glitter beam, with a large wave of heat and later a huge roar, as the shock wave passed. The fireball rises rapidly, followed by a mushroom- cloud that extends up to 12,000 meters. The first atomic bomb created an explosive power equal to 15,000 to 20,000 tons of trinitrotool (TNT). Such an explosive power was not known to the previous world, which on the one hand brought hope, but on the other hand, fear. In the following month, two other atomic bombs were produced, as part of the Manhattan Project, one used uranium 235, and the other plutonium. These two bombs were thrown to Hiroshima and Nagasaki, in Japan, and were the Herald of the new nuclear age. [32]

Little Boy' and 'Fat Man'

The first bomb was called "The Little Boy" and far from the small, this bomb weighed 4,500 pounds. To create the Little Boy, was used 64 kg of highly enriched uranium -235. While the other bomb was called "Fat Man" and was larger, about 4,670 kilograms. This bomb was different from the first because instead of uranium, a core of plutonium-239 was used to create a nuclear reaction chain that would release explosive energy, equivalent of 21 kiloton TNT dynamite.[33]

In a national survey at the turn of the millennium, both journalists and the public ranked the dropping of the atomic bomb and the end of the Second World War as the top news stories of the twentieth-century. The Manhattan Project is the story of some of the most renowned scientists of the century combining with industry, the military, and tens of thousands of ordinary Americans working at sites across the country to translate original scientific discoveries into an entirely new kind of weapon. When the existence of this nationwide, secret project was revealed

[32] "Nuclear Weapons" - A very short introduction, By Joseph Siracusa, Oxford, 2008 p.10-26

[33] Hiroshima, Nagasaki and the first atomic bombs, published in Live Science, by Marc Lallanilla, May 2014 (accessed on June 2017) http://www.livescience.com/45509-hiroshima-nagasaki-atomic-bomb.html

to the American people following the atomic bombings of Hiroshima and Nagasaki, most were astounded to learn that such a far-flung, government-run, top-secret operation existed, with physical properties, payroll, and a labor force comparable to the automotive industry. At its peak, the project employed 200,000 workers and, by the end of the war, had spent $2.2 billion, which in today's U.S. Dollars, amounts about 22.4 billion dollars. [34]

The Second World War ended, but that did not mean an end to the development of nuclear weapons of mass destruction. After the Americans, the Soviet Union was the second nuclear actor that appeared on the world stage.U.S. President Traumane decided to continue the development of nuclear weapons, to a new weapon, and that is, a hydrogen bomb, in order militarily to overcome their rival, Soviet Union. With this act began the arms race and was marked the beginning of a new war, the so-called Cold War. Until 1954, both the USSR and the United States made successful hydrogen bomb tests, but the development of such a dangerous weapon did not stop here and the world was not safer. From 1945 on, the United States has produced about 66,500 nuclear bombs and 100 different warhead types, including countless modifications for operational purposes. Practically, every part of the Earth's surface is within range and can become the target of the current US nuclear arsenal. [35]

2.2.2. The Soviet Union-

The Soviet nuclear program began in 1943 during the Second World War, a little later than the US nuclear program. This program was under the guidance of physicist Vasilievich Kurchatov and was initiated as a result of the Soviet spies that were inserted into the American Project Manhattan, which was rapidly progressing. One of the largest and most important associates of the the Soviet Union, in Los Alamos, which contributed to important atomic information was Klaus Fush. This pace of tracking and gathering information lasted until the atomic bombing of Hiroshima and Nagasaki, when Stalin was surprised by the results of the United States, in the production of a bomb of unprecedented size. After bombing Japan and

[34] Manhattan Project Background Information and Preservation Work, published in Energy, (accessed on July 2017) https://www.energy.gov/management/office-management/operational-management/history/manhattan-project

[35] " Bulletin of the Atomic Scientists" , Vol. 65 No.4 (2009), pp.72-81

understanding the destructiveness of the atomic bomb, Stalin instantly ordered an acceleration of the nuclear program, where he told his scientists and engineers: "A single demand of you comrades, provide us with atomic weapons in the shortest possible time. Hiroshima has shaken the whole world. The Balance has been destroyed. Provide the bomb - it will remove a great danger from us. " [36]

Lavrenti Beria was appointed as the leader of the whole project, while Kurchatov remained as a scientific director. The Soviet Union made extensive use of the documentation available from the American program and the detailed description of the "Fat Man" provided by Fush in June 1945. Soviet scientists and engineers were assisted by a group of German physicists who were taken into the Soviet Union after the surrender of Germany. The Soviet Union made its first nuclear test for nearly four years after the first use of such weapons on 29 August 1949, in Semipalatinsk, Kazakhstan. [37]

The first nuclear test of the Soviet Union was called "First Lightning", a detonated plutonium bomb, RDS - 1. The RDS code was of no significance, but different people working on the project gave different interpretations. One popular name was "Reaktivnyi Dvigatel Stalina" or "Stalin's Rocket Engine." The intention and the entire focus of the Soviet program and Stalin was to produce an atomic explosion as quickly as possible in order to overcome the United States.

The first atomic bomb made by the Soviet Union was a copy of the American design of Fat Man. After this first successful test, it was a second bomb in order to repair the defects of the first bomb and so on every subsequent atomic bomb to be better from the previous one. The atomic bomb with highly enriched uranium was made immediately after the first bomb, and after that was launched a new program (new for the Soviets), for a new more dangerous and destructive weapon, a thermonuclear weapon. It is a fact that the success of Soviet nuclear testing marked the beginning of the Soviet-American competition in nuclear arming, a competition that each year pushed the world closer to the outbreak of a nuclear war. [38]

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[36] The Soviet Union and the Arms Race , New Haven: Yale University Press, 1983, p.20
[37] Russian Nuclear Weapons: Past, Present, and Future, By Stephen J. Blank, November 2011 (accessed on July 2017) http://www.atomcentral.com/the-cold-war.aspx
[38] Swift, John. "The Soviet-American Arms Race", History Today. Retrieved 21 April 2017 (accessed on July 2017) www.historytoday.com

The Soviet Thermonuclear Weapons Program 1948-1954

After the successful nuclear tests of the Soviet Union, in the middle of 1948, the Soviet thermonuclear program was placed at the highest level. The theoretical researches were conducted by Zeldovich, who added three other important figures to the team: Andrei Dmitrievich Sakharov, Vitaly Lazarevich Ginzburg and Viktor Aleksandrovich Davydenko. The Soviet Union's thermonuclear program initially focuses on igniting unbalanced detonation in liquid deuterium (this scheme proved impractical)

This first approach to creating a thermonuclear weapon is called Sloika, and originates from the Sakharov and Ginzburg. Sakharov was credited with the first idea of heating and compressing the fusion blanket around the trigger fission, while Ginzburg contributed to the second idea of improving the use of lithium-6D fuel rather than liquid deuterium and tritium. Being the leader in the design of Sloyka, Saharaov was considered as a father on the the Soviet hydrogen bomb. [39]

From here onwards, the Soviet Union continues to modify and upgrade its nuclear weapons by producing tens of thousands of nuclear warheads, and as the most important bombs we can place the Tsar hydrogen bomb, considered as the most powerful nuclear bomb ever made and today's SATAN 2 nuclear bomb.

2.2.3. The United Kingdom -

Although Britain was not the first country to build an atomic bomb, it is a fact that it was the first country to investigate the development of nuclear weapons. A report by Rudolph Peiers, Frish and the MAUD Committee in February 1940 showed the possibility of fission weapons. In August 1943, an agreement was signed in Quebec between Britain, United States and Canada for

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[39] The Soviet Nuclear Weapons Program, published in Nuclear Weapon Archive, December 1997 (accessed on July 2017) (http://nuclearweaponarchive.org/Russia/Sovwpnprog.html

co-operation in researching and building an atomic bomb, so British scientists, known as the "British Mission," actively collaborated and contributed to the Manhattan Project. [40]

In 1946, the Atomic Energy Act was passed, a law known as 'Act McMahon', in which, relations between the American and British nuclear programs were cut off, which means, the United States suspended nuclear cooperation with Britain, fearing of further proliferation. [41]With the launch of the Cold War and Armament Race, Britain, headed by Winston Churchill, decided that it should start its own independent nuclear program, and, in January 1947 were established the plans for the development of nuclear weapons

The first nuclear reactor went critically on July 3, 1948, and sites were also built to produce highly enriched uranium and plutonium. Britain sought places to test its test-nuclear bombs in other countries, as its territory is small and there are no suitable locations for atmospheric weapons tests. Finally, the UK decided to test the atomic bomb on the Monte Belo Islands, located on the west coast of Australia. Thus, Britain finally detonated its first atomic bomb on 3 October 1952, which was called "Hurricane" and contained explosive power of about 25 kilotons. [42]

After, the successful nuclear tests on the Hydrogen bomb by United States and Soviet Union in 1952 and 1954, the UK government was forced to initiate the development of thermonuclear weapons. The thermonuclear bomb was successfully tested in 1957, and Britain regained its position again on the international scene, bringing relations between the United States and Britain back to a halt and stepping in the direction of active co-operation. [43]

Following the revision of the 1958 nuclear power act and the continuation of nuclear cooperation between Britain and the United States, Britain ceased its independent nuclear testing,

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[40] Cold War: A brief history- Britain goes Nuclear, published in Atomic Archive, (accessed on July 2017) http://www.atomicarchive.com/History/coldwar/page10.shtml

[41] History of the British Nuclear Arsenal, published in Nuclear Weapon Archive, April 2002, (accessed on July 2017) http://nuclearweaponarchive.org/Uk/UKArsenalDev.html

[42] United Kingdom Nuclear Forces, Center for Defense Information, July, 2008

[43] Nuclear Age Peace Foundation "A brief history of nuclear proliferation" By Volha Charnysh, January 2010

and then, in 1961, together with the United States, continued to conduct joint nuclear tests in Nevada. Since then, all nuclear weapons in the United Kingdom have been based on the design of the US nuclear weapons, but have been left to the UK. In 2008, the UK's nuclear arsenal was counted around 180-200 warheads, of which, 48 were available for use at any time. Although Britain possesses far fewer nuclear warheads compared to Russia and the United States, it still needs to be considered as a significant factor in the international arena, which in case of an international conflict can play an important role. [44]

2.2.4. France -

Together with the United States and Britain, also France was one of the pioneers in nuclear weapons research since the time of Marie Curie and her assistant Bertrand Goldschmidt, now considered the father of the French nuclear bomb. After the Second World War, France was in a severe crisis, on the one hand, due to the instability of the Fourth Republic, then the difficult financial situation, America's refusal to help in Indochina and a row of other obstacles. France on all sides was surrounded by threats, first from Britain, which became a nuclear state, then the development of Germany after the Second World War, where in Paris was asked the question of survival of France, ie "Will France remain France? ". [45] During the Manhattan Project, Goldsmith worked as part of the British-Canadian team, where he discovered today's method for opening plutonium. General De Gaulle was informed by scientists who were involved in the Manhattan project, for the Progress made by America, and in 1945, after the Hiroshima and Nagasaki attacks, he decided to form AEC - the Atomic Energy Commission. But unlike Britain, France was forced to launch its own nuclear program from the very beginning, so that the French reactor first time was critical in 1948, and in 1949, a small amount of plutonium was extracted. [46]

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[44] How did Britain get involved in the nuclear arms race?, by Michael Goodman, (accessed on July 2017) http://www.bbc.co.uk/timelines/z33fycw

[45] France's Nuclear Weapons, published in Nuclear Weapon Archive, December 2001 (accessed on July 2017) http://nuclearweaponarchive.org/France/FranceOrigin.html

[46] Nuclear Weapons, Federation of American Scientists, July 1998, (accessed on July 2017) https://fas.org/nuke/guide/france/nuke/

The first five-year plan for the development of atomic energy, which was prepared by Felix Gaylard, was nuclear reactors to produce about 50 kilograms of plutonium per year, which would mean that it can produce 6-8 nuclear bombs.

After many efforts that were largely strained by fear and pride, on February 13, 1960, under Charles De Gaulle's leadership, France made the first successful nuclear test, making it the fourth independent nuclear power in the world. From that moment on, France was on the same level, side by side, with America, Britain and the Soviet Union. [47]

France, during the Cold War has made about 210 nuclear tests and today it has about 300 nuclear warheads, of which 290 are in condition for use at any time. Historically, the Nuclear Program of France costs approximately 10% of the total defense budget annually, but we will talk about it in the next titles. [48]

2.2.5. China -

After the entry of the Soviet Union into the nuclear race and demolition of the American monopoly, nuclear infection spread rapidly across Europe and beyond. In that period, all major and industrially powerful states began to explore the nuclear program. Thus, the nuclear fever hit China, which decided to develop an independent strategic nuclear weapon with a twelve-year scientific plan that was presented at the eighth CWC Congress in September 1956

Due to lack of scientific basis, China signed an agreement with the Soviet Union, China to supply Moscow with uranium in exchange for scientific assistance and support for the Chinese nuclear program. At a time when China decided to develop an atomic bomb, it faced a variety of technological choices, that is, there was a dilemma in which way to set off. [49] But at the time, China had to choose between the development of the U-235 production method, by dividing

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[47] Robert Norris and Hans Kristensen "French Nuclear Forces, 2008" , Bulletin of the Atomic Scientists, Vol. 64 No.4 2008, p.50-54

[48] The French Nuclear Deterrent, published in House of Commons Library, June 2016, (accessed on July 2017) http://researchbriefings.parliament.uk/ResearchBriefing/Summary/SN04079

[49] Chinese Nuclear History, published by Wilson Center, (accessed on July 2017)
http://digitalarchive.wilsoncenter.org/collection/105/chinese-nuclear-history

isotopes or the production of Pu239, from a nuclear reactor. However, China chose to produce nuclear weapons through the physical separation of U235 and U238 isotopes. [50]

China reached its peak in the development of nuclear weapons in the 1960s and in period of three years, successfully tested its first atomic bomb on Oct. 16, 1964. Then, 2 years later, China made a successful test on the first nuclear missile and on June 14, 1967, the first hydrogen bomb was detonated.

China has launched a series of nuclear-weapon production since 1968, and has been thermonuclear since 1974. Like other nuclear actors, China continued to develop and upgrade its nuclear weapons during the Cold War, where about 45 nuclear tests were carried out (atmospheric, underground, oceanic). Today, the current number of strategic nuclear usable warheads of China is approximately 260. [51]

China, along with the Soviet Union, United States, United Kingdom and France, belongs to states that possess nuclear weapons of mass destruction, but are signatories to the Treaty on Non-Proliferation of Nuclear Weapons. On the other hand, today there are four other states that own nuclear weapons, but are not signatories to the Nuclear Weapons Non-proliferation Treaty, and these are India, Israel, China and North Korea.

2.2.6. India -

Today, India is considered as a nuclear-weapon state, but is not a signatory to the Non-Proliferation Treaty. Encouraged by the successful atomic bomb test in China, the continuing war with Pakistan, and the lack of any indication of a reduction in nuclear weapons by other 5

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[50] Cold War: A brief history - Chinese Nuclear Weapons, published in Atomic Archive, (accessed on July 2017) http://www.atomicarchive.com/History/coldwar/page12.shtml

[51] China and Proliferation of Weapons of Mass Destruction and Missiles: Policy Issues, Shirley A. Kan Specialist in Asian Security Affairs, January 2015 (accessed on July 2017)
https://fas.org/sgp/crs/nuke/RL31555.pdf
Read more: Nuclear Weapons, published in Federation of American Scientists, November 2006 (accessed on July 2017)
https://fas.org/nuke/guide/china/nuke/

nuclear nations, India began its nuclear program in March 1944, years earlier than its . [52]There are three phases of India's nuclear program development.

The first phase is called Nehru Era, after the first Prime Minister Janjaharlal Nehru and lasts from 1947 to the mid-1960s. This period is known as voluntary nuclear abstinence, and at that time, Nehru advocated the complete elimination of all nuclear weapons and was firmly opposed to the production and possession of nuclear weapons to any state, including India. Nehru, the possession of nuclear weapons from the other five nuclear states, called "a crime against humanity" and he was the first world leader to call for an end to nuclear testing. But the Indian civilian nuclear energy program, under the auspices of the Atomic Energy Department (DAE), had the capacity for dual use, that is, some of the main figures such as Homi Bhabha were not opposed to the prospect, in future, India to develop an atomic bomb.

The second phase began in the mid-1960s until 1974, and in this period New Delhi was left with little hope for the possibility of a nuclear disarmament on the global stage. Under the leadership of Bhabha, India's nuclear program was heading in the right direction and after China's first nuclear test, Bhabha said that India also had the capacity and opportunities to conduct a nuclear test within 18 months, but no significant changes were observed on the political scene .

The third phase is the period from 1974 to 1995. On May 24, 1974, India carried out its first nuclear test in Pokharan, in the desert of Rayasthan. Raya Ramanna, the team's leader who conducted the nuclear test, sent a letter to then-Prime Minister Indira Gandhi, which read "Buddha Laughs". It is believed that this bomb was nearly as powerful as the one that was used on Hiroshima with a yield of 8-12 kilotons. India called this test a "Peaceful Nuclear Explosion" and began in a diplomatic way to prove that this test was peaceful. India has promised that the CIRUS reactor, built with the help of Canada and the United States, will only use it for peaceful purposes. Also, in order to avoid international problems and avoid conflict, India has built another large nuclear reactor called Dhruwa, which started operating in 1985. [53]

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[52] India's Nuclear Weapons Program, published in Defense Forum India, March 2001 (accessed on July 2017) http://defenceforumindia.com/forum/threads/indias-nuclear-weapons-program-1944-1999-full-history-must-read.68475/

[53] India's Nuclear Weapons Problem, published in Nuclear Weapon Archive, March 2001 (accessed on July 2017) http://nuclearweaponarchive.org/India/IndiaOrigin.html

India has conducted six nuclear tests, has collected about 500 kilograms of plutonium from both reactors, which means it has about 120 nuclear warheads and thus remains an important actor on the international scene. [54]

2.2.7. Israel -

The possession of nuclear weapons and nuclear test data by Israel remain a mystery. It is believed that Israel possesses nuclear weapons and that makes it the sixth nuclear state and t the Israel's first nuclear bomb was made in December 1966 with scientific and technical support by France. Also, Israel is one of the four nuclear-weapon states, which has not signed the Non-Proliferation Treaty of Nuclear Weapons.

Israel's nuclear program began with the conviction that the Holocaust gave it the right to take any measures to ensure its own security. Co-operation between France and Israel has emerged since the 1950s, with the construction of a water reactor and a chemical processing plant in Marcoule. Hence, France gives full support to Israel in the construction of the nuclear reactor and becomes Israel's long-standing partner. It is likely that Israel did not have the capacity to independently build a nuclear reactor and produce nuclear weapons, without a blessing from the French government. Israel, long time successfully hide its nuclear program on an international stage, and so many data remain unknown until today, that is, all information about Israel's nuclear program is subject to certain theoretical calculations and assumptions. [55]

The CIA, according to various parameters, calculated that in 1974, Israel had ten to twenty nuclear warheads and that this weapon has not improved over the entire time period. As noted above, the exact number, size, design and strength of Israeli nuclear weapons is not known, and

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Read more: The Indian Nuclear Bomb - Long in the Making, by M.V. Ramana, (accessed on July 2017) http://members.tripod.com/~no_nukes_sa/precis.html

Read more: http: //www.angelfire.com/mi/MIND123/PRAFUL.html

[54] India's NW Program - 5 things you need to know, published in The National Interest, April 2015 (accessed on July 2017) http://nationalinterest.org/feature/indias-nuclear-weapons-program-5-things-you-need-know-12697

[55] History of Nuclear Weapons - Israel, Federation of American Scientists, July 2002 (accessed on July 2017) http://www.rense.com/general26/historw.htm

Read more: Israeli Nuclear History, The National Security Arch, The G.W. University, by Avner Cohen, (accessed on July 2017 http://nsarchive.gwu.edu/nukevault/israel/

therefore it comes down too many different calculations and reports. Israel is believed to possibly own 100 to 200 nuclear warheads by the mid-1990s. Some publications claimed that Israel could possibly have about 400 nuclear warheads, but there has been no public statement from the Israeli government so far. [56]

The United States was deeply concerned by Israel's ability to possess nuclear weapons and consistently pressed the Israeli government to explain the mysterious facilities near Dimona and to allow inspections to be carried out on suspicious territories. Following strong pressure from the US administration, Israel accepted inspections, but the inspectors were deceived, or, the fact that the exact time and date of inspections was known, all objects were equivalent to another purpose, and also the inspectors did not have access to all facilities, which eventually led the inspectors to report that the inspections were useless. Israel's most important data on the possession of nuclear weapons is the existence of a nuclear reactor " Dimona ", which was built with the help of France. [57]

Today is unknown the number of nuclear tests carried out by Israel, the number of nuclear warheads, and also their sophistication, size and power.

2.2.8. Pakistan -

Following the success of India's nuclear test, Pakistan sensed the threat at it's own gates and the fear of using nuclear weapons by India, was enough good reason to launch a nuclear program in 1972. The leader on the Pakistan's nuclear program was Zulfiqar Ali Bhutto, who at the time was Minister of Natural Resources and later President and Prime Minister of Pakistan. After the loss of East Pakistan in 1971 in the war with India, he officially launched the Pakistani nuclear program with a meeting of engineers in early 1972. One of the most deserving figures for

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[56] Welcome to Israeli NW, published in The National Interest, by Daniel R. DePetris, September 2015 (accessed on July 2017) http://nationalinterest.org/feature/welcome-israeli-nuclear-weapons-101-13882

[57] Israel's Nuclear Arsenal might be smaller and more strategic than everyone thinks, published in Business Insider, by Armin Rosen, November 2014 (accessed on July 2017)
http://www.businessinsider.com/israels-nuclear-arsenal-may-be-different-than-everyone-thinks-2014-11?IR=T
Read more: Israel's Nuclear Weapons Program, published in Nuclear Weapon Archive, December 1997 (accessed on July 2017)
http://www.nuclearweaponarchive.org/Israel/index.html

success in Pakistan's nuclear program is Dr. Abdul Lidder Khan, a metallurgist trained according to German standards with extensive experience in the processing of enriched uranium in the Netherlands. Dr Khan was the main leader in building and operating the Cahuta facility, which was established in 1976 and under his leadership was developed a network of technologies and people needed to develop highly enriched uranium.

By 1986, Pakistan had produced enough material to make a bomb, but it did not stop, but continued to develop and upgrade the program for producing Highly enrichment uranium (HEU). [58]

Pakistan achieved its first nuclear success on May 28, 1998, by carrying out five nuclear tests. At that time, the Pakistan Atomic Energy Commission said that the five nuclear tests caused seismic signals of 5.0 on the Richter scale. Two days later, on May 30, 1998, Pakistan tested another atomic bomb with yield of 12 kilotons, in the city of Balotzistan. These nuclear tests by Pakistan were carried out two weeks after the five nuclear tests by India in a sign of warning to Pakistan.

Pakistan's nuclear program primarily used a highly enriched uranium, which was produced by Dr. Khan in his lab in Cahuta. The facility in Cahuta was active from the early 80's and up to 90 years, and in the same facility were counted about 3000 centrifuges. [59]

It is also important to say that in the launch and development of Pakistan's nuclear program, an important role was played by China, in particular in the procurement and transport of materials and technology needed for the construction and operation of nuclear facilities. China also provided extensive material and technical support for the construction of the Nuclear Reactor Chasma in the 1990s. [60] Also Pakistan expected support from France, but because Pakistan did not sign the Nuclear Weapons Non-proliferation Treaty and did not accept the terms of the International Atomic Energy Agency, France withdrew from the co-operation. According

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[58] Pakistan Nuclear Weapons - A Chronology - a timeline of the Pakistan's Nuclear Development program since 1965.
From Testing to Deploying Nuclear Forces: The Hard Choices Facing India and Pakistan - Gregory S. Jones. , Rand, 2000

[59] Documents Indicate A.Q. Khan Offered Nuclear Weapon Designs to Iraq in 1990: Did He Approach Other Countries? By David Albright and Corey Hinderstein, February 2004

[60] Pakistan's Nuclear Weapons Program, published in Nuclear Weapon Archive, January 2002 (accessed on July 2017) http://nuclearweaponarchive.org/Pakistan/PakOrigin.html
Read more: Why China helped countries like Pakistan, N. Korea build Nuclear Bombs, by Alex Kingsbury, January 2009 (accessed on July 2017)
https://www.usnews.com/news/world/articles/2009/01/02/why-china-helped-countries-like-pakistan-north-korea-build-nuclear-bombs

to some reports, at the time of the development of the nuclear program, Pakistan was also assisted by the Soviet Union. [61]

To date, according to official and current information, Pakistan has conducted six nuclear tests and currently has about 130 nuclear warheads that are capable of being used.

2.2.9. North Korea -

The history of North Korea's nuclear program has roots since 1950s, and began in 1989 with the collapse of the Soviet Union and the end of the Cold War, when it lost its only economic allies. The history of North Korea's nuclear proliferation can best be shown through chronological data, due to the lack of official documents and records. The experts uses only various reports and claims from stakeholders, such as North Korea and the United States, followed by various influences from China, Russia, South Korea and Japan.[62]

North Korea's nuclear program is divided into several phases: the first phase is from 1956 to 1980 when North Korea only collects basic information on nuclear weapons, the second phase from 1980 to 1994, which is marked by the suspension of North Korea's production of plutonium. The third phase is the period when North Korea, in addition to the prohibition on producing plutonium, is secretly working on a nuclear- program based on Highly Enriched Uranium, and the fourth phase is from 2002 to the present, and this phase covers the period of increased nuclear activities in North Korea. [63]

In the following points, we will list some of the more important dates and events related to North Korea and its nuclear program:

*In 1950, North Korea begins nuclear research assisted by the Soviet Union

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[61] How does Pakistan have more nuclear bombs than India? How does it change India's foreign policy of war or retaliation?, by Balaji Viswanathan, (accessed on July 2017)
https://www.quora.com/How-does-Pakistan-have-more-nuclear-bombs-than-India-How-does-it-change-Indias-foreign-policy-of-war-or-retaliation

[62] https://www.ft.com/content/17d64600-74c8-11e2-b323-00144feabdc0

[63] North Korean Nuclear History, published by Wilson Center, (accessed on July 2017)
http://digitalarchive.wilsoncenter.org/collection/113/north-korean-nuclear-history

* In 1969, North Korea began developing nuclear weapons

* In 1974, North Korea joins the International Atomic Energy Agency to supervise Pyongyang's nuclear program

* A year later, in 1975, North Korea joined the NPT on Nuclear Weapons

* In 1986, the nuclear reactor in Yongbuon was activated, with a capacity for producing plutonium, and seven years later, in 1993, North Korea withdrew from the NPT.

* From the 1990s to 2005, on several occasions North Korea came to a point of conflict and misunderstanding with the United States, and finally, in October 2006, North Korea made the first nuclear test. Some experts have calculated that the bomb had 1 kiloton, which, compared with that of Nagasaki, which had 20 kilotons, is very small, but is a great successful start and motive for the further development of nuclear weapons by North Korea. [64]

Then in 2009, North Korea carried out its second nuclear test and several more consecutive in the next few years, until the last two in 2016. Every North Korean nuclear test contained a bomb with a growing and more powerful capacity for destruction, as well as a longer range. Kim Jong-un, the North Korean leader, claims Pyongyang has the capacity to produce a thermonuclear bomb, while external experts are skeptical about the success of North Korea's nuclear program. Because of nuclear testing, North Korea has been subject to constant sanctions by the United Nations and other major powers over the last two decades. [65]Today, we are all witnessing daily US and North Korean interruptions, followed by threats of using weapons of mass destruction, where Kim Jong Un is threatening the United States with a total war. The world is affected by these problems, because one misuse of nuclear weapons can cause catastrophic consequences for the two confronted sides and for the rest of the world.

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[64] How North Korea's Nuclear Program Began, by Olivia B. Waxman, March 2017 (accessed on July 2017) http://time.com/4692045/north-korea-nuclear-weapons-history/

[65] North Korea Nuclear Timeline Fast Facts, CNN Library, (accessed on July 2017) http://edition.cnn.com/2013/10/29/world/asia/north-korea-nuclear-timeline---fast-facts/

Read more: North Korea, published in The Nuclear Threat Initiative, August 2017 (accessed on July 2017) http://www.nti.org/learn/countries/north-korea/

Conclusion:

These nine countries are not the only states that have succeeded in creating a nuclear program. While on the one hand there are countries looking for nuclear weapons, there are several countries that have given up nuclear ambitions and nuclear weapons: Brazil, Argentina, South Africa, Ukraine, Belarus, Kazakhstan and Libya. But, however, everyone asks why states build nuclear weapons, or what are the motives for possessing such destructive weapons ?! The production of nuclear weapons is too expensive investment, but the states want to own it. With the launch of Pakistan's nuclear program, the Pakistani government said, "If need we will eat only grass for years, but we will get nuclear weapons." The motives for nuclear weapons are different, from fear and distrust to pride, but all are connected in some way. For example, the nuclear ambitions of the United States were prompted by Nazi Germany, then the Soviet Union was driven by the possession of an atomic bomb by the United States, China began its nuclear program fearing America and Britain, India, in turn, began its nuclear program Fear of China and so on to all other countries, Pakistan from India, Iran from Israel, North Korea from America.

The world witnessed the destructiveness and consequences of the use of nuclear weapons with the attacks in Japan, but still countries did not deviate from nuclear ambitions. While some search for nuclear weapons with the goal of defense and deterrence, others seek with purpose to use it, as the terrorists. It is a fact that if a state owns nuclear weapons, its role on the international scene will be significantly greater, and no other state would condemn it to attack, so that states seek the justification for possessing nuclear weapons in guaranteeing security.

Throughout history, the international institutions are trying through various agreements to prevent the proliferation of nuclear weapons, but the biggest problem is that the main word in the institutions themselves has the great powers ie. Nuclear forces.

It remains to be seen and to be witnesses whether the nuclear club will cut its members or continue to spread.

2.3. Nuclear weapons in the past and today

Following the example of every development process of all inventions to date, the same process has passed the nuclear weapons. At the outset, during the Second World War, the two opposing blocs worked to create such weapons so far unseen to the world. After the successful "testing" of the nuclear weapons of Hiroshima and Nagasaki by the United States, a new process of its improvement has begun. This process of improvement is a process that is ultimately unaccountable; first, the US and USSR have been focused on the development and creating a larger and more powerful atomic bomb, followed by numerous nuclear tests and the creation of a thermonuclear bomb that has been shown to be tens of times more powerful than the atomic bomb. The thirst to overcome the other and to show greater power to the world has taken these two blocs into an accelerated technological development which on the one hand has contributed to humanity, but on the other hand the danger of destroying our planet and the whole animal system every day was bigger and bigger. But the very creation of such weapons with an unprecedented size of power, demand an appropriate delivery systems that have also been further developed in accordance with the development of nuclear weapons in the past seventy-two years.

In this part of the study of this comparison of the size and power of nuclear weapons in the past and today, the focus will be on the United States and Russia, as the main bearers and nuclear leaders in the world. Various diagrams will be presented where they can graphically and simply show the difference in the power of the nuclear weapons at the very beginning and today and will also briefly explain the development of nuclear weapons and delivery systems that are of particular importance. While at the beginning, the United States and the USSR (today Russia), were initially coping with each other regarding the technology and directions of nuclear weapons development, today these two most powerful countries in the world are moving in different directions with different strategies that will also be covered in this part. [66]

The first nuclear weapon was detonated by the United States on July 16, 1945, in New Mexico. This nuclear test was called "The Trinity test" and contained about 20,000 tons of TNT, an explosive sufficient to cover an area of five square miles of radioactivity. But this test was just the beginning of the nuclear era, a start that was followed by about 2,000 nuclear tests, of which

[66] How dangerous are modern nuclear weapons?, by Vandita, January 2016 (accessed on August 2017) http://anonhq.com/how-dangerous-are-modern-nuclear-weapons/

two were 'true' targets (Hiroshima and Nagasaki, Japan), and produced over 125,000 nuclear bombs in the past seventy-two Years.

Until 1945, the world had no perception of the possibility of having such a type of weapon, which, unfortunately, Japan felt on its own skin. Atomic bombs that were dropped on Hiroshima and Nagasaki, also named after their codename "Little Boy" and "Fat Man", have caused enormous destruction, with lasting consequences that can be felt today, killed about 160,000 people in Hiroshima and 80,000 people in Nagasaki. The good side of the history of nuclear weapons is that since World War II, such weapons have not been used, although the risk is increasing every day, on the other hand, the negative part is that today, nuclear weapons have been developed to the level, where power of the nuclear weapons has been increased by several thousand times that the atomic bombs of Hiroshima and Nagasaki. Atomic bombs from Hiroshima and Nagasaki are fission bombs that cause a chain reaction from a nuclear fission. Atomic nuclei from radioactive materials are split-separated to create various elements that release a huge amount of energy, as a result of the division of more atoms and the production of an explosion with a great power of destruction.

The Little Boy, at his explosion, released about 15 kilotons of energy which is equivalent on 15,000 tons of TNT, while the Fat Man produced 21 kilotons of energy, which is equivalent to 21,000 tons of TNT explosives. It's hard to say that their impact is small, but these two bombs marking the beginning of the nuclear age are only a small shadow of the weapons that were created during the Cold War period. [67]

During the Cold War culmination, the USSR and the US possessed thousands of ballistic missiles capable of delivering up to 10 independent warheads at the same time, each of them twenty times more powerful than the atomic bomb dumped at Hiroshima. The peak was reached in 1988, when Russia possessed about 45,000 nuclear weapons in its warehouses, which is 13,000 more than the US-owned arsenal. By the end of the Cold War, after all the calculations, the US owned about 3.8 billion tons of nuclear weapons. [68]

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[67] Nuclear Weapons and Nonproliferation, Second Edition, by Sarah J. Diehl and James Clay Moltz, , Denver, CO, USA 2008
[68] How dangerous are modern nuclear weapons?, by Vandita, January 2016 (accessed on August 2017) http://anonhq.com/how-dangerous-are-modern-nuclear-weapons/

The destructiveness of atomic bombs was not enough for the two major rivals United States and the USSR, and therefore development continued in advanced stages where the final result was the creation of a thermonuclear bomb or a so-called hydrogen bomb. In the explosion of the hydrogen bomb, the fission process is just the beginning, that is, modern nuclear weapons use a similar fission process as well as atomic bombs, but initial energy ignites a fusion reaction in the second nucleus from the hydrogenate isotopes deuterium and tritium. The nucleus of the hydrogen atoms condenses (fuse) to form a helium and a re-chain reaction with an explosion that is much more powerful. The first successful hydrogen bomb test was made by the United States on November 1, 1952, on the island of Ellugelab in Enewetak Atoll, in the Pacific Ocean, as part of the IVY operation. This H-bomb was called Ivy Mike, and carried 50 MT of TNT. [69]

Hence, the competition, or the race for thermonuclear weapons, began, where every year, the world was presented with a bigger and more powerful bomb. As the largest and most powerful nuclear weapon ever built, we will list several thermonuclear bombs that marked the Cold War period. In the race to build an H-bomb, the United States was the first to succeed in building and successfully testing thermonuclear weapons, but so far the most powerful nuclear weapon ever seen for humanity has been created by the USSR to date. Specifically, nine years later, since the creation of Ivy Mike on October 30, 1961, over the island of Novaya Zemlya, USSR detonates the most powerful hydrogen bomb, the Tsar Bomb, with a power of 3,800 times bigger than the atomic bomb dropped at Hiroshima. The Russians, the Tsar Bomb still called Kuzkina Mat or simply translated "We'll show you". This bomb raised the scale of an explosion of frightening 50 Megatons, or 50,000 kilotons, although the original bomb was supposed to deliver 100 million tones of yield, with sufficient destructive power to destroy the area, equivalent of the size of Connecticut. The Tsar bomb produced a mushroom-cloud 40 miles high or nearly eight times the height of Mt. Everest. The final firewall was supposed to cause third-degree burns, even at a distance of 100 km (64 miles), and also in Norway and Finland were noticed some broken windows. This bomb was dropped by Tu-95 bomber, using a huge parachute. The Tsar bomb contained three phases, while other thermonuclear bombs exploded only in two phases. The

[69] Here's How Much Deadlier Today's Nukes Are Compared to WWII A-Bombs, by Jay Bennett, October 2016 (accessed on August 2017)
http://www.popularmechanics.com/military/a23306/nuclear-bombs-powerful-today/

additional third phase increased the explosive power of the thermonuclear power, and the actual range of 100Mt was reduced by 50% to limit radioactive dust. [70]

The Russian Nuclear Triad includes the Strategic Fleet (Naval Base): it has 12 submarines capable of carrying up to 609 nuclear warheads, then the Strategic Missile Forces (land bases): 489 missiles capable of carrying up to 1788 warheads and Strategic Aviation Units: 79 Bombers capable of carrying up to 884 cruise missiles. [71]

Unlike the USSR, at that time, the United States was moving along a completely different direction in the development of nuclear weapons, that is, instead of building a huge bomb, they built thermonuclear weapons of smaller size and power, but with more developed delivery systems. These nuclear weapons are called the MIRV-A multiple independently targetable reentry vehicle, where one ballistic missile containing more thermonuclear warheads and each capable of hitting a different target. The best example of this type of nuclear weapon, is the US B-83 thermonuclear missile. B-83 is a variable-yield gravity bomb, developed by America in late 1970, but with active production began in 1983 and is considered the most powerful nuclear weapon in America's nuclear arsenal. B - 83 has a maximum yield of 1.2 megaton TNT, which is 75 times more powerful than the atomic bomb " Little Boy " dropped at Hiroshima. This nuclear weapon was first tested in underground test blasting on Dec. 15, 1984. B-83 can be carried by different types of aircrafts, but it is also multifunctional, which means, it can be activated by water, air, and land. About 650 B-83 thermonuclear missiles have been made and are still active in the US Nuclear Arsenal. [72]

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[70] The Soviet Union and the Arms Race , New Haven: Yale University Press, 1983, p.20
[70] RUSSIAN NUCLEAR WEAPONS:PAST, PRESENT, AND FUTURE, By Stephen J. Blank, November 2011
[71] http://www.visualnews.com/2012/04/24/visualizing-the-frightening-power-of-nuclear-bombs/

Read more: http://www.telegraph.co.uk/news/uknews/defence/11920013/Heres-how-World-War-Three-could-start-tomorrow.html

Read more: http://www.britannica.com/technology/nuclear-weapon

Read more: http://www.icanw.org/the-facts/nuclear-arsenals/http://www.armscontrol.org/factsheets/Nuclearweaponswhohaswhat

[72] https://www.youtube.com/watch?v=vwaA-dbVMW8

View more: https://www.youtube.com/watch?v=xLRSmzGRLUk
Read more:http://nationalinterest.org/blog/the-buzz/the-most-dangerous-nuclear-weapon-americas-arsenal-13433

Development of Nuclear Bombs[73]

The US has continued the trend of creating modernized strategic nuclear weapons, so one of the types considered as the most powerful weapon of the US nuclear arsenal is the B-61 model. B-61 has a maximum yield of 50 kilotons, equal to 50000 tones of TNT, but far smaller than the B-83 nuclear bomb, which has a maximum yield of 1.2 megatons. What makes the B-61 nuclear bomb - America's most dangerous nuclear weapon is its usability, which comes from its accuracy and low yield. To explain the difference simpler, the advantage of the B-61, is the fact that the existing Nuclear Bombs of the United States have a probability of circular problems of 110-170 meters, while on the B-61 CEP is only 30 meters. Hence, the combination of accuracy and low yields make B-61 the most usable nuclear weapons in the US arsenal. [74]

The United States has a full set of options for delivering its nuclear weapons, ranging from land, water and air. The American Nuclear Triad contains about 94 bombers (B-52s and B-2s) capable of carrying nuclear bombs, over 40 Minuteman III ICBMs and 12 nuclear submarines capable of carrying ballistic missiles. Today, not only the US, but also some of the other nuclear actors have developed and own MIRV missiles, including Russia, which understood the convenience and usability of this type of nuclear weapon.

Over the past period, Russia has unveiled a new class of "RS-28 SATAN 2" nuclear missiles, intercontinental ballistic missiles equipped with MIRV. In Russia, it is called "The RS-28 Sarmat", while SATAN 2 is the codename of this type of nuclear weapons in NATO. Satan 2 has a weight of 10,000 kg and can carry up to 15 separate thermonuclear warheads. It is clear here that Russia is moving with the trends and develops and owns the MIRV system, which means that MIRV missiles can deliver more nuclear bombs on one target or all warheads to divert to different targets on a particular surface. SATAN 2 or Russian RUS-28 SARMAT has an

[73] https://commons.wikimedia.org/wiki/File:Nuclear_weapon_size_chart.jpg
[74] The B-83 Bomb, published in Nuclear Weapons Archive, November 1997 (accessed on August 2017)
http://nuclearweaponarchive.org/Usa/Weapons/B83.html
Read more: Weapons of Mass Destruction, (accessed on August 2017)
http://www.globalsecurity.org/wmd/systems/b83.htm

operating range of 10,000 kilometers and a maximum speed of 24,910 kilometers per hour. The maximum yield of this H-bomb is 50 Megatons. [75]

The demonstration of RS-28 in the picture below illustrates the power of this nuclear weapon, for which the government of Russia has said that a missile has enough power to destroy the size of France and Texas.

As part of some of the more important nuclear bombs that have been made, we will mention:

-> B-41 The nuclear bomb that was produced in 1960 with a yield of 25 Megatons and is considered the most powerful nuclear weapon ever made by the United States.

-> TX-21 Shrimp (Castle Bravo) which was tested in March 1954 and a yield of 14.8 Megatons, making it the most powerful nuclear weapon ever tested by the United States.

-> MK-17 / EC-17 produced in 1950 with a yield of 10-15 Megatons and weighing 18 tones, making it the most severe thermonuclear weapon ever made by the United States.

-> Then follow: MK 24 / B-24 (15 Mt); Yves Mike X-bomb (10.4 Mt); MK-36 (10Mt), B-53 (MK-53 and yield of 9Mt); MK-16 (TJ-16 / EC-16 and yield of 7Mt) and MK-14 / TJ-14 with a yield of 6.9Mt. [76]

Nuclear weapons delivery systems:

The development of nuclear bomb delivery systems has been moving in parallel with the development of nuclear weapons themselves. In the beginning, delivery systems represented a major problem for the USSR and the US, which means, the number and type of vehicles for

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[75] Russia unveils its new class of RS-28 'Satan 2' nuclear missiles, By Joel Hruska, October 2016 (accessed on August 2017) https://www.extremetech.com/extreme/238325-russia-unveils-new-class-rs-28-satan-2-nuclear-missiles

Read more: Russia unveils 'Satan 2' missile, could wipe out France or Texas, by Sebastian Shukla and Laura Smith, October 2016 (accessed on August 2017)
http://edition.cnn.com/2016/10/26/europe/russia-nuclear-missile-satan-2/index.html

[76] "Russian Nuclear Weapons: Past, Present and Future", by Stephen J. Blank, November 2011

delivery of such weapons was limited. At that time, aircraft faced a lack of reach to achieve the desired goal (mostly overseas) without refueling, which forced them to land in friendly countries to make refuel. With the creation of NATO, all this was facilitated by military cooperation between the United States, Canada and Western European countries. Thus part of the nuclear arsenal was deployed in some of NATO's European partners in order to be closer to the USSR (today Russia).

The development of delivery systems covered all parts, ranging from land, air and water:

* Today, bombers are called Strategic Long-Distance Bombers and they played the most important role in delivering nuclear weapons of mass destruction until the emergence of rocket systems such as ICBMs. During the Second World War, for the bombing on Hiroshima and Nagasaki were used B-29 bombers, while the most sophisticated and most powerful bomber developed by the United States to date is the B-2 bomber, which can achieve a maximum speed of 0.9 Mats, a load of 22 Tones and has a stealth structure that can avoid detecting radar.

* In the part of the delivery of nuclear weapons through water, in 1954, the United States launched the first nuclear-powered submarine, the USS Nautilus, gaining the ability to invisibility and cruise through the world's oceans without complementing fuel or touching land. Then six years later, the US Navy put into operation the first submarine of a nuclear power capable of launching nuclear ballistic missiles and to provide a mobile delivery system near the territory of the USSR.

* On the other hand, the USSR retaliate with the creation of the Warsaw Pact, a treaty extending the defense line in communist countries and deploying nuclear weapons in their territories. But, because of the lack of allies, the USSR had to find another way to follow the USA and NATO, and therefore was the first country that developed intercontinental missiles. In October 1957, the Soviet Council launched the first long-distance ballistic missile that allegedly carried an artificial satellite (Sputnik I). This successful test eliminates the vulnerability of the USSR, with the Soviets possessing a system capable of delivering nuclear weapons on the territory of the United States.

* ICBM - intercontinental ballistic missiles have been projected with a range of more than 6,400 kilometers and are a land-launched missile capable of carrying a hydrogen bomb of about 10,000 kilometers.

* The MIRV - Multiple Independently Targetable Reentry Vehicle, which we have explained above in the text, is a nuclear weapons delivery system that carries me from 5 to 15 nuclear warheads on a single missile and each warhead can attack a different target.

- Ballistic missiles are classified into:

-> IRBM - Intermediate-Range Ballistic Missile (IRBM): range - 2,400-6,400 kilometers

-> MRBM - Medium-Range Ballistic Missile (MRBM): range - 800-2,400 kilometers

-> SRBM - Short-Range Ballistic Missile (SRBM): range - up to 800 kilometers

* Cruising missile - unlike ICBM and SLBM that have rocket motors, cruise missiles are equipped with Jet Motor, which is an unmanned spacecraft which uses supersonic speeds and uses an automatic steering system. Cruise missiles can be launched from the sea (SLCM), air (ALCM) or land (GLCM). Sea-launched projects are launched from submarine or warships torpedo systems, and missiles which are launched from air are deployed on bombers and can be launched out of range of enemy radar. [77]

Today, as in the past, Russia and the United States remain at the forefront of being the most powerful nuclear and military actors on the international stage, while other nuclear actors are striving to follow development trends and technological advancement of nuclear weapons, but the mere possession of nuclear weapons for Mass Destruction, requires the continued investment of huge sums of money, which is an additional problem or difficulty for smaller nuclear actors. About how much the production of nuclear weapons costs, its maintenance, development and

[77] The Evolution of Nuclear Weapons, published in PCF, (accessed on August 2017)
http://www.pcf.city.hiroshima.jp/Peace/E/pNuclear4_3.html
Read more: http://laromkarnvapen.se/en/what-is-nuclear-weapons/delivery-mechanisms/
Read more: Proliferation of Missile Delivery Systems for NW, published in National Intelligence Estimate, January 1967 (accessed on August 2017)
https://www.cia.gov/library/readingroom/docs/DOC_0000972742.pdf
Read more: Nuclear Weapons and Nonproliferation, by Sarah J. Diehl and James Clay Moltz, , Denver, CO, USA 2008 p.11

sophistication, we will talk in the part that follows, where will be shown the number of nuclear weapons today.

2.4. Number of the nuclear weapons and nuclear tests in the past and today

Today, nine states, all together possess about 15,000 nuclear weapons and 93% of the total number belongs to Russia and the United States as nuclear and military leaders. Russia and the United States each separately keep and maintain about 1,800 of their nuclear weapons on high alert status and are ready to be launched at any time within minutes of receiving an order. In previous texts we have explained the power of nuclear weapons today compared to atomic bombs thrown at Hiroshima and Nagasaki. Today's victims of a nuclear attack would be counted in millions of people, and if we compare the destructiveness with that of the Tsar the hydrogen bomb, the most powerful thermonuclear bomb ever made by Russia (then the USSR), the Tsar bomb is only 3,800 times more powerful than the atomic bomb dropped in Hiroshima. [78]

There are no official data for the number of nuclear weapons owned by states, so today different data and numbers are found from different sources. But generally, these numbers can roughly show us today's situation, i.e. which states possess nuclear weapons, and how much they own, whether they are operational or stored, etc. And in our images depicted through the texts, readers will encounter a variety of data and the number of nuclear weapons. Which number will accept, we leave to the readers themselves. [79]

Due to the failure of nuclear forces to disarm and withdraw from nuclear weapons, the risk that other countries can acquire nuclear weapons has increased significantly. As the only guarantee and security of the further dissemination and use of nuclear weapons is its removal without delay. Some of the leaders of the nuclear forces have expressed a desire and vision of a world without nuclear weapons, however they have failed to develop detailed plans and strategies to eliminate their nuclear arsenals.

(Appendix I: See page 164)

[78] Nuclear, Biological, and Chemical Weapons and Missiles: Status and Trends , Paul K. Kerr Analyst in Nonproliferation Foreign Affairs, Defense, and Trade Division, February 2008

[79] Nuclear Arsenals, published by ICAN, 2017 (accessed on August 2017) http://www.icanw.org/the-facts/nuclear-arsenals/

Positive data is that according to different sources, from 2010 to 2016, the number of nuclear warheads owned by Russia and the United States has been reduced by 30%. The number of nuclear warheads from the late 1960s to the present is at a constant pace of decline and this data gives readers and ordinary people an image that the amount of nuclear weapons in the world is decreasing and will come to zero, but the truth is completely different. The fact is that in the last 50 years, the number of nuclear weapons has decreased and decreased, but on the other hand the balance has been achieved by the development of more powerful and more sophisticated precision nuclear weapons with modern and developed delivery systems. The armament race ended with the collapse of the Soviet Union, but today Russia and the United States constantly maintain enough nuclear weapons(1,800) in their bases, so they can fight back any challenge and destroy potential enemies. In other words, the power of modern nuclear weapons replaces their numbers, which means that we can conclude that today's world is no more safe than 50 years ago.

According to the Guardian, while the nuclear arsenal of Russia and the United States is gradually decreasing, some countries are increasing their nuclear arsenal. China, which counted 240 nuclear weapons in 2010, in 2016 increased the arsenal of 260 nuclear weapons. Also, this trend was followed by India and Pakistan. India, ranging from 60-80 nuclear weapons in 2010, reached 100-120 nuclear weapons in 2016, and Pakistan from 70-90 nuclear weapons in 2010, reached 130 nuclear weapons in 2016. [80] (Appendix II: See page 165)

[80] Stockpiles of nuclear weapons around the world, published in The Guardian, 2016 (accessed on August 2017) https://www.theguardian.com/world/2017/mar/11/stockpiles-of-nuclear-weapons-around-the-world-in-data

Nuclear tests

-> **USA** - from building the first atomic bomb in 1945, to date, they have made a total of 1,030 nuclear tests. The first nuclear test was made on July 16, 1945, and the last on September 23, 1992. On Sept. 24, the United States signed the Comprehensive Nuclear Test Ban Treaty, which put an end to nuclear testing. According to the Federation of American Scientists, the United States today has 6,970 nuclear warheads, of which 1,750 are operational and 4,670 are stored or on the waiting list for dismantling.

-> **Russia** - as the only opponent who can compete with the United States is also on the leading list for nuclear tests with 715 nuclear tests in the past 68 years. The first successful nuclear test was made on August 20, 1949, and the last on October 24, 1990, with the collapse of the Soviet Union. Russia ratified the Comprehensive Nuclear-Test-Ban Treaty on June 30, 2000. According to the Federation of American Scientists, Russia today has a total of 7,300 nuclear warheads and in this moment, can be called a nuclear leader. Of the total number of nuclear warheads, 1,790 are operational, while 4,490 are stored or on the waiting list for dismantling.

-> **Britain** - during the development of its nuclear weapons was assisted by the United States and it has been estimated that there are a total of 45 nuclear tests. The first nuclear test was made on October 3, 1952, and the last on November 26, 1991, according to the logic of the dissolution of the USSR and the non-existence of the long-standing enemy. The UK signed the Comprehensive Nuclear-Test-Ban Treaty on September 24, 1996, and the ratification was deposited on April 6, 1998. According to the Federation of American Scientists, Britain has 215 nuclear warheads. Of the total number of nuclear warheads, 120 are operational, and 95 are stored or on the waiting list for dismantling.

-> **France** - for a period of 36 years, made a total of 210 nuclear tests. The first nuclear test was made on February 13, 1960, and the last on January 27, 1996. France signed the Comprehensive Nuclear-Test-Ban Treaty on September 24, 1996, and the ratification was deposited on April 6, 1998. According to the Federation of American Scientists, France has a total of 300 nuclear warheads. Of the total number of nuclear warheads, 280 are operational, and 10 are stored or on the waiting list for dismantling.

-> **China** - for a period of 32 years, made a total of 45 nuclear tests. The first nuclear test was made on 16 October 1964, and the last one on 29 July 1996, one month after the signing of the CNTBT. China Comprehensive Nuclear-Test-Ban Treaty signed on June 24, 1996. According to the Federation of American Scientists, China has a total of 260 nuclear warheads. All 260 nuclear warheads held by China are stored or on the waiting list for dismantling, which means that it does not have operational nuclear warheads.

-> **India** - for a period of 24 years has made only 3 nuclear tests(Officially) . The first nuclear test was made on May 18, 1974, and the last on May 13, 1998. India is not a signatory of the Comprehensive Nuclear Test Ban Treaty. According to the Federation of American Scientists, India has 110 to 120 nuclear warheads. All nuclear warheads are scaled, which means, currently there is no operational warheads.

-> **Pakistan** - has made only 2 nuclear tests in a period of only two days. The first nuclear test was made on May 28, 1998, and the second and also the last on May 30, 1998. Just like India and Pakistan is not a signatory of the Comprehensive Nuclear Test Ban Treaty. According to the Federation of American Scientists, Pakistan has about 110-130 nuclear warheads. All warheads are in the warehouse or on a dismantlement waiting list, which means that Pakistan currently has no operational nuclear warheads.

-> **Israel** - there is no officially confirmed data on the conduct of nuclear tests by Israel and therefore is considered to have zero nuclear tests. Also, Israel is not a signatory of the Comprehensive Nuclear Test Ban Treaty. According to the Federation of American Scientists, Israel has a total of 80 nuclear warheads. According to the data, Israel has no warheads that are operational, but all are stored or on the dismantling list.

-> **North Korea** - is the youngest member that joined the nuclear club with a total number of 5 nuclear tests. The first nuclear test was made on October 9, 2006, and the last on September

9. North Korea is not a signatory of the Comprehensive Nuclear Test Ban Treaty. The number of nuclear warheads held by North Korea is unknown, but it is assumed that there are about 3-10 nuclear warheads. As for North Korea, today, this topic is popular and it remains to see what will happen next. [81]

Through nuclear testing, states had the opportunity to prove their power, development and final result - creating the most sophisticated nuclear weapons. On September 24, 1996, after lengthy negotiations, the Comprehensive Nuclear-Test-Ban Treaty was opened for signing and banning any nuclear testing and nuclear explosions. This agreement has been signed and ratified by most states, but its imagined efficiency and role has not yet been achieved. For the agreements reached in the past 72 years, related to the nuclear weapons of mass destruction, we will talk in the next chapters.

(Appendix III: See page 166)

The table below (Appendix IV) shows the total number of nuclear tests made by all nuclear actors amounting to 2055 nuclear tests. The consequences of nuclear testing are no different from intended use, that is, a nuclear attack on a particular country. In any case, the earth is polluted, the animal and plant life is destroyed, and all this does affect us, people.

(Appendix IV: See page 167)

[81] Fact Sheet: Who Has Nuclear Weapons, And How Many Do They Have?, published in NBS NEWS by Elizabeth Chuck, March 2016 (accessed on August 2017)
http://www.nbcnews.com/news/world/fact-sheet-who-has-nuclear-weapons-how-many-do-they-n548481

Read more: http://www.nti.org/learn/nuclear/
Read more: https://www.armscontrol.org/factsheets/nucleartesttally
Read more: https://fas.org/issues/nuclear-weapons/status-world-nuclear-forces/
Read more: http://www.icanw.org/the-facts/nuclear-arsenals/
Read more: https://www.theguardian.com/world/2017/mar/11/stockpiles-of-nuclear-weapons-around-the-world-in-data
Read more: https://fas.org/sgp/crs/nuke/RL30699.pdf - Source: Federation of American Scientists 2017
Read more: http://www.ucsusa.org/sites/default/files/legacy/assets/documents/nwgs/Wordwide-Nuclear-Arsenals-Fact-Sheet.pdf
Read more: http://www.independent.co.uk/news/world/politics/the-nine-countries-that-have-nuclear-weapons-a6798756.html

2.5. The Cost of Nuclear Weapons

In this chapter, the focus will be on the United States as a nuclear actor with the largest military budget. The US has projected to spend about $ 700 billion on nuclear weapons, its maintenance, and nuclear programs for a period of 10 years from 2012 to 2021, meaning that the US budget for nuclear weapons is higher than the military budgets of all other nuclear actors. According to statistics, Russia is ranked first in terms of the number of nuclear weapons it owns, but the United States uses much of its budget to improve and develop delivery systems. Federal budgets are constantly intensifying and this leads to a situation whereby the costs of nuclear weapons are fully investigated, and then effective security priorities are established, so policymakers can reduce budget cuts by actively storing most of the Nuclear weapons. [82]

Another interesting historical fact is that the United States spent about $ 5.48 trillion in the period between 1940 and 1998. The most conservative is that neither the congress, nor military services, nor the president had any idea how much money was spent and how much money are spending now on nuclear weapons, according to a four-year analysis sponsored by the Brokington Institution. [83]These data clearly show us the importance of nuclear weapons for the United States to remain in the lead, which money has never been a problem when it comes to military needs and competition with Russia.

According to William J. Mr Weida, a professor of economics at the Colorado College and former director of the Department of Defense Policy and Analysis Department, money spent on nuclear weapons and cleaning the environment, could buy 290 million cars. That is almost, one new car for every U.S. Citizen. [84]

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[82] Nuclear Security Spending Assessing Costs, Examining Priorities, Stephen I. Schwartz with Deepti Choubey, CARNEGIE ENDOWMENT FOR INTERNATIONAL PEACE

[83] U.S. Nuclear Arms' Cost Put at $5.48 Trillion, by Matthew L. Wald, published in New York Times, July 1998 (accessed on September 2017)

http://www.nytimes.com/1998/07/01/us/us-nuclear-arms-cost-put-at-5.48-trillion.html

[84] U.S. Nuclear Arms' Cost Put at $5.48 Trillion, By MATTHEW L. WALD JULY 1, 1998

The US government does not make a full calculation of the total cost of nuclear weapons and nuclear programs, so independent experts have made several calculations of US nuclear costs with a comprehensive study by Steven Schwartz and Deepty Choubes. Experts have calculated that in 2008, the US spent $ 52.4 billion on nuclear weapons and nuclear programs. The Energy Department plans to spend an additional $ 15 trillion to improve nuclear warheads and build new factories. Then, the Defense Department plans to spend $ 125 billion to maintain existing and develop new delivery systems, while the cost of DOs for these analyzes is not clear, so the total cost calculation for 10 years can reach 740 billion Dollars. [85]

Examples of the value of certain projects from the nuclear arsenal

The US plans to replace the entire nuclear arsenal with five new types of weapons (3 + 2) over the next 25 years, of which three types of weapons will be a long-range cruise missile and two types of ships. According to this plan, it would have to produce 3,000 of this new type of weapon, which would cost $ 60 billion, or $ 20 million per piece, which would, in the end, be cheaper to restore the already existing B-61 than to build one of these new weapons. [86]

Nuclear weapons delivery systems cost too much, i.e. The minuteman III land-based missiles, which carry a single warhead, cost about $ 50 million each. The Defense Department also modifies Trident submarine-based missiles, which cost about $ 100 million per piece, and in case it is upgraded to extend the shelf life, it would cost about $ 140 million per piece. The Navy's plan is for the next ten years to replace 12 submarines armed with nuclear weapons and cost only $ 8 billion per piece. Each of the submarines would carry 16 Trident missiles, each with four warheads, or a total of 64 warheads, which means that the costs for each nuclear warhead will be around $ 200 million.

[85] Cost of modernizing U.S. NW to fall to next president, by POLITICS, September 2016 (accessed on September 2017) https://www.nationalpriorities.org/cost-of/nuclear-weapons/

[86] How Much Does it Cost to Create a Single Nuclear Weapon?, published in Union of Concerned Scientists, November 2013 (accessed on September 2017)
Http://www.ucsusa.org/publications/ask/2013/nuclear-weapon-cost.html#.WUp6peuGPIU

In the end, B-61 and B-83 bombs should be delivered with B-2 bombers, that is, the so-called stealth bombers. Approximately $ 80 billion seems to develop and build 21 such bombers, or $ 4 billion for a B-2 bomber. Also, each of them carries up to 16 bombs, the total cost of each bomb would be around $ 270 million.

Russia - it is difficult to estimate how much money Russia (the former USSR) spent on nuclear weapons due to the fact that the state economy did not rely on cash costs for its nuclear programs, and therefore in this chapter the focus was on the US budget for the needs of nuclear programs. Various calculations from different sources point out that Russia's nuclear program costs more than 35% of Russia's GDP (USSR), its military forces. It is almost impossible to make accurate calculations about how much Russia (USSR) spent and spent on nuclear programs, but the high costs were indirectly depicted with the very collapse of the USSR in 1991. [87]

(Appendix V: See page 170)

As for Russia, in recent history, the government of Russia has made several increases in the cost of nuclear weapons, that is, the government of Russia in 2012 announced that in the period 2013-2015, the cost of nuclear programs will increase from 9.29 trillion rubles, To a total of 38.57 billion rubles.

This number is much lower than the nuclear costs of the United States and the United Kingdom, or with numbers expressed, the United States has announced a trillion dollar budget for nuclear weapons in the next 30 years. An interesting fact is that the United States spent more money on nuclear programs in 2014 than during the Second World War and the Cold War. According to the Guardian, UK, it spends 36 billion dollars on the Trident Program and this figure in the next 30 years will reach 100 billion dollars.

This increase is very small compared to the total increase in Russia's defense spending, that is, in 2014, Admiral Vladimir Komoyedov, head of the State Dumas' defense Committee, said that Russia's defense budget for 2015 will reach 3.3 trillion rubles, which calculated in

[87] How much did the USA and Soviet Union spend on the global nuclear arms race?, by Cameron Greene, June 2016 (accessed on September 2017)
https://www.quora.com/How-much-did-the-USA-and-Soviet-Union-spend-on-the-global-nuclear-arms-race

dollars would reach $81 billion. Such a budget depends on how the Russian economy will hold and survive in spite of economic sanctions from UN. [88]

According to a survey by the Swedish Defense Research Agency, Russia will devote most of its defense budget to the conventional Navy and Aerospace Sectors, while only a small fraction of about 5% would target strategic nuclear forces. [89]

All these numbers and data point to the importance of nuclear weapons in the 21st century, and in spite of the numerous debates, conferences, negotiations and agreements, states do not give up producing of nuclear weapons. When all these budgets would be used for social development programs, most of the problems in society would be solved, but the power of the state is more important than its social and economic development.

2.6 The role of nuclear weapons in the Cold War and Today

When it comes to the role of nuclear weapons today, experts, and politicians have different opinions. On the one hand, those who possess nuclear weapons see the reasons for its further production, improvement and modernization, while those who do not own it, find millions of reasons for its complete removal. Statements and facts in the text that follows will tell us that the truth is relative.

According to Baker Spring- F.M. Kirby Research Fellow in National Security Policy, the role of nuclear weapons today is quite different from that during the Cold War, yet the sense of endangerment of that period is still present in nuclear actors. The role of nuclear weapons during the Cold War was presented as a defense by the opponent (then the USSR), that is, the deterrence of another nuclear superpower and the establishment of a balance of forces. During that period,

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[88]Nuclear weapons, financing, and Russia's armed forces reform, By Larisa Brown for the Daily Mail , 20 February 2015 (accessed on September 2017)
http://www.basicint.org/blogs/2015/02/nuclear-weapons-financing-and-russias-armed-forces-reform
Read more: https://www3.nd.edu/~dlindley/handouts/Costs%20of%20Arms%20Races.

[89] Swedish Defence Research Agency, 2015 (accessed on September 2017)
https://www.foi.se/en.html

the maintenance of military objectives was a priority, which posed a problem in the maintenance of social goals. [90]

After the end of the Cold War with the collapse of the USSR, America remained without a historical enemy, thus "the most dangerous" threat was removed. Today, threats come from regional forces that are armed with weapons of mass destruction and long-distance delivery systems. In recent history, Russia has returned from the dead and now again, is active on the international stage, which besides the United States, is the most important actor in the world. Today, the new environment is far different from that during the Cold War, and therefore there are dilemmas between historians and analysts as to whether there is a continuing role in the defense of nuclear weapons. Deviation as a tool is uncertain in today's environment, and the US and even Russia can not cope with smaller military actors and the emergence of terrorism.

According to John Holder, professor of environmental policy and director of the Kennedy School's Science, Technology and Public Policy Program and colleagues at the National Academy of Sciences on International Security and Arms Control, the only defense feature left of the US nuclear weapons, in the new environment is "core deterrence". "Core deterrence" means the deterrence of other nuclear-weapon countries that would use the same to attack or coerce the United States and its allies. [91]

Hence the conclusion is that if the only function of nuclear weapons is to deter other nuclear-weapon countries, there is no reason why the United States should follow the policy of "not first use" of nuclear weapons under any circumstances.

As a recommendation and advice by the National Academy of Sciences Committee to the United States and other nuclear actors, regarding nuclear weapons, the following was submitted: The United States declares that they will never use nuclear weapons to respond or prevent conventional, chemical or Biological attacks and to constantly be in consultation with their allies, and with Russia, in order to undertake certain activities to transform nuclear power and policies,

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[90] Baker Spring - F.M. Kirby Research Fellow in National Security Policy (accessed on September 2017) http://www.heritage.org/defense/report/the-role-nuclear-weapons-the-21st-century

[91] https://www.hks.harvard.edu/news-events/news/news-archive/is-there-a-role-for-nuclear-weapons-today

and ultimately - a reduction in nuclear weapons. This proposal, which exists since 1997, has been repeatedly ignored by the administration of the upcoming US presidents. [92]

However, certain agreements that took place during the Cold War and the post-war period contributed to the mutual behavior of Russia and the United States, which managed to dismantle thousands of warheads and delivery systems. [93]

Military analysts and nuclear safety experts agree that the US and even Russia can maintain deterrence with less nuclear weapons and keep their positions on the international stage. Continuous production and modernization of nuclear weapons and delivery systems can contribute to the expansion of the nuclear club, as other world powers feel the need to maintain their security and position in the region and the world. [94]

On the question " What does he see as the future role of nuclear weapons?", Derek Johnson, Executive Director of Global Zero, a non- partisan campaign group working towards the phased elimination of nuclear weapons, answer that "he doesn't see any role of nuclear weapons in the future. He said that global security can't be based on threats of mass destruction and the example of Russia and Ukraine crisis is a perfect case in point. "The United States through NATO has about 200 tactical nuclear weapons on the territory of Europe and these weapons can not prevent the crises that have occurred in Ukraine, which means that nuclear weapons in this case are useless. [95]

On the other hand, on the same question, the answer of General Philip M. Breedlove, the NATO Supreme Allied Commander Europe, went in the opposite direction, in short: "While

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[92] Holdren, John P.. *"Is There a Role for Nuclear Weapons Today." Arms Control Today*, vol. 35. no. 6. (July / August 2005)
Read more: "Is There a Role for Nuclear Weapons in the Post-Cold War Era? " By Tobias Bock, University of Birmingham, 2008

[93] The Role of Nuclear Weapons in International Politics: A Strategic Perspective, published in Foreign Policy Research Institute, by Andrew L. Ross, March 2009 (accessed on September 2017)
http://www.fpri.org/article/2009/03/the-role-of-nuclear-weapons-in-international-politics-a-strategic-perspective/

[94] Http://nsnetwork.org/the-role-of-nuclear-weapons-in-todays-strategic-environment

[95]What will be the future role of nuclear weapons?, published by Debating Europe, May 2015 (accessed on September 2017)
http://www.debatingeurope.eu/2015/05/15/will-future-role-nuclear-weapons/#.WUuQ7uuGPIU

Read more: " Nuclear weapons and nonproliferation", By Sarah J. Diehl and James Clay Moltz, - 2008, p. 39-43
Read more: The Role of US Nuclear Weapons in the Post-Cold War Era, By Richard A. Paulsen, Maj, USAF , Research Fellow Airpower Research Institute, 1994 p.135-165

there are nuclear weapons in Europe and in the rest of the world, there is a reason why the United States will maintain such weapons." In other words, the simpler version would sound like this: "They have the bomb, and we have to have it."

5 Reasons Why Nuclear Weapons Are Still Relevant Today:

On the other hand, on the Conference of Generations, held in Prague on July 9, 2014, were highlighted five reasons why nuclear weapons are still important today.

1. The danger of nuclear weapons is a shared danger, worldwide.

That would mean that, in the event nuclear weapons are found in the hands of terrorists, then the rules for nuclear deterrence do not apply. Terrorists are non-state actors and are scattered around the world, which means that, in the event that the United States is attacked by nuclear-weapon terrorists, then there is no way how to react with nuclear weapons.

2. The Cold War is over, but the ash and trash is still with us.

At a conference in Prague, then-US President Barrack Obama said, "The United States will keep a stockpile to deter them," but 60% of young Americans aged 18-34, think the United States should cut its nuclear arsenal.

3. Future agreements will require more sophisticated verification technology.

With the advent of the new START agreement, some innovations have been provided with regard to the on-site tests, but more sophisticated technologies are needed to monitor and detect illegal activities, such as the example with Iran. Such technology will be of paramount importance, since only in this way can be provided a verification of nuclear contracts and to be ensured that every country performs it's duties

4. Climate change will become even more real if there is a "nuclear winter.

In case of using nuclear weapons, a certain amount of ash from the burning towns and forests can enter the atmosphere, where a shield will be created that will prevent sunlight from

reaching the earth. Then there would be permanent darkness, blocking photosynthesis of plants, reducing temperatures and potentially creating snowstorms without a real summer.

5. We do not fully understand our adversaries, who have nuclear weapons.

According to Admiral Hanes, commander of the U.S. Strategic command, the United States should make every effort and through various negotiation efforts to deepen its understanding of its opponents, which continuously increase their nuclear capabilities. Starting with Russia, China, Pakistan and North Korea, which not only develop their nuclear facilities, but also have ambitions for proliferation of nuclear weapons. [96]

We can agree that, in addition to all the above-mentioned positions, which are largely opposed, the role of nuclear weapons in international relations is truly complex, followed by many contradictions. Discussion as to whether nuclear deterrence as a strategy is right or wrong goes on and remains the only place where intellectuals will express their views while leaders continue their plans and strategies. Today, in the new environment there is terrorism, which is an additional threat to international security and is a good indicator that weapons of mass destruction will remain in the security programs of the great powers. But because nuclear weapons can be found in the hands of terrorists, big powers should sit at the negotiating table and through effective and reasonable agreements, formulate new strategies and measures that will contribute to the fight against terrorism. Terrorism, as a new threat in the last 25 years, can be an important trigger for unifying major powers, entering alliances, in order to combat terrorism. Regarding the role of nuclear weapons, the slogan still holds true: " If they have the bomb, we must have it ".

[96] 5 Reasons Why NW Are Still Relevant Today, *By Theresa Shaffer on Jul 15, 2014 (accessed on September 2017)* http://www.americansecurityproject.org/5-reasons-why-nuclear-weapons-are-still-relevant-today/

2.7 Nuclear terrorism

In recent history, terrorism has become a major threat to international security and a very unpredictable phenomenon. In the last 15 years, new organizations with similar ideologies have been constantly emerging. The fear of a nuclear attack by terrorists is not a new topic, but for this threat debates has been done since 1970 and it is known that intimidation and possession of nuclear capacity are useless against an enemy without nation, without territory, that is, against an anti-state enemy. The interests of politicians and terrorists are quite different, the terrorists are striving to destroy the old order and establish a new order and have no need to secure or defend territory because they are non-state actors, which appears as an advantage over the leaders of the great powers. In this period of unpredictable events, a terrorist with only one nuclear weapon may be much more dangerous than a country with thousands of nuclear weapons. [97]

In "The nuclear terrorism threat" by William Tobey and Pavel Zolotarev Pattaya, nuclear terrorism is divided into three types:

- *Nuclear explosives* -> in a terrorist attack with a nuclear explosive, the consequences would be catastrophic, followed by thousands of victims, but such an attack is difficult to achieve because terrorists can not get the resources needed to build such a bomb.

- *Nuclear sabotage* -> also in case of this type of terrorist attack, the consequences would be catastrophic, but difficult or perhaps impossible to achieve.

- *"Dirty Bomb"* -> is still called a weapon of mass disorder and this type of terrorism, compared to the previous two, is much easier to accomplish. As a consequence of such an attack, the number of direct casualties would be smaller, but the consequences of the environment would be devastating, billions of dollars would have been incurred as a result of radiation and pollution. [98]

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[97] Do Nuclear Weapons still have a Role in International Relations in the Post-Cold War Era?, MARTIN Taggart, May 2008 (accessed on September 2017)
http://www.e-ir.info/2008/05/10/do-nuclear-weapons-still-have-a-role-in-international-relations-in-the-post-cold-war-era-2/

[98] "The nuclear terrorism threat "William Tobey and Pavel Zolotarev Pattaya, Thailand January 13, 2014, Belfer Center for Science and International affairs p.2-7

An interesting fact is that in the Middle East, various articles and documents have been found indicating that the terrorists, that is, the organization of al Qaeda were searching for nuclear weapons. Such examples give us a warning that they are not the only ones who are seeking for weapons of mass destruction.

How serious is the threat of nuclear terrorism?

According to military analysts, building or acquiring nuclear weapons and its use is possible, and at the same time an attractive option for terrorists. As mentioned above in the text, the possibility for terrorists to acquire nuclear weapons is very small, but as another threat, even more dangerous, are the radioactive materials that terrorists can get it and that would be used in the RDD (Dirty bomb). In the case of a terrorist attack with such a bomb, major territories of the capitals can be contaminated, which would create high- health risks. There are three factors that can spur terrorists on nuclear weapons.

- Firstly, there is a global fear of nuclear weapons and its devastating power, in particular from possible victims and suffering caused by radiation, which would be released during a nuclear explosion.

- Secondly, the thousands of nuclear warheads found in the warehouses of Russia, the United States and the other seven nuclear actors, make theft or diversion very likely in the case of bribery, especially among nuclear actors from the Middle East, where the security of the warehouses does not is confirmed and the corruption is on high level.

- Thirdly, even in the case of obtaining nuclear resources, the construction of a sophisticated nuclear bomb is rather problematic and difficult, but the construction of the RDD would be quite simple.

The materials needed to build the bomb are HEU (Highly Enriched Uranium) and plutonium. Today, there are about 1,900 metric tons of material in the warehouses with a high enriched uranium around the world, which would be enough to build 38,000 nuclear weapons.

As a positive side, here is the fact that the bulk of the HEU is located in the warehouses of Russia and the United States, which are highly secured and it is almost impossible to approach, not to get inside. In terms of plutonium, it has been estimated that there are 1,855 metric tons of plutonium worldwide in military and civilian warehouses. This amount of plutonium would be enough to build 225,000 weapons and unlike the HEU, the bulk of the plutonium, or 1,600 metric tons, is found in civilian warehouses. [99]

As can be seen, terrorists are more likely to build Dirty bombs or radiological weapons. Building a RDD would mean the use of radioactive nuclear material, such as spent nuclear fuel, and even medical isotopes packaged together with a conventional explosive. Using Dirty bomb, no explosion will be triggered, but radioactive material will certainly be dispersed, which will contaminate entire cities and spread fear through the citizens. The number of victims of a direct conventional explosion will not be large, but a large number of people may get sick as a result of radiation. Hence, the cost of cleaning the environment would be in bilions sums. Unlike plutonium and HEU, radioactive material is available, in numerous quantities, in cities all over the world, in warehouses where security conditions are not at the same level as those in the nuclear warehouses of the United States and Russia.

Pakistan-Black Spot and Persistent Risk of Terrorism:

Pakistan today is the most desirable target for terrorists, due to the situation that the country is located and the government policy. In short, Pakistan is one of the countries that own nuclear weapons and is not a signatory of the Treaty on Non-Proliferation of Nuclear Weapons. By the very fact that it is not a signatory to this agreement, the IAEA has no access to Pakistan's nuclear warehouses, which makes it unable to make full inspections. In addition, Pakistan's leaders do not allow other countries to engage in the provision of nuclear-weapon databases, although these bases have been targeted by terrorists several times. Pakistan today is a potential source of

[99] "Nuclear weapons and nonproliferation", Second Edition, By Sarah J. Diehl and James Clay Moltz, Colorado, 2008 p.50-58

nuclear materials, for which terrorists are willing to pay large sums of money and bribe to get to the desired materials. [100]

More information on nuclear terrorism can be found in the following books:

-> "NUCLEAR TERRORISM THE NEW TERROR OF THE 21ST CENTURY", RESHMI KAZI, December 2013 http://www.idsa.in/system/files/Monograph27.pdf

->The four faces of Nuclear Terrorism, by Charles D. Ferguson and Wiliam C. Potter , - Monterey Institute- Center for Nonproliferation Studies

-> Preventing Nuclear Terrorism: Nuclear Security, the Nonproliferation Regime, and the Threat of Terrorist Nukes By Samuel Kane, 2012

-> The nuclear terrorism threat William Tobey and Pavel Zolotarev Pattaya, Thailand January 13, 2014 http://www.belfercenter.org/sites/default/files/legacy/files/nuclearterrorismthreatthailand2014.pdf

-> Deterring Nuclear Terrorism By Robert S. Litwak, - Woodrow Wilson International Center for Scholars, 2016 https://www.wilsoncenter.org/sites/default/files/deterring_nuclear_terrorism_robert_litwak.pdf

-> Nuclear Terrorism: A Brief Review of Threats and Responses September 22, 2004 Jonathan Medalia Specialist in National Defense Foreign Affairs, Defense, and Trade Division https://fas.org/irp/crs/RL32595.pdf

-> http://www.dw.com/en/why-pakistans-nuclear-obsession-is-reason-for-concern/a-18679176

-> http://www.belfercenter.org/publication/preventing-nuclear-terrorism-securing-pakistani-nuclear-weapons

-> http://www.belfercenter.org/publication/nuclear-security-pakistan-reducing-risks-nuclear-terrorism

-> "Nuclear weapons and nonproliferation" , By Sarah J. Diehl and James Clay Moltz, Colorado, 2008 p.50-58

-> Nuclear Weapons- A very Short Introduction, by Joseph M. Siracusa, Oxford University, 2008 p.108-112

The threat of nuclear terrorism is not only a theoretical projection, but a real threat, with which international actors should seriously deal with. In the last 15 years, 19 cases of seizure of nuclear materials in various locations around the world have been published, while the same materials have not been reported missing from the facility they originated. From a historical point of view and according to the situation in which nuclear actors are located today, a major lack of resolve has been noted, that is, smaller nuclear actors such as Pakistan and India do not cooperate with the Great Powers to deal with smugglers and terrorists who are seeking for a nuclear materials or weapons . In international relations, there is a lack of severe punishments, for those actors who

[100] Pakistan nuclear arms at risk from terrorists, Catherine Philip, The Times, April 1, 2016 (accessed on September 2017) http://www.theaustralian.com.au/news/world/the-times/pakistans-nucleararms-at-risk-from-terrorists/news-story/0d16cef89473dc929084a0f10b1e913a

do not cooperate for the sake of the world, and all that encourages terrorists to undertake more and more activities. Most citizens think that nuclear terrorism is only a fiction and a theoretical projection, and that remains so, until it happens, but then it will be late. (If I can not see it, it does not exist).

2.8. The risk of nuclear attack in the future

In recent years, the everyday developments that surround the world, the new environment, show a high percentage of concern among the world's population. Today, the term nuclear weapons, is a popular subject across all the world's media, years later since the end of the Cold War. Whether the world faces the start of a new Cold War, or even worse, nuclear war, are issues that are currently dependent on the political decisions of world leaders, and we will remain vigilant to observe, analyze and assume.

After calculations by various military experts, the chances of a nuclear explosion in the next 10 years are from 10 to 30 percent. As the most relevant source of accurate information, we will use the calculations of Martin Hellman, a professor emeritus of electrical engineering at Stanford and a co-inventor of public key cryptography, who calculates that the coefficient of 1 percent per year is moving forward. In case to continue to increase the risk of nuclear war, coefficient over a period of 10 years will reach a probability of 10%, and in the next 50 years, will reach a whopping 40% chance of a nuclear war. Martin Hellman, who 25-year professionally engaged in nullifying intimidation, says a baby born today who would live for 80 years is facing a 50-50% chance of a nuclear-weapon attack, except when the number of nuclear weapons and nuclear materials in the world , will drastically decrease. [101]

According to Martin Hellman, "Nuclear tensions in Iran and North Korea are increasing the need to take a long look at how United States handles weapons of mass destruction." Helman, along with a group of defense experts and Stanford University professors, are calling for a thorough analysis that will help to derive effective strategies in order to drastically reduce the

[101] Nuclear Attack a Ticking Time Bomb, published in CBS NEWS, by Dan Farber, May 2010 (accessed on September 2017) Http://www.cbsnews.com/news/nuclear-attack-a-ticking-time-bomb-experts-warn/

number of nuclear weapons in the world. With a total of 15,000 nuclear weapons (according to the latest information), and the ability to build many others, the choice of the great powers lies between the creation of a world of suffering or no world at all. Nuclear weapons since the Cold War still exist, but public concern over nuclear strategy has worn off. To all of this, Helman said "People who are saying change is too risky are implicitly assuming that the current approach is risk free, but no one really knows what the risk is if we do not change." [102]

Matthew Bunn, an associate professor at Harvard University's John F. Kennedy School of Government and an expert on nuclear proliferation and terrorism, says that even one percent chance of a nuclear war in the next 10 years is too high risk. He says that no one with a conscious mind would place the nuclear power plant at the top of a large city, which in the next 10 years has a chance of 1 percent for a nuclear attack. In case of such a nuclear explosion, the consequences would be disastrous, that a nuclear bomb of 10 kilotons (equivalent to 10,000 tones of TNT), detonated in downtown Manhattan, in the middle of the day, could kill half a million people, while economic damage would reach as high as $ 1 trillion. [103]

Iran and North Korea

Here we are returning again to Martin Hellman, who says the complexity of the assessment has been greatly increased due to North Korea's nuclear testing and Iran nuclear program. Also, Helman explains that the preliminary analysis did not include nuclear terrorism, which additionally increases the coefficient, that is, a country that possesses nuclear weapons and the presence of terrorists, may be a trigger for a nuclear war, especially when the main enemy of terrorists would be the United States or Russia . According to Hellman, the first key step in resolving problems with North Korea and Iran should be resolving the conflict between the United States and Russia. That means, for the sake of all, Russia and the United States to sit at the negotiating table and demonstrate genuine political will to find a solution, so together they are united to deal with the remaining problems that the world is concerned with. As Hellman

[102] Chance of nuclear war is greater than you think: Stanford engineer makes risk analysis, by Christine Blackman, July 2009 (accessed on September 2017)
https://phys.org/news/2009-07-chance-nuclear-war-greater-stanford.html

[103] Nuclear Attack a Ticking Time Bomb, published in CBS NEWS, by Dan Farber, May 2010 (accessed on September 2017)
http://www.cbsnews.com/news/nuclear-attack-a-ticking-time-bomb-experts-war

puts it: "Let's work on the United States and Russia first, because that's where the most weapons are, it's the easiest to solve, and it will make a more fertile ground for the resolution of later crises." [104]

One thing is certain, it is impossible to calculate with precise numbers the percentage of the risk of a nuclear war, but it is clear to the world that this percentage is greater than zero. According to various researches, 60% of the respondents considered that the percentage of the risk of nuclear war has increased in the last 10 years, and 52% of them thought that this percentage will continue to grow in the following period. Confrontations with China and Russia are more evident and larger. With the help of the technological revolution, information is rapidly flowing around the world today, every black spot is noticeable, which means having the right and précised information should be advantage to the international institutions and the leaders of the great powers, should make an effort to resolve the international conflicts.

For the management and resolution of international conflicts, the most needed is the political will and the small political steps, which will open up new horizons and doors, which will help find a compromise between the great powers. Resolving the conflict between Russia and the United States and drastically reducing the number of nuclear weapons will entice trust and confidence in other nuclear actors who would later join the negotiating table. In one interview, former United Nations Secretary-General Boutros Ghali, on a question related to international conflicts, says: "My advice is only to negotiate, only negotiate, talk to each other, even if you need 20 years to talk! It's better to talk for 20 years than to fight for 2 years. Talk!! And if you talk long enough, you will find a solution. " [105]

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[104] Chance of nuclear war is greater than you think: Stanford engineer makes risk analysis, by Christine Blackman, July 2009 (accessed on September 2017)
https://phys.org/news/2009-07-chance-nuclear-war-greater-stanford.html

[105] https://www.youtube.com/watch?v=xn1Fib_uXbU

CHAPTER 3

3. CONSEQUENCES OF NUCLEAR WEAPONS

In this chapter we will talk about the consequences and effects of the production, testing and use of nuclear weapons for mass destruction. As we already know, nuclear weapons are completely different from conventional weapons, first because of the huge amount of explosive energy they are releasing, and secondly, because of the effects and consequences that result from their use, such as radiation and high temperatures. The first atomic bomb and the Manhattan project themselves began to save the world from the Nazis, or the potential target at the time was Germany. But as Germany capitulated, atomic bombs were "tested" on Hiroshima and Nagasaki in Japan. At that time there was a huge motivation, hope and desire among scientists and world leaders to find a way to prevent Germany, which means the greatest driver of this discovery was the suffering of the world during the Second World War. The question is: Who is the driver replacing the suffering of the Second World War, to continue investing enormous sums of human, financial and material resources in order to produce and sophisticate nuclear weapons. Here we will mention the aftermath of the atomic bombs of Hiroshima and Nagasaki, which were catastrophic, and the fact that today's nuclear weapons are only 3,800 times more powerful than those of Hiroshima and Nagasaki, we can only guess what the consequences and effects of a possible nuclear attack. One thing is certain, there will be no winners. Therefore, this section will cover the short-term and long-term consequences of the Hiroshima and Nagasaki attacks, which are the thermal effects of the nuclear explosion, what are the effects of the explosion, the impact of nuclear weapons on the environment, the impact on climate, the impact on human health of what kind of suffering does not expect, in case our leaders decide to measure their strengths with nuclear weapons.

3.1. The damage from the use of nuclear weapons in Hiroshima and Nagasaki

By bombarding Hiroshima and Nagasaki with "The Little Boy" and "The Fat Man", the world's population has significantly changed the perception of warfare and the consequences of using such weapons. In addition to all the negative effects and consequences of nuclear bombardment, there is a positive side, which is that these terrible consequences that arose from the attacks on Hiroshima and Nagasaki caused fear in the world and great international engagement was observed to never repeat itself this catastrophe. In the Hiroshima attack on August 6, 1945, nearly 70% of all buildings were destroyed and burned, and the number of direct victims from the explosion reached 140,000 dead. Then, in an attack on Nagasaki, which was carried out three days later, the number of victims reached up to 74,000 dead.[106]

Those who survived the nuclear explosion were considered unhappy why they did not die during the blast, because they were left helpless to lie down and die in suffer and pain. The entire infrastructure, all buildings and hospitals were destroyed, 42/45 hospitals were destroyed, ninety percent of doctors and nurses were killed and all these factors contributed to an enormous increase in the number of victims. Also, following the bombings, some of the people who entered the cities to help the survivors, died from strong radiation.[107]

As mentioned above, the entire infrastructure of Hiroshima and Nagasaki was destroyed, the cities were unrecognizable, the pillars stood in some strange illogical corners, all the city's landmarks were destroyed to the extent of disorientation. The buildings were destroyed and burned, even those who looked from the outside as if they remained on their foundations, however the pressure made huge internal irreparable damages. In terms of people, in the late 1950s, psychologists noted increased neurotic symptoms, such as amnesia, lack of concentration and general fatigue. Additional symptoms of psychological damage in the population were also observed. PTSD (cognitive disorders of post-traumatic stress) include:

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[106] The effect of the atomic bombs dropped on Hiroshima and Nagasaki, published by Washington State University, by Drew Frame, January 2015 (accessed on September 2017)
https://history.libraries.wsu.edu/spring2015/2015/01/20/the-effect-of-the-atomic-bombs-dropped-on-hiroshima-and-nagasaki/
[107] Hiroshima and Nagasaki Bombings, published by ICAN, (accessed on September 2017)
http://www.icanw.org/the-facts/catastrophic-harm/hiroshima-and-nagasaki-bombings/

- Nightmares
- flashback
- intense anxiety
- insomnia
- problems with concentration
- suicidal thoughts
- depression
- anger and irritability
- feeling numbness, etc. [108]

Psychological harm to humans can not be compared to the physical damage caused by the direct explosion and the effects of exposure to the radiation of the bomb. Those who survived the blasts were in terrible pains and searching for help and remedying their injuries, but as we mentioned, 90% of the medical staff was dead, and the medical material was very quickly consumed. Many of those who survived the null blast began to feel the effects and consequences of exposure to bombing the bomb. Various symptoms of cataracts, burns, malignant tumors, thermal burns, susceptibility to leukemia, nausea, bleeding and loss of hair to death appeared in the wound.

Other physical damage as a consequence of radiation radiation:

-Surface, especially leukemia and lymphoma

-Mental retardation

-Spinal bifida

- Small size of the brain

- Little intelligence

-Developed development

According to various analyzes and researches regarding the consequences of nuclear explosions on Hiroshima and Nagasaki, the following statistics have been reached:

[108] The After-Effects of The Atomic Bombs on Hiroshima & Nagasaki, by The TAOOFD, December 2011 (accessed on Sept. 2017) http://zazenlife.com/2011/12/29/the-after-effects-of-the-atomic-bombs-on-hiroshima-nagasaki/

- Studies and research on 1600 children who were irradiated while still in their mother's womb during nuclear explosions found that 30 of them suffered from a clinically severe mental retardation.

- Research on children whose mothers received a certain amount of radiation from the whole body showed that children had an increased risk of small brain and mental retardation, especially of mothers who were pregnant for 8-15 weeks at exposure time.

- Radiation exposure has caused 421 cases of cancer, of which 17 cancer types survived as many as 16 types.

- According to some studies, by the year 1950, 200,000 people died due to cancer or other long-term effects. From 1950 to 1990, about 9% of deaths from cancer and leukemia among those who survived nuclear explosions are due to radiation from the bomb, that is, radiation.[109]

Those who survived the nuclear bombardment of Hiroshima and Nagasaki were called Hibakusha. [110]

3.2. Effects of the Use of Nuclear Weapons

The effects of nuclear weapons are divided into four categories: instant, immediate, short-term and long-term effect.

Instant effects -> in a nuclear explosion, the epicenter of the explosion reaches a temperature of several million degrees Celsius and as a result of the heat flash, all human tissues evaporate. For example, in Hiroshima, within a radius of 500 meters, the only remains of people covered by the blast in the open air were their shadows burned in stone.

[109] The After-Effects of The Atomic Bombs on Hiroshima & Nagasaki, by The TAOOFD, December 2011 (accessed on Sept. 2017) http://zazenlife.com/2011/12/29/the-after-effects-of-the-atomic-bombs-on-hiroshima-nagasaki/

[110] The Story of Nagasaki, published in Hiroshima and Nagasaki Remembered, (accessed on Sept. 2017) http://www.hiroshima-remembered.com/history/nagasaki/page7.html

Immediate effects -> people in buildings and other objects will be indirectly affected by the thermal effects and explosion when buildings are decomposed, with the mortality rate above 90%. Then, as temperature increases, so the air is drawn from the periphery to or near the ground level. All this would result in hurricane, lethal forces, produced by intense conventional large-scale bombing in cities with several million inhabitants. Beyond the area of direct explosion, the number of survivors will be higher, but still most of the victims will suffer from terrible burns, bleeding from glass blades and massive internal injuries. The mortality rate will be higher than in a normal disaster, as medical services and rescue services will not be able to respond, due to the loss of resources and staff and the destruction of infrastructure. The International Red Cross concluded that using a nuclear weapon would result in a humanitarian disaster, where the best hope for victims could be to die with as little pain as possible.

Short-term effects -> after the very nuclear explosion, in the coming days, the survivors will be hit by a radioactive fall, where the degree of decline will depend on whether the nuclear bomb is detonated in the air or on the ground. The area covered by the fall is determined by the direction and the speed of the wind, that is, the larger particles of the radioactive material will fall in the immediate vicinity and will be blown to lengths of distance before falling to the ground. One specific example is the Chernobyl accident, that is, as a result of the Chernobyl explosion in Ukraine in 1986, radioactive rain fell over the next few days across Northern Europe, Scandinavia, Scotland, Cambria and Wales, at a distance of over 2,100 kilometers from Chernobyl. The effects of exposure to a radioactive fall are: hair loss, internal bleeding, sweating, fever, coma and, most importantly, there is no specific and effective treatment, which is followed by a few days. Those who survive face very serious complications and life-long suffering.

Long-term effects -> cancer caused by radiation will affect many in the next 20 years of the blast. Certain types of cancer, as the cancer of the thyroid gland in children, is particularly related to exposure to radiation from radiation. The children of those parents who have been

exposed to radiation are statistically more likely to be born with abnormalities and suffer from leukemia. [111]

On the other hand, in relation to the long-term effects of the use of nuclear weapons, Dr Bertrand Jordan, an expert in molecular biology at Aï¿¾-Marseille University in France, argues that the perception among the public of the increased rate of cancer and deformity in those who survived the nuclear bombings on Hiroshima and Nagasaki, is exaggerated, relative to the real picture. This claim is supported by 60 years of research on 100,000 respondents, most of which include survivors who have been exposed to radiation and a part that has not been exposed to radiation. The rate of cancer among survivors compared to the cancer rate of those who were out of the city during the nuclear explosion is for some degree higher. The difference between one and the other is 10%, indicating 848 additional cancer cases of 44,635 survivors. The possibility of getting cancer depends on the degree of exposure to radiation, that is, those who have been exposed to radiation from 1 Grau, which is 1000 times the safety margins, face a 44% greater risk of getting cancer. [112]

In summary, the use of nuclear weapons brings catastrophic consequences for humans, the environment, the land and the whole world..

Nuclear weapons detonation effects-> as we have already mentioned, the energy released as a result of nuclear detonation in the center of the explosion, achieves a temperature of several tens of millions of degrees Celsius and is compared to the temperature inside the core of the sun. At such a temperature, everything in the vicinity of the earth evaporates. The remaining gases of the weapon represent a fireball that begins to grow rapidly and rises as a balloon and, with cooling itself, expands and gives the appearance of the famous mushroom shape. Particles contaminated with radioactivity fall on a large surface and create a radioactive deadly effect with long-term catastrophic effects.

[111] The Effects of Nuclear Weapons, published in Campaign for Nuclear Disarmament, (accessed on Sept. 2017) http://cnduk.org/campaigns/global-abolition/effects-of-nuclear-weapons

[112] Long Term Effects of Nuclear Weapons, published in Science Daily, (accessed on Sept. 2017) https://www.sciencedaily.com/releases/2016/08/160811120353.html

Blast effects-> most damages come from an explosive explosion when a shock wave of air radiates outward, causing sudden changes in air pressure that can destroy objects. This means that large buildings are destroyed by the change in air pressure, while people and trees are destroyed by the wind. [113]

Gas residues move outward as a result of high temperatures and the effect of these high pressures is to create an explosive wave that travels several times faster than sound. Nuclear weapons of 15 kilotons can create a pressure of 10 pounds at a wind speed of 800 km per hour and a radius of 1.2 km. The radius of destruction is expanding proportionally with the increase in the power of nuclear weapons. With a distance of 3.2 km from the epicenter of the nuclear explosion, the pressure gradually decreases to 3 psi, and with it the speed. At this distance, the number of dead is lower, while the survivors suffer with severe injuries. Although people are quite resistant to pressure, they can not escape the hard objects or buildings that fall on them. [114]

Thermal effects -> about 35 percent of the total energy yield from the nuclear plant is an intense burst of thermal radiation, that is, heat that causes burns and fires. Then there is a shock wave that also spreads, and with it the fires spread. Because thermal radiation travels at the speed of light, the flash of light and heat precedes the wave for a few seconds. To explain this more salient, this wave can be compared with the lightning that is seen before the thunder is heard. If there is an increase in the intensity of the fires and their collection, then there are mass fires called firefighting. For example, due to differences in terrain, Hiroshima's live effects were totally different from those in Nagasaki, that is, a firestorm that raged over Hiroshima caused damage four times greater than the surface burned in Nagasaki.[115]

Flash blindness can take several minutes and in case the flash is focused through the lens of the eye, then a permanent retinal gland will emerge. Among the survivors of Hiroshima and Nagasaki, of all the cases of luminosity, there was only one case of retinal burns. Burns of the skin arise from the exposed state of the higher intensities of light and are carried closer to the

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[113]Basic Effects of Nuclear Weapons, published in Atomic Archive, (accessed on Sept. 2017) http://www.atomicarchive.com/Effects/effects2.shtml

[114] Effects of Nuclear Weapons, published in Nuclear Darkness, (accessed on Sept. 2017) http://www.nucleardarkness.org/nuclear/effectsofnuclearweapons/

[115] The Effects of Nuclear Weapons, published in Encyclopedia Britannica, (accessed on Sept. 2017) https://www.britannica.com/technology/nuclear-weapon/The-effects-of-nuclear-weapons

center of the blast. At a distance of up to 8 kilometers from the center of the nuclear explosion, first, second and third degree burns may occur. Third-degree burns can result in shock and be fatal if adequate medical care is not available. For example, US facilities for the treatment of severe burns are from 1000 to 2000 people, while only one nuclear explosion can cause over 10,000 cases of third-degree burns.[116]

Detonation of a 15 kiloton nuclear bomb may create thermal radiation whose intensity may exceed 1000 watts per square centimeter. It would be the same as getting a burn of an acetylene torch used for welding metals. If they took into account the size of the bombs from Hiroshima and Nagasaki, that is, a bomb of 15 kilotons, then everyone who is at a distance of about 2 kilometers will suffer from third degree burns, while if the bomb is about 550 kilotons, then the radius of burning of the third degree of 2 km increases 9 km. In all cases, if burns from the third degree to more than 24% of the body occur, almost no survivors, because of the lack of adequate medical care. All these data point to the terrible consequences for mankind and the whole planet in the event of a nuclear war and therefore the international community should actively advocate the prevention of proliferation of nuclear weapons in order to manage international conflicts.[117]

Electromagnetic Effects (EMP) -> Ionizing radiation from a fireball produces intense currents and electromagnetic fields, which are called electromagnetic pulses and are felt at very long distances. A highly diversified nuclear detonation can create a destructive EMP of over hundreds of thousands of square kilometers from the blast site. Under the impact of such waves, all computers, televisions and all other electronic equipment will be completely burned out, with which all possible communication links with the outside world will be cut off, and the return of communications facilities would be a very difficult and expensive task, due to the already destroyed infrastructure from a nuclear explosion. [118]

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[116] Basic Effects of Nuclear Weapons, published in Atomic Archive, (accessed on Sept. 2017) http://www.atomicarchive.com/Effects/effects2.shtml

[117] Effects of Nuclear Weapons, published in Nuclear Darkness, (accessed on Sept. 2017) http://www.nucleardarkness.org/nuclear/effectsofnuclearweapons/

[118] Effects of Nuclear Weapons, published in Nuclear Darkness, (accessed on Sept. 2017) http://www.nucleardarkness.org/nuclear/effectsofnuclearweapons/

The effects on climate -> massive absorption of sunlight from the global smoke layer can cause temperatures of ice age on the earth. According to NASA, this smoke would remain in the stratosphere for 10 years and would have destroyed much of the protective ozone layer, causing dangerous amounts of UV light to reach the surface of the Earth. Also, around 100 weapons of the Hiroshima bomb will put 5 million tons of smoke into the stratosphere, with global temperatures decreasing to levels of small icebergs, which would result in starvation of about 1 billion people.

In the event of a major nuclear war, 150 million tons of smoke would emerge in the stratosphere, leading to global temperatures to be as cold as 18,000 years ago during the coldest part of the last ice age. As a consequence, average global precipitation would be reduced by 45% and the ozone layer of the country would be decimated. All this suggests that the destructiveness of nuclear weapons would be catastrophic in any respect, that is, in the event of a major nuclear war, the environment will be completely destroyed, people will starve to death, the ecosystems, radioactive fats and deadly climate change will cause mass destruction, which would eliminate people, and with them the most complex forms of life on earth. [119]This means that the life of the country will fade away as a result of technological development.

Human impacts from the nuclear industry -> apart from the direct effects on the whole earth's life, there are indirect effects on human health, and they arise from the production, testing and storage of nuclear weapons. For more than 60 years, carcinogens and mutagenic isotopes in the environment have been sprayed as a result of accidents occurring in civilian nuclear power plants and military nuclear reactors. The largest amount of radiation in Europe and North America was widespread as a result of nuclear disasters in Chernobyl and the island of Tri Mile. In these regions, there is a high increase in thyroid cancer and severe mental retardation due to the genetic damage to the entire animal world. Also, there has been a high increase in the rate of cancer occurrence among military personnel involved in the production and testing of nuclear weapons. It is estimated that only due to atmospheric testing, by the year 2000, 430,000 cancer cases were produced and this figure would ultimately reach 2.4 million victims.

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[119] Effects of Nuclear Weapons, published in Nuclear Darkness, (accessed on Sept. 2017) http://www.nucleardarkness.org/nuclear/effectsofnuclearweapons/

Environmental impacts from the nuclear industry -> large areas of soil and water are polluted as a result of the production of nuclear weapons in the world. Substances released from the nuclear weapons production process, including plutonium, uranium, constipation, benzene, mercury and cyanide, are carcinogens and mutagens and as such remain dangerous for hundreds of thousands of years. For example, plutonium needs about 250,000 years to become lead, and according to several analyzes it is predicted that cleaning would cost 300 billion dollars by 2070. As an immediate solution for the removal of radioactive decomposition, radioactive materials are currently being buried. Until now, there is no concrete solution to the problem of radioactive waste, and there are no technologies that can clean the radiation, therefore the halting of the production of nuclear weapons is considered as the most ideal solution.[120]

The atomic bombs dropped on Hiroshima and Nagasaki in 1945 in Japan, to date are the only example of using nuclear weapons in armed conflict. The following figures reflect the scale of the casualties and damage that resulted from the explosions. Deaths: Hiroshima: 100,000 – 140,000 killed* Nagasaki: 60,000 – 70,000 killed* Total area destroyed by heat, blast and fire: Hiroshima: 13 sq km (including 4 sq km completely destroyed by a firestorm) Nagasaki:

- 6.7 sq km Impact on medical services in Hiroshima:
- 270 out of 300 doctors killed or injured
- 1,654 out of 1,780 nurses killed or injured
- 112 out of 140 pharmacists killed or injured[121]

[120] What's the damage?, published in Greenpeace, April 2006 (accessed on Sept. 2017) http://www.greenpeace.org/international/en/campaigns/peace/abolish-nuclear-weapons/the-damage/

[121] The Effects of Nuclear Weapons on Human Health, published in International Committee of the Red Cross, May 2013 (accessed on Sept. 2017) https://www.icrc.org/eng/assets/files/2013/4132-1-nuclear-weapons-human-health-2013.pdf

Of all these data, we can conclude that the use of nuclear weapons requires huge financial costs and brings only destruction, lagging behind, disasters that cover the whole world of life on the planet. If all these resources were used for humanitarian purposes, and not for the development and maintenance of nuclear weapons, major global problems would be resolved, and thus the world would be a better place for life today. I hope that the great powers have learned the lesson from the use of nuclear weapons and its consequences, and thus will not allow once again to repeat this inhuman act.

(Appendix VI: See page 171)

CHAPTER 4

NUCLEAR DISARMAMENT TREATIES

In all the years since the emergence of nuclear weapons, various agreements have been signed on non-proliferation of nuclear weapons, on nuclear disarmament, on the control of production and possession of nuclear weapons, on the prohibition of its use. But the mere signing and ratification of the agreements does not necessarily mean that they are effectively fulfilled, so small steps of success in meeting the agreements by the signatories have been noticed, but not entirely, and today we are facing countries like the United States and Russia possessing an enormous amount, or 93% of the total nuclear weapons in the world.

In this part, I will try to incorporate all previous nuclear-related agreements, their short content, and to explain those agreements that I consider to be of major importance. Nuclear disarmament implies the reduction or total elimination of nuclear weapons where the end result will be a world without nuclear weapons, which will be completely removed and destroyed.

As the most active and vocal American activists advocating nuclear disarmament, we can mention George Schultz, Sam Nun, and Henry Kissinger. These scientists are guilty of continually calling on governments to activate and adhere to a vision for the complete elimination of nuclear weapons, by providing various proposals that include a program to take important steps to achieve the set goal. Hence, some organizations such as Global Zero, an international non-party group of 300 world leaders committed to achieving nuclear disarmament. Other groups that appear in and include in the nuclear disarmament campaign are: Greenpeace, the Peace Foundation for the Nuclear Age, the International Campaign for the Abolition of Nuclear Weapons, the Mayors of Peace, and others. Here we will focus on disarmament agreements, while we will talk about these organizations and their role together with the role of the United Nations and the European Union in the next chapter.

Nuclear disarmament treaties may be on a bilateral, multilateral or international basis. On a bilateral basis, agreements between Russia and the United States which are commonly the leading nuclear forces. In addition to nuclear disarmament, nuclear agreements also include the

control of nuclear weapons, which is also of great importance. The very process of nuclear disarmament requires a long time, efforts and huge financial, material and human resources. Hence, these agreements are essential in terms of maintaining international law and order, and at the same time, states depend on them to ensure stability in the international relationships.

If we are guided by the main carrier agreement for non-proliferation of nuclear weapons, the so-called NPT, which we will discuss below, states that possess nuclear weapons should be disarmed, but the facts say that this is not happening. On the contrary, nuclear forces are constantly improving nuclear systems, while not allowing other countries to own / produce such weapons. At one time, even the Pentagon proposed a program to develop new versions of the existing smaller nuclear weapons (Bunker Bourse), but this program was not activated due to the withdrawal of the budget / financing in 2005 by the Congress.[122]

The most important actor in terms of nuclear disarmament and control of nuclear weapons are the United Nations, which through their bodies and frontiers are actively involved in all processes that take place on the international stage.

4.1. The non-proiferation treaties and nuclear disarmament agreements are all listed in the appendix.

(Appendix VII: See page 172)

4.2 Treaty on the Non-Proliferation of Nuclear Weapons: Status and full text of the NPT.

(Appendix VIII: See page 184)

4.2.1. Why is the Non-Proliferation Treaty important?

As I mentioned above in the text, all agreements and treaties that have been reached so far and related to nuclear weapons, ie its control and disarmament, are of particular importance and each of them contributes to the maintenance of peace and security in the world, but the Treaty on Non-Proliferation of Nuclear Weapons is especially important because of its universality. In this section, I will show you several reasons why this agreement is important.

John P. Holdren, the Teresa and John Heinz Professor of Environmental Policy at the Kennedy School of Government; Co-Director of the Program on Science, Technology, and Public Policy in the Kennedy School's Belfer Center for Science and International Affairs; and Professor of Environmental Science and Policy in the Department of Earth and Planetary Sciences at Harvard University and President Obama's Science Advisor says:

"The "bargain" under which this commitment was achieved includes preserving and enhancing access to the benefits of civil nuclear energy for non-nuclear-weapon states in good standing under the Treaty and pursuing, over time, the elimination of nuclear weapons from the possession of those countries that now possess them."

Also he is explaining the importance of the goal of the NPT and the importance of the Existence and Strength of the NPT where he says:

"The *goal* of the NPT is important because every additional state that possesses nuclear weapons represents an additional set of possibilities for the use of nuclear weapons in conflict (bringing immense destruction and risk of escalation), as well as additional possibilities and temptations for the acquisition of nuclear weapons by still further states and by terrorists.

The *existence and strength* of the NPT itself are important because the goal of preventing proliferation cannot be attained by one or a few states acting alone, no matter how powerful those states may be: Attaining the goal requires the commitment and cooperation of the world community acting in concert to limit the spread, and monitor the use of, the technologies most directly relevant to acquiring nuclear weapons."

John P. Holdren says that every weakening of the NPT, weakens the belief of the world community in attainability of nonproliferation goals and, in the same time, weakens the will of individual countries to participate in the measures needed for success. [123]

4.2.2. Effectiveness of the NPT Treaty

Today, scientists and academics can not come to a concrete and common conclusion as to whether the Nuclear Non-Proliferation Treaty (NPT) is effective or not, and debates are continually being held. Everyone agrees that such an agreement should exist and that is one of the most important tools for nuclear disarmament and the prevention of the nuclear proliferation, but its effectiveness has been questioned. In general, scientists are divided, theon one side optimists who firmly believe in NPT and its effectiveness, while others are pessimists who draw energy from NPT failures and believe that this treaty is only a tool of the great forces to hold monopoly in the production and possession of nuclear weapons , and thus the power in the world.

Considering that since 1963, 15-25 states could possess nuclear weapons in less than ten years, but 44 years later, only nine countries possess nuclear weapons and it is estimated that around 44 states are capable of developing nuclear weapons, but are determined not to do so and if we are guided by these data, then the Nuclear Non-Proliferation Treaty is a success that has enabled the establishment of a mechanism for overseeing all activities related to nuclear weapons. Most literature focuses on contract failures, but it is important to invest equally and make efforts to understand the causes of success in order to proceed in that direction, but also to understand the causes of failures in order to be able to it is working on perfecting and developing the agreement, in order to allocate maximum results.[124]

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[123] Why is the Non-proliferation Treaty important?, published in Harvard Kennedy School - Belfer Center for Science and International Affairs, by John P. Holdren, April 2005 (accessed on Sept. 2017)
https://www.belfercenter.org/publication/question-1-why-non-proliferation-treaty-important-john-p-holdren

[124] Is the NPT Irrelevant?, published in International Policy Digest, by Salra Bano, November 2014 (accessed on Sept. 2017)
https://intpolicydigest.org/2014/11/29/is-the-npt-irrelevant/

4.2.3. Optimists and Pessimists

Matthew Fuhrmann from the Texas A&M University and Yohatan Lupu from the George Washington University in their article the opinion about the effectiveness of the Nuclear Nonproliferation Treaty are dividing on two sides: optimists and pessimists.

* NPT Optimists Hypothesis: Ratification of the NPT reduces the likelihood of nuclear proliferation

- Some scientists such as Noah, Sagan, Ruble, Dai and Weinman argue that the NPT has restricted nuclear proliferation, that is, when NPT does not exist, then the probability of building nuclear weapons would be much greater. The mere absence of an obligation would increase the chances of some countries reaching for the development of such weapons. These optimists believe that the NPT regime reduces the risk of proliferation of nuclear weapons, reduces the uncertainty about the behavior of other countries, facilitates the exchange of information, and increases the cheating costs multiple times, which further represents a financial obstacle to launching such a project. Another important reason why optimists consider NPT to be a success is that the treaty itself urges member states to accept stringent verification measures and allow IAEA inspectors to visit their nuclear facilities to confirm that nuclear objects are not developed for military purposes.

* NPT Pessimist Hypothesis: There is no relationship between NPT membership and nuclear proliferation once one accounts for selection into the treaty.

- On the other hand, there are pessimists who think that the NPT is not very effective, that is, very little is done to prevent the proliferation of nuclear weapons. As more active scientists who hold on to this hypothesis are Mearsheimer, Betts, Hyman and Fuhrmann that hold on two related arguments.

The first argument pessimists make by claiming that the NPT is an effect of non-proliferation, and not a reason, that the states that join the NPT can do so because they do not intend to develop nuclear weapons, which means that the agreement is screening for proliferation, rather than limiting it. This indicates that the states that accede to this agreement

have no intentions for nuclear proliferation and fully comply with the contractual provisions. While the second argument in its focus puts the institutional weaknesses of the NPT and calls it "Paper Leaves" that can not restrict states when their national security is jeopardized. Pessimists claim that states that are clearly designated for nuclear proliferation can not be deterred by the threat of punishment by the IAEA and that the agreement has significant flaws and restrictions and points to countries such as Libya, North Korea, South Korea, Romania, Iraq, Iran who are signatories to the NPT, but the treaty is violated by them. [125]

--- *The ambassador Linton F. Brooks*, former Under Secretary of Energy for Nuclear Security and Administrator, National Security Administration, at the conference about the twentieth Anniversary Celebration of the "Power and Promise of Nonproliferation Education and Training" as a keynote speaker, he is speaking about the importance of Nonproliferation Education and Training where he addresses the successes and the failures on preventing the proliferation of nuclear weapons:

Nonproliferation Successes:

- The signing of and widespread adherence to the Chemical Weapons Convention.

- The indefinite extension of the NPT.

- The signing of the Comprehensive Nuclear Test Ban Treaty and the continuing moratorium on nuclear testing by all the NPT - recognized nuclear weapons states.

- South Africa's stunning decision to eliminate and reveal its nuclear weapons program.

- Ukraine, Belarus and Kazakhstan electing to return to Russia the nuclear weapons they had inherited following the breakup of the Soviet Union and to join the NPT as non-nuclear weapons states.

- Libya's decision to abandon its pursuit of weapons of mass destruction.

- The strengthening of the international legal regime through the IAEA Protocol; UN Security Council Resolution 1540, and UN Security Council Resolution 1887.

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[125] Do Arms Control Treaties Work? Assessing the Effectiveness of the Nuclear Nonproliferation Treaty. Matthew Fuhrmann - Texas A&M University and Yonatan Lupu - George Washington University , International Studies 2016 (accessed on Sept. 2017) http://yonatanlupu.com/Fuhrmann%20Lupu%20NPT.pdf

- The continued slow expansion of nuclear weapons free zones

- Complementing the international legal regime with less formal means of thwarting proliferation, such as the Proliferation Security Initiative.

Nonproliferation Failures:

- The nuclear weapons tests by India and Pakistan, caught completely by surprise.

- The inability to bring the CTBT into force or to agree on a verification protocol for the Biological Weapons Convention.

- The decade - long gridlock in the Conference on Disarmament.

- The inability of the international community to prevent North Korea and Iran from developing nuclear weapons.

- The failure to recognize how close Iraq was to a nuclear capability in the first Gulf War and how fat it was from one in the second Gulf War.[126]

Today, the Nuclear Non-Proliferation Treaty faces several problems, ranging from institutional shortcomings, to the inability to find a solution and compromise with states that are determined to continue the development of nuclear weapons, such as North Korea. Here I would draw a brief conclusion on this part, where I would clearly state that the strategy that the US should rely on a preventive policy of using military force in response to problems related to proliferation of nuclear weapons is not the right choice, but to solve problems of nuclear proliferation requires co-operation and a multilateral approach that will not only involve major powers, but all states that, through common efforts, will work to solve these problems, including the problems with North Korea and Iran.

[126] The Importance of Nonproliferation Education and Training, Ambassador Linton F. Brooks , James Martin Center for Nonproliferation Studies, Monterey Institute of International Studies, December 3, 2009 (accessed on Sept. 2017) http://www.nonproliferation.org/wp-content/uploads/2016/10/20th_linton_brooks_keynote.pdf

4.2.4. Recommendation and ways to achieve nuclear disarmament

In 2003, China on the substantive session of the United Nations Disarmament Commission came out with working paper where clarified the efforts that international community should make in order to achieve the goal of enhancing the international peace and security through complete prohibition and destruction of nuclear weapons. The three efforts are:

First, to establish a new security concept based on mutual trust, mutual benefit, equality and cooperation. The nuclear disarmament process is intertwined with the international security situation. A peaceful, secure, stable international environment based on mutual trust is essential for the advancement of the nuclear disarmament process.

Second, to maintain the global strategic balance and stability which constitute the basis and precondition for progress in the nuclear disarmament process. The states concerned should strictly abide by the existing arms control treaties underpinning the global strategic balance and stability. They should stop the development, deployment and proliferation of advanced missile defense systems and outer space weapons, which will jeopardize the nuclear disarmament process and even trigger a new round of nuclear arms race.

Third, any nuclear disarmament measures should follow the principle of undiminished security for all states.

- Also, China confirmed that in order to eliminate nuclear weapons, the international community may take the following concrete steps:

1. The nuclear-weapon States possessing the largest nuclear arsenals bear special responsibility for nuclear disarmament. They should continue to reduce drastically their respective nuclear arsenals on the principle of irreversibility.

2. All the nuclear-weapon States should renounce the nuclear deterrence policy based on the first use of nuclear weapons, undertake unconditionally not to be the first to use nuclear weapons and conclude an international legal instrument to such effect.

3. All the nuclear-weapon States should commit themselves unconditionally not to use or threaten to use nuclear weapons against non-nuclear-weapon States or nuclear-weapon-free zones, and a relevant international legal instrument should be concluded.

4. The nuclear-weapon States concerned should undertake to withdraw all the nuclear weapons deployed outside their territories.

5. All the nuclear-weapon States should support the efforts to establish nuclear-weapon-free zones, respect the status of those zones and assume the relevant obligations.

6. The nuclear-weapon States and the non-nuclear-weapon States concerned should forego the "nuclear umbrella" policy and the practice of "nuclear sharing".

7. The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) should be observed in full and in good faith. Those countries which have not yet acceded to the NPT should do so without delay and without conditions, so as to make the treaty truly universal.

8. The states which have not yet signed and ratified the Comprehensive Nuclear-Test-Ban Treaty (CTBT) should do so as soon as possible, so as to promote the early entry into force of the CTBT according to the treaty provisions.

9. A universal and verifiable fissile material cut-off treaty (FMCT) should be negotiated and concluded.10. On the basis of the above-mentioned efforts, a convention on the complete prohibition of nuclear weapons should be negotiated and concluded.[127]

It is obvious that the non-proliferation regime faces more flaws, and the effectiveness of the Nuclear Non-Proliferation Treaty depends on what is the goal we want to achieve. It is indisputable that this regime is followed by numerous successes and has significantly contributed to the deterioration of certain countries to reach nuclear material. As another important feature, I will mention the argument that the establishment of measures by IAEA and the enormous costs

[127] Ways and Means to Achieve Nuclear Disarmament, 2003/10/15, Working Paper Submitted by China,2000 Substantive Session of the United Nations Disarmament Commission (accessed on Sept. 2017) http://www.china-un.org/eng/chinaandun/disarmament_armscontrol/cjhy/t29293.htm

that made the production of nuclear material too expensive and impossible for many of the states, which is an important reason for abandoning nuclear programs. Also, the International Community should learn lessons from previous failures and disadvantages and make efforts to better complete the NPT. One of the lessons we need to learn is the surprise element, that is, the international community over the past 40 years, was often surprised by nuclear tests. (Ex. Indian and Pakistani tests).[128] Subsequently, public support is very important in the fight for nuclear non-proliferation, and leaders must be able to explain the complicated concepts to the public in a way that is understandable to people who are not professional in that sphere in order to be better understood and then obtain their support.

[128] Ways and Means to Achieve Nuclear Disarmament, 2003/10/15, Working Paper Submitted by China,2000 Substantive Session of the United Nations Disarmament Commission (accessed on Sept. 2017) http://www.china-un.org/eng/chinaandun/disarmament_armscontrol/cjhy/t29293.htm

CHAPTER 5

ORGANIZATIONS AND NGO'S vs. NUCLEAR DISARMAMENT

Nuclear disarmament is a topic for which the majority of international actors have the same opinion, but not all take the same actions in relation to this problem. To be precise, all international actors approach the idea of nuclear disarmament and the prevention of nuclear proliferation, but when it comes to the total elimination of nuclear weapons, states especially those who still possess nuclear weapons, avoid participating in discussions, debates of such a nuclear weapon caliber and publicly express a clear view of this problem. Most often, these actors, for example, Britain, when they are forced to make a statement, then they skillfully and diplomatically evade a concrete response, certainly in order to protect their interests.

This section will cover the roles and strategies of the European Union, the United Nations, the International Atomic Energy Agency and the Non-Governmental Organizations regarding Nuclear Disarmament and how active and effective they are on this topic. To maintain peace in the world, it is necessary to actively involve all international actors who through the signing of specific agreements for the execution of duties in relation to nuclear disarmament and nuclear proliferation, will together contribute to the maintenance of the stability of the world, the progress of the states, and all of that will bring cohesion and progress of mankind.

5.1. EUROPEAN UNION AND NUCLEAR NON-PROLIFERATION

Today, at this time of constant uncertainty, continuous unexpected developments around the world clearly express the risks to the possibility of an unwelcome Third World War. After the end of the Second World War, after that tragedy that happened to the world, the generations clearly came out with a common and firm stand: "Do not let happen again this tragedy to the world." But, almost eight decades later and the change of several generations, the world seems to forget about this tragedy. The Second World War remained only in the books and memories of those older generations who felt the suffering and the catastrophic consequences. The situation is more and more tight and we see from all sides how the world is slowly preparing for "Cleaning", in a new form, but with the same consequences for us and the whole environment.

Therefore, while there is still time, the European Union, as one important player in the international arena, needs to form a clear and firm consensus on nuclear weapons and nuclear non-proliferation, and as the carrier of European Liberalism and Democracy to become a world driver who will work to attract states towards the World of Liberalism, Democracy and Peace. The world must act together, united, but first, it is necessary to unite Europe.

When it comes to the European Union and the place that it takes in terms of nuclear disarmament and non-proliferation of nuclear weapons, it is important to mention a few facts that characterize the Union itself:

- Several of the member states of the European Union have the necessary resources, if they decide to become nuclear states, within a year to produce nuclear weapons, and thus expand the club of nuclear states.

- The European Union can praise two nuclear-weapon Member States, which are France and the United Kingdom, who are not so enthusiastic and optimistic about the activities undertaken in terms of implementing the Treaty on Nuclear Non-Proliferation of Nuclear Weapons. Also, they are known for avoiding debates and direct answers to this topic.

- Another interesting feature is that EU Member States are also members of various other organizations and bodies, stemming from one of the obstacles to lack of consensus on the issue of nuclear non-proliferation.

- EU Member States further special agreements and protocols with the IAEA (International Atomic Energy Agency), and they also have different views and opinions regarding the use of nuclear energy for civilian needs.

- States Parties have different attitudes and degree of optimism regarding NATO membership and transatlantic vision, and one of the reasons is that some of the States have long-standing historical frameworks for building neutrality and are actively committed to full nuclear disarmament. [129]

5.1.1. EU strategy on Weapons of Mass Destruction

Aside from the activities undertaken in the past and the strategy for the Nuclear Weapons, through NPT and all other conferences and agreements, through roots that came out of the fight against terrorism since the September 11 attacks, the European Union has adopted its own strategy in terms of Weapons of Mass Destruction. On December 12, 2003, the European Council in Thessaloniki adopted its own strategy "European Union Strategy Against the Proliferation of Weapons of Mass Destruction", which gave a clear sign of the European Union's serious political commitment to this issue where the focus was on the nuclear non-proliferation.[130]

The European Union's approach to threats of Weapons of Mass Destruction has been described in several points:

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[129] "The EU and Non-Proliferation: Need for a Quantum Leap", Roland Kobia, 2008 (accessed on Oct. 2017) https://www.oecd-nea.org/law/nlb/nlb-81/031_053_ArticleKobiaRoland.pdf

Read more: http://www.nonproliferation.eu/web/documents/nonproliferationpapers/linagrip53611327371e9.pdf http://trade.ec.europa.eu/doclib/docs/2004/august/tradoc_118532.en03.pdf -> on this link you can find the full document about the "European Union Strategy Against the Proliferation of Weapons of Mass Destruction"

[130] "The EU and Non-Proliferation: Need for a Quantum Leap", Roland Kobia, 2008 (accessed on Oct. 2017) https://www.oecd-nea.org/law/nlb/nlb-81/031_053_ArticleKobiaRoland.pdf

- EU conviction that a multilateralist approach to security, including disarmament and non-proliferation, provides the best way to maintain international order and hence our commitment to uphold, implement and strengthen multilateral disarmament and non-proliferation treaties and agreements;

- EU conviction that non-proliferation should be mainstreamed in our overall policies, drawing on all the resources and instruments available to the Union;

- EU determination to support multilateral institutions charged with verification and compliance with these treaties;

- EU view that increased efforts are needed to enhance the consequence of management capabilities and improve coordination;

- EU commitment to strong national and internationally-coordinated export controls;

- EU conviction that EU in pursuing effective non-proliferation should be forceful and inclusive and needs to actively contribute to international stability;

- EU commitment to cooperate with the United States and other partners who share our goals.[131]

Multilateralism is the foundation on which this strategy is built, which clearly affirms the commitment of the European Union and its efforts through legal instruments to participate in the fight for nuclear non-proliferation and nuclear disarmament. The European Union uses multilateralism as an option to conduct foreign policy, but views on multilateralism from different points lead to unwanted conclusions and acceptances. Therefore, the European Union and those who create its foreign policy use positive connotations of multilateralism in order to arrive at a single positive response, i.e. solution, by creating the so-called 'Effective Multilateralism', a concept that will unite the various European views towards multilateralism on the same basis.

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[131] " The European Union Strategy Against the Proliferation of Weapons of Mass Destruction" , Thessaloniki, 2003

The EU Non-Proliferation Consortium[132]

The EU Non-Proliferation Consortium is managed jointly by four institutes entrusted with the project, in close cooperation with the representative of the High Representative of the Union for Foreign Affairs and Security Policy. The four institutes are the Foundation for Strategic Studies (FRS) in Paris, the Peace Research Institute in Frankfurt (PRIF), the International Institute for Strategic Studies (IISS) in London and the Stockholm International Peace Research Institute (SIPRI). The Consortium started its work in January 2011 and forms the core of a wider network of European non-proliferation think tanks and research centers that will be closely associated with the activities of the Consortium. [133]

This concept of effective multilateralism is identified by four different views on multilateralism:

- Military Power Europe
- Civil Power Europe
- Institutionalist Europe
- National Power Maximizer Europe [134]

Effective multilateralism in relation to the Strategy on Non-Proliferation of Nuclear Weapons provided a common identity of the European Union in international relations by adopting a consensus that would bring internal and external legitimacy. There are three important objectives ahead of the EU in terms of strengthening the EU's policy, such as: internal cohesion in the EU, strategic coherence with regard to the goals set and the means to be used both internal

[132] "THE EU's WMD STRATEGY AND THE CFSP: A CRITICAL ANALYSIS", Peter Van Ham, Sept. 2011 (accessed on Oct. 2017) https://www.sipri.org/sites/default/files/EUNPC_no-2.pdf

[133] "THE EU'sWMD STRATEGY AND THE CFSP: A CRITICAL ANALYSIS", Peter Van Ham, Sept. 2011 (accessed on Oct. 2017) https://www.sipri.org/sites/default/files/EUNPC_no-2.pdf

[134] "The EU and International Regimes in the Field of Non-Proliferation of Weapons of Mass Destruction", Benjamin Kienzle PhD, University Institute of European Studies, University of Autonomy de Barcelona, Spain

and external legitimacy. But this concept is not always easy to achieve, that is, the EU faces a problem of establishing a consensus on the policy it is leading. In many cases, the EU's consensus is weak, especially when EU states are in the focus, in this case the United Kingdom and France as nuclear-weapon states. In such cases, the EU's consensus is very weak, which makes the European Union just another divided organization. There are certainly examples where the European Union comes up with a strong consensus on the Non-Proliferation of Nuclear Weapons, and for this the best example is the EU's reaction to nuclear testing by North Korea in 2006. [135]From this section we will conclude that the concept of effective multilateralism to guide EU foreign policy is positive and effective only if the EU succeeds in strengthening its position and providing a strong consensus that will clearly and unanimously present the direction to which it is moving. Only then, united and firmly positioned, the European Union will remain an important player on the international stage, which is needed to maintain peace and order in the world.

5.1.2. European Union Role on Weapons of Mass Destruction

The EU has long been absent from the political agenda in the area of Nuclear Non-Proliferation, and for the past thirty years has been stepping on the path to the fight against nuclear weapons through the Common Foreign and Security Policy (CFSP). EU often is doing that promotion by Universalization of the Treaties, transparency and control of exports and various regional initiatives. The Union actively launched its role in Nuclear Non-Proliferation and Disarmament in 1981 with the establishment of a working group working on nuclear issues in the context of the European Political Cooperation. Hence, the European Union has gradually strengthened its role throughout history and its constitutional development took place as follows:

- Single European Act (SEA-1986) - this Act made the first major revision of the Treaty of Rome (1957), outside its main objective, which is the establishment of the Single European Market until 1992. Security issues such as nuclear non-proliferation and disarmament were on the agenda of the European Political Cooperation, but it was based on soft legal bases.

[135] The EU's Strategy on Weapons of Mass Destruction, From Ambition to Disappointment, Peter van Ham, Clingendael Paper No. 6, Netherlands Institute of International Relations, CLINGENDAEL, December 2011

- *Treaty of Maastricht (1992)* - this agreement officially established the second pillar of the European Union, the Common Foreign and Security Policy (CFSP), while retaining its interstate character. This pillar, ie the CFSP, covers all parts of the foreign and security policy and all other issues that are correlated with the security of the European Union, thus establishing a legal and political basis for undertaking major activities related to nuclear non-proliferation and disarmament. Great achievements of the European Diplomacy were noticed, and this was initiated by the signing of the Treaty of Nuclear Non-Proliferation by France.

- *Treaty of Amsterdam (1997)* - with this agreement, certain second pillar reforms (CFSP) were made in order to improve the effectiveness of EU activities in the Nuclear Non-Proliferation and Disarmament area. This agreement allowed the EU to create political and institutional conditions to tackle the challenges facing the Union, such as international crime, smuggling and terrorism.

- *Treaty of Nice (2001)* - this agreement allows the Union's mechanisms for non-proliferation and disarmament to be more effective, thus abolishing the right of each Member State to have the veto of a particular activity by introducing a new rule to a minimum of eight countries to establish co-operation and progress in the Common Foreign and Security Policy (CFSP), certainly with the exception of the defense.

- *Treaty of Lisbon (2007)* - this agreement provides Union instruments that will contribute to improving the conduct of activities on the international scene, and this would happen if they create a position for President of the European Union and the strengthening of the position of High Representative who will also become Vice-President of the Commission, and he will be responsible for external relations.[136]

The role of the European Union in relation to Nuclear Non-Proliferation and Disarmament is continually strengthened in the part of the IAEA Agreements, the NPT, the Chemical Weapons Convention, and the Biological and Toxin Weapons Convention. The EU, its role in the international arena, also strengthens with the participation as a permanent member in two agreements, the so-called London Club and the Zangger Committee, which help export control.

[136]"The EU and Non-Proliferation: Need for a Quantum Leap", Roland Kobia, 2008 (accessed on Oct. 2017) https://www.oecd-nea.org/law/nlb/nlb-81/031_053_ArticleKobiaRoland.pdf

The Union is participating in several other agreements that cover the part of non-proliferation: "Missile Technology Regime", "Wassenaar Arrangement", "Australia Group", "G8". [137]"

The EU's most famous example of non-proliferation activities is the diplomatic campaign for continuing the Nuclear Non-Proliferation Treaty for an indefinite period of time. More specifically, a year before the conference to decide whether the NPT should be renewed for a limited time or to continue indefinitely, the European Union actively joined in promoting the second option through various diplomatic activities, which were greeted by the International Community.

EU initiatives towards Nuclear Non-Proliferation

At the regional level, the EU is involved in a number of initiatives that are directed towards efforts for Regional Nuclear Non-Proliferation through assistance programs. These include numerous initiatives to contribute to the efforts of the Russian Federation in terms of arms control and disarmament control. Then, since 1997, the European Union is participating in the Korean Peninsula Energy Development Organization, where the EU appears as a member of the executive committee of KEDO. KEDO was established in 1995 to build two light-water reactors in exchange for the cancellation of North Korea's nuclear program, where the European Union is making a major contribution in exchange for the complete cancellation and dismantling of the North Korean Nuclear Program.

EU responses to Nuclear Proliferation Crises:

The European Union reacted on four occasions in situations where a state developed nuclear weapon or behaved suspiciously. *First*, in the 1990s, the European Union actively engaged and contributed in resolving the crisis in Ukraine, which arose as a result of the refusal of the Ukrainian Parliament to ratify the Lisbon Protocol of the START-1 Treaty, which envisioned the shifting of the nuclear weapon that was set by the Soviet Council from the territory of Ukraine by returning it to the territory of Russia and joining Ukraine to NPT as Non-Nuclear Weapon State. *Secondly*, in the Nuclear Crisis between India and Pakistan in 1997 and their nuclear

[137] The Role of the EU in the Non-Proliferation of Nuclear Weapons - The Way to Thessaloniki and Beyond", Clara Portela, Prif Reports No64, 2004

testing, the European Union was not unique and complex in its response, primarily responding to declarations condemning the tests and calling on both sides to join the NPT. In this crisis, EU Member States have expressed different views, while some (Germany, Sweden, Denmark) have stopped development help, others (Spain and France) have not joined these measures because they considered that India and Pakistan as countries that didn't signed the NPT, have no obligation to give up the acquisition of nuclear weapons. *Third*, the European Union had its share in the 1998 Iraq crisis when Iraq refused access to UNSCOM (United Nations Special Commission) inspectors in the country, which was followed by periodic attacks by France, the United Kingdom, and the United States. As in the previous example, the EU members were divided into two parts, i.e. they shared two views, while one supported the attacks and solidified with the United States (Poland, Slovakia, Hungary, Slovenia), the others (Germany, France (which withdrew from attacks) and Belgium) opposed the country's interventions and were unanimous in the view that Iraq could be disarmed with peaceful means. [138] *Fourthly*, the European Union's response to the Iranian crisis arising from suspicions that Iran is working to develop a nuclear program and Iran's refusal to sign the IAEA Supplementary Protocol, which includes the strengthening of security systems whose implementation needs to prove that the nuclear program is only for civilian needs. In this crisis, the EU showed outstanding diplomacy undertaken by three Member States (Germany, France and the United Kingdom), who reacted more individually rather than as a triple delegation on behalf of the European Union. As a result of the visit of the foreign ministers of the three countries of Tehran, at the invitation of the Iranian government, a compromise emerged where Tehran agreed to solve all the problems with the IAEA, sign and ratify the Additional Protocol, and suspend and withdraw all activities associated with enriched uranium. After all this, the three countries have indicated that once Iran has fulfilled all these obligations that has committed, it can expect economic support and assistance in technology and resources in all fields.[139]

[138] "The Role of the EU in the Non-Proliferation of Nuclear Weapons - The Way to Thessaloniki and Beyond", Clara Portela, 2004

[139] "Coercive Diplomacy by EU case study: The Iranian nuclear weapons crisis", Tom Sauer, September 2006

5.1.3. How Effective is the EU's Role in Nuclear Non-Proliferation?

From all of what we have mentioned in the text above, it is indisputable that the European Union is making significant efforts in the fight for Nuclear Non-Proliferation and remains as huge challenge in the future. We can conclude that the pillar of the EU approach is effective multilateralism, which together with the promotion of a stable regional and international environment and joint cooperation with certain partners will contribute to significantly positive results in the related Non-proliferation and Disarmament. The efforts and work of the EU on this international issue are clearly visible, yet the EU is still not effective as an international non-proliferation actor and remains only an actor on the margins. The European Union must work on the problems that its policy of non-proliferation suffers. One of the main problems is the inability of the EU to provide a consensus on its policy and the direction in which it is moving, ie Member States of the Union have divided views on various issues, and this is evident in many cases so far. By reaching a consensus, a single common position, when the EU will speak with one voice, then its position on the international scene will be visible and full of authority. Then, in order to improve efficiency, the EU must create a common approach, which will precisely target the objects.

In addition, the inefficiency of the European Union's role stems from the inability of the Union to enforce the Nuclear Non-Proliferation Treaty, where international actors have equal positions that all countries should adhere to the NPT, but this is not the case. The problem always arises from the lack of a mechanism for sanctioning, coercion and control of the great world powers, simply "the court judges, but no one will punish the court". When it comes to other states, punishment and pressures are not a problem, but in this case when major violations and violations of international law and international treaties are made by the Great Powers, then organizations like the EU, the UN are powerless, or at least show disability in their handling. Hence, the failure of the Union to resolve this central issue defines its inefficiency. Finally, we can conclude that the EU's policy regarding Nuclear Non-Proliferation is too general, and thus remains an actor on the margins.

5.2. UNITED NATIONS AND NUCLEAR NON-PROLIFERATION

Finally, we can see what is the role and what strategies are used by the international peacekeeper, ie the United Nations in the fight for nuclear non-proliferation and nuclear disarmament. The United Nations was born almost at the same time as nuclear weapons, that is, after the meeting of the UN founders in San Francisco on April 25, 1945 to complete the Charter, a few months later the first nuclear test took place in New Mexico and three weeks later were bombarded Hiroshima and Nagasaki. The United Nations accidentally found itself at the same starting point along with the Cold War that marks the age of the nuclear age and that is its biggest challenge today.

As it is written in Article 1 of the Charter of the United Nations, the main objective is to maintain international peace and security, and in order to do it, it as calculated the undertaking of collective measures for the prevention and removal of threats to peace and security. Today, as many as 193 Member States are a constituent part of the United Nations that carries out the work and mission for the purposes and principles contained in the UN Charter. Basically, it means undertaking actions to address the issues facing 21st century humanity, from peace and security, climate change, sustainable development, human rights, disarmament, terrorism to humanitarian and health conditions, gender equity, governance, food production and many more. [140]

The majority of the Treaties and the Conventions related to nuclear non-proliferation and disarmament, are implemented through the United Nations, which today holds the post of the most important international security and peace watchdog in the world. In the previous chapter, we have listed and processed all agreements related to nuclear disarmament, so now we will not dwell on the historical part and carry and implement the agreements, but we will list the bodies from which the United Nations is formed, the departments for which they are bound, and agencies that are also an integral part of this organization, all of which will emerge the role and strategy of the UN in relation to nuclear disarmament. Another interesting fact is that eight of the nine nuclear-weapon States are United Nations members, while nuclear states defined by the NPT are China, France, Russia, the United Kingdom and the United States.

[140] United Nations Overview, published in United Nations Web Site, (accessed on Oct. 2017) http://www.un.org/en/sections/about-un/overview/index.html

The main bodies of the United Nations are:

- General Assembly
- The Security Council
- The Economic and Social Council
- Trusteeship Council
- The International Court of Justice

The General Assembly - is considered to be the main advisory and representative body through which the UN policies are created and it contains all member states, which makes it the only body with universal representation. In the GA, decisions on important issues (we are interested in the area of peace and security) are adopted by a two-thirds majority, while other issues are settled by a simple majority. The GA convenes with full membership each year in September in New York, where the heads of states address the session. The GA has a president with a one year mandate.

The Security Council - consists 15 members of which 5 are permanent and 10 non-permanent members and each member has one vote. The responsibility of the Security Council arises from the UN Charter for the maintenance of international peace and security and under this Charter all member states are obliged to abide by the Council's decisions. The Security Council works on the following issues: it calls on parties to peacefully resolve disputes, recommends methods, impose sanctions and has the right to allow the use of force in order to restore peace and stability.

Economic and Social Council - is a UN body tasked with reviewing policies, dialogue on them, and recommendations on economic and social issues, including the coordination and implementation of internationally agreed development goals. This Council has 54 Members elected from the General Assembly and is the main point that gives rise to innovative thinking and debates on sustainable development.

The Trusteeship Council - was established in 1945 in order to provide international oversight of 11 Territories of Trust that were administered by seven Member States and prepared them for independence.

The International Court of Justice - is a judicial authority of UN and is the only body that is not located in New York (USA). His role is to resolve any legal disputes submitted to him under international law.

The secretariat - is a UN body headed by the Secretary General who works with several thousand international officials. The Secretary General is appointed by the General Assembly and is the Chief Administrative Officer of the Organization for a term of five years. [141]

(Appendix IX: See page 192)

The above image (Appendix IX) shows the main organs of the United Nations and how they are branching out to smaller bodies of organizations, each of which is focused on a certain part of the issues dealt with by the UN. From the presented scheme, we will focus only on the authorities, sub-bodies and agencies that cover the part we are dealing with in this document, which is the management of international conflicts by preventing the proliferation of nuclear weapons of mass destruction, ie which is related to nuclear disarmament.

Derek Boothby, a former employee in the Department of Disarmament Affairs (now UNODA), uses the term "Disarmament Machinery" in his document "The United Nations and Disarmament", which refers to bodies, committees and agencies which are working, discussing and negotiating all issues related to the multilateral limitation of nuclear arms and disarmament. Disarmament Machinery's bodies are the following:

- The General Assembly of the United Nations
- The first UN Committee
- The UN Disarmament Commission
- UN Conference on Disarmament
- The United Nations Disarmament Office (UNODA)[142]

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[141] Main Organs of United Nations, published in United Nations Web Site, (accessed on Oct. 2017) http://www.un.org/en/sections/about-un/main-organs/index.html

[142] The United Nations and Disarmament, International Relations Studies and the United Nations by Derek Boothby, 2002 p.31-33

* **General Assembly of the United Nations** -> we briefly explained the basic bodies of the United Nations, including the General Assembly, briefly, but now we will look at it from another prism. Derek Boothby argues that, although according to the founding UN Charter, the Security Council is responsible for matters related to the Arms Regulations, the main steps and activities in relation to disarmament are undertaken by the General Assembly and its subsidiary bodies. This means that the General Assembly, composed of all UN member states, is a primary advisory body and hence serves as a source of powerful, moral and political reassurance that states can not easily avoid it. Interestingly, by 1984, a quarter of the resolutions adopted by the General Assembly were related to disarmament. [143] Also, the General Assembly plays a significant role in the process of setting standards and codifying international law. In recent years, there has been an effort to reach a consensus on issues of great importance, rather than formally voting, and in this way the support in the decision-making of the Assembly is strengthened.[144]

* **The First Committee of the United Nations** -> is one of the seven main committees of the General Assembly and meets every year from October to December. The first Committee works on issues related to disarmament, global challenges and threats to peace and security affecting the international community. At the same time it looks at all issues related to disarmament and international security within the Charter, the general principle of co-operation in the maintenance of peace and security and principles governing disarmament and arms regulation. The first Committee works in close cooperation with the UN Disarmament Commission and the Disarmament Conference.

The sessions of the First Committee are structured in three phases:

- General debate
- Thematic discussions
- Draft action[145]

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[143] The United Nations and Disarmament, International Relations Studies and the United Nations, by Derek Boothby, 2002 p.31-33

[144] Functions and Powers of the General Assembly, published in United Nations Web Site, (accessed on Oct. 2017) http://www.un.org/en/ga/about/background.shtml

[145]Disarmament and International Security (First Committee), published in United Nations Web Site, (accessed on Oct. 2017) http://www.un.org/en/ga/first/

* **The United Nations Disarmament Commission (UNDC)** -> was created in January 1952 by the General Assembly with resolution 502. This Commission is under the auspices of the Security Council, which aims to prepare proposals in order to deal with regulation, limitation and balanced reduction of all armed forces, including the elimination of all weapons of mass destruction.

UNDC focuses on a limited number of agenda items on each session, and since 1989, this agenda has been limited to a maximum of 2-3 cases, where each subject being considered for three consecutive years. Subsequently, in 1998, the General Assembly decided that from 2000, the Dispelling Commission would have 2 items annually from disarmament issues, where one subject is related to nuclear disarmament. The principles, guidelines and recommendations that were formulated by UNDC over the years were accepted by the General Assembly, which is a success for the work of this body. [146]

* **Conference on Disarmament of United Nations** -> is the fourth organ of the Disarmament Machine, which itself occupies an equally important function as other organs. The disarmament conference was formed a little later than the other authorities in 1979 and is considered to be the only forum for disarmament negotiations for the international community. The current director of UNOG is also the Secretary General of the Conference on Disarmament. The CD maintains an annual session that is divided into three parts 10 + 7 + 7 weeks and in order to ensure the coherence of the approach among the six Presidents at the Conference, since 2006, an informal coordination system R6 has been established, which provides for the meeting of presidents sitting once a week. The CD adopts the Rules of Procedure based on the recommendations of the GA and the proposals of its members, and conducts its work with consensus. [147]

Today, CD membership has 65 Members and focuses on addressing the following issues: prevention of nuclear war, prevention of arms race in space, taking appropriate actions for non-nuclear states to be used or threatening to use nuclear weapons, new types of weapons of mass destruction, the cessation of the nuclear arms race and nuclear disarmament, and the

[146] United Nations Disarmament Commission, published in UNODA Web Site, (accessed on Oct. 2017) https://static.un.org/disarmament/HomePage/DisarmamentCommission/UNDiscom.shtml

[147] An Introduction to the Conference, published in United Nations Office in Geneva Web Site, (accessed on Oct. 2017) https://www.unog.ch/80256EE600585943/(httpPages)/BF18ABFEFE5D344DC1256F3100311CE9?OpenDocument

establishment of a comprehensive disarmament program that will take place with a high level of transparency. [148]

Through the Disarmament Conference and its previous bodies, major multilateral arms limitation and disarmament agreements have been agreed and implemented, including:

- Treaty on Non-Proliferation of Nuclear Weapons

- Convention for the Prohibition of Military or Other Enemy Use of Environmental Modification Techniques

- Agreement on banning the placement of nuclear weapons, etc. weapons of mass destruction of the seabed and the ocean

- Convention on the Prohibition of the Development, Production and Storage of Bacteriological and Toxic Weapons

- Convention for the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and for Their Destruction

- Agreement on a Comprehensive Nuclear Ban[149]

From all of the above, we can conclude that the work of the UN Disarmament Conference achieves positive results and makes a major contribution to the fight against nuclear non-proliferation and disarmament. Hence, it is clearly visible that the United Nations has resources, ie "Disarmament Machinery" (Derek Boothby, 2002), which since the founding of the UN has been continuously working to accomplish and achieve the set goals. But this is not the maximum that can be given by this organization, this is not everything, with other words, there are many obstacles and brakes that the United Nations faces and which are the brakes in the work of the UN, we will see in the conclusion of this chapter.

* **United Nations Office for Disarmament Affairs (UNODA)** -> was established in January 1998, working on disarmament issues as part of the GA reform program. UNODA's roots come from 1982, with the establishment of the Department for Disarmament Affairs

[148] The United Nations and Disarmament, International Relations Studies and the United Nations by Derek Boothby, 2002 p.31-33
[149]Conference on Disarmament, published in United Nations Office for Disarmament Web Site, (accessed on Oct. 2017) http://static.un.org/disarmament/CD/

(DDA), which has been renamed several times over the years, for today to be UNODA - UN Office for Disarmament.

UNODA in its agenda promotes:

- Nuclear disarmament and non-proliferation
- Strengthening disarmament regimes in relation to other weapons of mass destruction and chemical and biological weapons
- Efforts to disarm conventional weapons, especially in the area of landmines and small arms. [150]

UNODA's work covers a wide range of issues that it considers and carefully covers all the angles associated with disarmament, and it does so by providing organizational support for setting norms in the field of disarmament through the work of the GA and its First Committee, the Commission of Disarmament, Conference on Disarmament and the other bodies. UNODA is making every effort to provide objective and impartial information on multilateral disarmament issues to member states, intergovernmental organizations, institutions, departments and institutions of the UN, research institutions, civil society, the media and the general public. UNODA works on issues of disarmament and demobilization of former fighters, and through various programs it helps them to reintegrate into society, thereby preventing further emergence of new fighters, new targets, and hence new conflicts and consequences.

(Appendix X: See page 193)

As we can see in the picture given above (Appendix X), the UN Disarmament Office breaks down into five branches through which it operates:

- *CD Secretariat and Conference Support Branch* -> provides organizational servicing at the Disarmament Conference

- *The Weapons of Mass Destruction Branch (WMD)* -> this branch is in charge of providing support in the field of disarmament of weapons of mass destruction and in cooperation with

[150]United Nations Office for Disarmament Affairs, published in UNODA Web Site, (accessed on Oct. 2017) https://www.un.org/disarmament/about/

specialized agencies such as IAEA, the OPCW and the PKSPP participate in multilateral efforts to strengthen the non-proliferation of weapons for mass destruction.

- *Conventional Arms Branch (CAB)* -> this branch is focused and operates on all weapons that are not part of weapons of mass destruction and is responsible for supporting the Conference on the UN Program on Small Arms and the Process of Trade Agreement weapons, targeting the highest transparency.

- *Regional Disarmament Branch (RDB)* -> this branch oversees and coordinates the activities of the three regional centers for peace and disarmament: Africa, Asia and the Pacific, Latin America and the Caribbean, and at the same time is in charge of providing support to Member States and regional organizations regarding disarmament measures and related security issues.

- *Information and Outreach Branch (IOB)* -> this branch is responsible for producing UNODA publications and organizing special events and programs in the field of disarmament, and nevertheless it is working to update the content and design of the UNODA website and maintain databases data for specialized areas. [151]

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If we attempt to briefly describe the role of the UN Disarmament Office, it would be that UNODA functions as a Secretariat for the Nuclear Non-Proliferation Treaty, which together with the IAEA and the Director General of the UN, provides the necessary administrative and substantive support for meetings of the UN member states, as well as conferences. Hence, UNODA is considered as a central source of institutional knowledge in terms of the functioning and implementation of the Nuclear Non-Proliferation Treaty (NPT).[152] UNODA guides its work along the path of the vision set: recognizing that achieving disarmament will not create world peace; where he believes that the potential effects of the use of nuclear weapons require his elimination; where it is firmly believed that global disarmament norms are vital for sustainable development and the survival of this planet, and where this organization is firmly convinced that

[151] UNODA Structure, published on United Nations Office for Disarmament Affairs Web Site, (accessed on Oct. 2017) https://www.un.org/disarmament/structure/

[152] Fact Sheet: Treaty on the Non-Proliferation of Nuclear Weapons, published by UNODA, (accessed on Oct. 2017) https://s3.amazonaws.com/unoda-web/wp-content/uploads/2017/07/NPT-fact-sheet-Jul2017.pdf

global threats today from the use of nuclear weapons cannot be removed only with the help and actions of a country . [153] To achieve all this, consensus, joint efforts, a common position, a common strategy and a united world are needed in which states will give up their own national interests in interest of the good of mankind and the maintenance of peace and security in the world.

What is essential for us is whether all these organs, agencies, and organizations are effective in what they do, and also if the goals that have been set are achieved? It is obvious that in the world the problems of nuclear disarmament and non-proliferation have not been solved, and the main reason for the existence of this problem is that the states that preach nuclear non-proliferation are exactly those countries that produce and possess nuclear weapons and hence all directions are leading us to the first sentence of this paper, and this is that you cannot tell everyone in the room not to smoke, and you hold a cigarette in your mouth. The cigarette is not the root of the problem, but the problem itself arises from the lack of a mechanism for controlling, punishing the one who orders (the preacher), the manager, the ambassador, the president, those who represent the greatest states in the world. Also, to achieve maximum effectiveness in the work of international organizations, it is necessary to give them authority with which there will be no country that can use double standards.

+ I would like to add two more organs and expand the Derek Boothby's "Disarmament Machinery"(by Derek Boothby, 2002 p.31-33). In this group of United Nations bodies actively working on issues related to nuclear disarmament and non-proliferation I add the following bodies:

- **The United Nations Institute for Disarmament Research (UNIDIR)** -> is a voluntary-funded institute that is autonomous and is a UN-body based in Geneva where promotes itself as an impartial actor and promotes ideas and researches in the field of disarmament and security . In other words, UNIDIR is a blend of all actors, starting with civil society, international

[153] Vision of UNODA, published on UNODA Web Site, (accessed on Oct. 2017) https://www.un.org/disarmament/vision/

organizations, the private sector, the academia and the countries themselves, which also functions at all levels locally, regionally and internationally in order to create creative solutions that will be in the interest of all states and peoples.

This institute is borne by the vision of providing human security, which implies total elimination of nuclear weapons, which prevents the proliferation of conventional weapons, where military expenditures will be reduced to a minimum, i.e. a vision where peace prevails over the conflict. [154] In order to achieve this vision, UNIDIR works with all its research and educational capacities to find and implement disarmament solutions, thereby helping the international community to maintain peace and security, where conflicts will be just forgotten examples in historical textbooks. The UN Disarmament Research Institute works to prevent, resolve, and manage conflicts, which means tackling all security risks through academic excellence through educational programs that in other words means instruments for peacefully handling international problems. In other words, UNIDIR works as an academic and educational support to all UN bodies and bodies dealing with Nuclear Disarmament and Non-Proliferation issues, and thus deserves a place in the Derek Boothby's "Disarmament Machinery".

- **The International Atomic Energy Agency (IAEA)** -> was created in 1957, officially marking its formation with the ratification of the United States Statute of the IAEA, and the reason for this is the fears of knowledge about the diverse use of nuclear technology.

At a press conference after the signing ceremony at the White House Roses at the White House in Washington, DC, President Eisenhower voiced his message to the UN General Assembly in December 1953, on which he proposed forming the IAEA. President Eisenhower, in his speech in Washington in 1953, on how the unbundling of the atom could unite the world, was a precursor to the formation of the International Atomic Energy Agency (IAEA). The agency is established within the United Nations and operates as a global organization that collaborates with its member states and partners, promoting safe and peaceful nuclear technology, and its goals are formulated in the IAEA Statute, in Article II. [155] The IAEA's goal is to accelerate and enhance the contribution of atomic energy to peace, health and prosperity around the world, and is

[154] About UNIDIR, published on United Nations Institute for Disarmament Research (UNIDIR), (accessed on Oct. 2017) http://www.unidir.org/

[155] History of International Atomic Energy Agency(IAEA), published on IAEA Web Site, (accessed on Oct. 2017) https://www.iaea.org/about/overview/history

making efforts to ensure that the assistance it has distributed, will not be used for military purposes. (https://www.iaea.org/about/statute) The IAEA operates through several regional offices located in Toronto (Canada), Tokyo (Japan), New York (USA), Geneva (Switzerland) and three specialized nuclear laboratories technology in Vienna (Austria), Seebersdorf (Austria) and Monaco.

The picture below (Appendix XI) depicts the structure of the IAEA, where all branches and departments organized are splitting. We can see that the agency is headed by the General Director.

(Appendix XI: See page 194)

The IAEA's functions are also embodied in its Statute in Article III, where the agency is empowered to: assist in the research, development and practical application of atomic energy for peaceful use anywhere in the world; to provide a provision that will be in accordance with its Statute for material services, facilities to meet the needs for research, development and application of atomic energy for civilian purposes; to encourage the exchange of scientific and technical information on the peaceful use of atomic energy; to encourage the exchange of trainings for scientists in the field of peaceful use of atomic energy; to establish safeguards to ensure that all types of services provided by the IAEA are not used for military purposes or be abused in any way; to establish safety standards for the protection of health and to minimize the danger to the life and property of all citizens, including the practical application of the established standards. [156]

Hence, we can conclude that the International Atomic Energy Agency, taking an important place in this complex world and through its hard work, makes a huge contribution to nuclear disarmament, advocating nuclear facilities and states and using its nuclear facilities only for civilian purposes. This is an important segment for the maintenance of international peace and security.

[156] The Statute of the IAEA, published on IAEA Web Site, (accessed on Oct. 2017) https://www.iaea.org/about/statute

However, despite all the efforts of these bodies and mechanisms working for the same purpose - nuclear disarmament and non-proliferation, their effectiveness is questioned. All of this is because of the numerous failures or I call it the inability to successfully deal with problems affecting the world, and the failures arise from the internal structure. Finally, it comes down to the authority that arises from having a consensus between the states that are united by a common goal which will be to work on issues that bring peace and security in the world.

5.2.1. The role of the UN in Nuclear Disarmament and Non-Proliferation

Today, the role of the United Nations in the world is irreplaceable with no other international organization, and the UN maintains this position thanks to a huge positive contribution to the maintenance of international peace and security. When peace and security are present, then states develop international economic and social co-operation, all of which contribute to the promotion of international development. Tackling today's global risks and challenges depends on the accomplishment of the three main tasks of the United Nations, namely maintaining international peace and security, protecting human rights and economic and social development. Hence the role played by the UN in international relations is in the interest of all countries in the world and therefore states must unite and give each member state the right to participate equally in international relations, and this automatically means strengthening the role of the UN.

In this paper, we are interested in the role of the UN regarding the issues and challenges in the field of nuclear disarmament and conflict management. Since the formation of the UN, the style of warfare and the definition of conflicts has changed with the course of history, and the UN has been continuously working to track these changes. If in the 1960s international conflict meant a conflict between two states, today that definition is completely different. The states today do not have a firmly defined enemy and the enemy appears in different forms, groups that are a real problem to detect. Conflict management today is a real challenge for the United Nations, and one of the important tasks in conflict management is to prevent weapons of mass destruction, as nuclear weapons to come in the wrong hands, with the consequences being catastrophic. Hence, with its bodies, branches, through agreements, conventions, agencies, the

UN is working hard to prevent states from reaching the production and proliferation of nuclear weapons, and at the same time disarming the states that already own it. Basically, the United Nations is trying to enforce international law and help maintain peace and security in the world and in that direction have done a lot of valuable work. But we will ask ourselves if the work of the United Nations can be considered successful, or did UN are effective as they have imagined to accomplish the set goals. In general, it is indisputable that the United Nations is making a huge and significant contribution and has shown great effectiveness in the area of nuclear disarmament and non-proliferation, but the imagined goal of full disarmament and non-proliferation is far from achievable and it is very difficult in the near future to achieve it.

In order to strengthen the role of the United Nations, efforts should be made to respect the purposes and principles of the Charter of the United Nations. The authority of the Security Council in the maintenance of international peace and security must be preserved and the role of the United Nations in the field of development should be strengthened. In order to strengthen the role of the United Nations, it is essential to ensure that all member nations of the United Nations have the right to equal participation in international affairs and at the same time to protect the rights of the developing countries. The United Nations owes its incomplete effectiveness in the performance of tasks to several weaknesses and shortcomings with which is constantly facing, and in this regard, reforms should be made within the organization such as: [157] the question of the power of the veto is to be debated and changed; the weight of the small states' votes and the big ones should be equated, which will increase democratization and transparency, which means reconstructing the bodies and branches of the United Nations; The Security Council must be expanded to be more effective; The UN should learn from the mistakes of the past, and from here comes the conclusion that the role of the General Assembly must be strengthened, which will turn into a consensus forum to address important global issues; then, perhaps, the most important thing is that the UN does not have the appropriate means to meet the set goals. The lack of adequate resources means that the Organization must use the resources of the Member States, and in that case the US funds are the most widely used, which in turn weakens the organization and its authority, because they are the ones who give the bread to the poor and there is no mechanism-instrument with sufficient authority to sanction them, because on several occasions

[157] Goals and Roles of United Nations, published on Your Article Library Web Site, (accessed on Oct. 2017) http://www.yourarticlelibrary.com/uno / united-nations-goals-and-roles-of-united-nations / 40332

in history, even today, the United States deliberately violates international law. As a consequence of not sanctioning those who violate international law, the authority of the United Nations is lost, and that means the existence of double standards, and automatically the other member states (especially the major powers) give themselves the right to skip international law.

At the end of this chapter, we can conclude that the United Nations is successful in fulfilling its assigned tasks and contributes to maintaining international peace and security, if not fully, then at least controlling conflicts within certain borders. The Treaty on Nuclear Non-Proliferation (NPT) is of paramount importance and its contribution to the reduction of nuclear weapons is particularly significant. The direction to which the United Nations is moving brings prosperity and success, but more changes and reconstructions within the organization are needed, which along with the syllabus of all member states and the establishment of consensus will contribute to maximizing the effectiveness of the work of the United Nations. Maintaining peace and security in the world continues to be the main mission-task of the United Nations. We can find the answer to fulfill this mission in the very title of the organization, which is " Unification of the Nations ". Only united we can contribute to the good of all, where all equal and united will work for common goals and will realize common interests.

5.3. NGO's and Nuclear Disarmament

In parallel with the introduction of the world with the nuclear weapons of mass destruction and its destructive power (the bombing of Hiroshima and Nagasaki), numerous anti-nuclear movements with various structures from local protests, international movements, to non-governmental organizations in which worked members - experts in the area of peace, security, atomic energy and weapons of mass destruction. All of these actively made efforts in various ways, through various means to act, that is, to exert certain pressure on the nuclear states. The activities of anti-nuclear movements occupy a significant place in the group of instruments and bodies struggling for nuclear disarmament and non-proliferation, and this is due to the numerous successes achieved at different points of the planet earth. I would also say that International Organizations such as the United Nations and the European Union over the years have strengthened their position and authority over these issues, all thanks to the voice of the people

who in various ways was transmitted around the world. In addition to non-governmental organizations and anti-nuclear movements were supported by leaders of states, mayors, local administrators, lawmakers, scientists, academics, Nobel laureates, and even governments.

At first, these movements were periodic, but later a number of non-governmental organizations emerged that actively and continuously worked and still are present today. These NGO's are making efforts to influence international organizations and nuclear states in stopping the production of nuclear weapons, and at the same time advocating for nuclear disarmament with the ultimate goal - the complete elimination of nuclear weapons. These NGOs work on the ideology and goals of anti-nuclear movements, which cover peace, security, ecology and environmental concerns. For the first time, anti-nuclear movements were massively beginning to develop in the United States in 1970 after the energy crisis. Through mass demonstrations, non-governmental organizations pressured nuclear states through successful efforts to raise standards for control and production of nuclear weapons, and thus the prices of nuclear weapons production increased drastically. That was another reason for some of the countries to give up from the expensive nuclear programs.

After each subsequent nuclear test, after each disaster around the world associated with nuclear weapons and nuclear power plants, new and enhanced anti-nuclear movements were born. It is important to note that the Nuclear Forces were claiming in public that these demonstrations were propaganda organized by certain actors and stubbornly were stacked to their propaganda promoting nuclear programs as necessary for maintaining the security of the country. Only in the United States existed and operated about 40 non-governmental organizations, of which the most famous are:

- Abalone Alliance
- Clamshell Alliance
- Greenpeace USA
- Institute for Energy and Environmental Research
- Musicians United for Safe Energy
- Natural Resources Defense Council
- Nevada Desert Experience
- Nuclear Control Institute

- Nuclear Information and Resource Service
- Public Citizen Energy Program
- Shad Alliance
- Sierra Club
- and Others ...[158]

We can also mention some of the famous scientists and engineers active in anti-nuclear movements: Barry Commoner, S. David Freeman, John Gofman, Amory Lovins, Arjun Makhijani, Gregory Minor and Joseph Romm.

Every non-governmental organization, every anti-nuclear movement, any activity against the proliferation and use of nuclear weapons and nuclear energy has given its undisputed contribution, where these movements have succeeded in preventing the development of nuclear energy by governments and nuclear weapons. I would like to emphasize that the effectiveness of the United Nations has been greatly enhanced, thanks to the voice of the people. Today, the development of technology and social networks greatly facilitates the organization and mobilization of anti-nuclear movements, and also anti-nuclear movements through the Internet directly involve citizens from all over the world in the fight for nuclear disarmament. Everybody can contribute on his own way.

From April 24 to May 18, 2000, a Review Conference of the Non-Proliferation Treaty on Nuclear Weapons was held in New York, where member states of the NPT gathered at the Sixth Review Conference. Since 1995, when the NPT Agreement has been extended indefinitely, this was the first conference at the same time where agreements were signed to strengthen the review process of nuclear non-proliferation and disarmament targets that should have been a measure of the effectiveness of States in the implementation of the NPT Agreement. In this package of decisions, a resolution on the Middle East was adopted, which confirmed the importance of establishing a regional free zone from all weapons of mass destruction. [159]

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[158] Anti-nuclear movement in the United States, published in Nuclear Heritage Web Site, (accessed on Oct. 2017) http://www.nuclear-heritage.net/index.php/Anti-nuclear_movement_in_the_United_States

[159] 2000 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, published in UNODA Web Site, (accessed on Oct. 2017)
https://www.un.org/disarmament/wmd/nuclear/npt2000/

At the Sixth Review Conference of the Parties to the Treaty on Non-Proliferation of Nuclear Weapons, a number of anti-nuclear Non-Governmental Organizations were reported to attend and clearly expressed their views and suggestions. At the conference, part of the NGOs that previously worked closely with the United Nations on the same issue, with their proposals, made a major contribution to the positive development of the NPT Agreement with the idea of nuclear abolition. Non -Governmental Organizations at the NPT conference made the biggest influence by sharing the frustration regarding the limited effectiveness and implementation of the NPT Agreement. In short, in the end, we can conclude that NGOs have played and still play an important role in the fight for nuclear disarmament and non-proliferation and they are corrector and pressure maker for international organizations.

5.4. Today's happenings regarding nuclear disarmament

Today, nuclear weapons remain relevant and maintains a primate regarding of security challenges in the 21st century. Russia and the United States remain the leading nuclear powers, who in the public emphasize peace, security, democracy, freedom, but, while they are hiding behind all these propaganda, they quietly work on the second cold war. These two great powers do not measure their muscles in a direct collision, but through the use of other countries. Regarding the amount of nuclear weapons in the last 20 years, today the figure is significantly lower, but that does not represent the right picture. Nuclear forces with the reduction in the number of nuclear warheads have only thrown away the emergent models, while those who still represent the nuclear arsenal are new models, significantly developed and modernized, with much greater destructive force and much greater precision that in a sense equate nuclear power compared to that of the Cold War.

The new START Treaty entices the United States to reduce its nuclear arsenal, while Russia can increase its nuclear arsenal. Russia has increased its defense budget by 50 percent over the past 15 years, one third of which have been earmarked for nuclear weapons. The problem with Iran and the United States today is still relevant despite Iranian authorities' approval of nuclear power plants by the IAEA, and on the other hand, Russia has threatened with possible use of nuclear weapons against some NATO members if they are striving to provide rockets defenses

that would protect them from Iranian ballistic missiles. Uncertainty is not only present in the US-Russia conflict, but also in the Pakistani-Indian conflict, China-Japanese, Iran with its neighbors, and ultimately the most actual today, and that is a conflict between the US and North Korea.

Regarding the Pakistani-Indian dispute, Pakistan seeks to increase the nuclear arsenal in order to equalize power with India's conventional and nuclear power. Pakistani authorities' claim that the nuclear arsenal is safe, but the international community fears the possibility that Pakistan's nuclear weapons will be in the hands of terrorists, thus bringing the whole world in jeopardy.

Regarding China and Japan, the problem arises from the international dispute between China and the United States over the Asian territories that is constantly intensifying, and thus Japan loses the sense of security guaranteed by the United States, which could be a trigger for Japan, and even South Korea to reach for a nuclear weapons. China increases its military budget by about 10% every year and its strategy is constantly evolving, so the world must accept that in addition to one of the most powerful economic powers, China today is also considered as a serious military force.

We have yet to mention the most current topic in the last two years, and that is the political conflict between North Korea and the United States. In the last two years, the relations of these two countries have severely intensified, even to direct and public threats to total war and the use of nuclear weapons. This situation arose after the North Korean nuclear test in September 2016, and the line became red after the nuclear test this year in November. It seems Pyongyang is determined to become a complete nuclear power, and with the latest test, that was confirmed by their side. The US responded with threats with military resolution of this conflict, while China, Russia, South Korea and the United Nations called for diplomatic settlement of the dispute. We are all witnesses of the daily interception of the two sides through social networks, through diplomatic representatives in the United Nations and various TV statements. The US is striving to completely take away North Korea's nuclear arsenal, and for this purpose, all means have been put on the table, including the military, while Kim Jong Un does not deviate from his nuclear program and without hesitation responds that he is ready to respond to the slightest provocation from the United States. Especially now when they reached the level of a powerful nuclear force, Pyongyang stated the readiness of a total war in order to protect themselves from the nuclear

threat of the United States. At this moment, from what we hear every day in public, there are pressures towards China, which is considered as the biggest contributor to North Korea to take a step and, through economic pressures or direct negotiations, to make Pyongyang overthrow the nuclear program. The international community fears the scenario where part of North Korea's nuclear weapons can be found in the hands of other merchants - terrorists who would be delighted to use it. The United States is defending its side, while North Korea is defending its own, and whoever is right, now it does not matter anymore.

We talked about nuclear disarmament, strengthening and pressing the Nuclear Non-Proliferation Treaty, to reduction and total elimination of nuclear weapons in the world, but only these two last pages briefly give us a picture of today's developments. We can conclude that states that possess nuclear weapons do not even think of the option to give up production and development of their nuclear arsenals. These daily transitions and exchange of threats give us a clear sign that there is no chance that nuclear weapons will decrease in the near future, but on the contrary there are tendencies of increasing the arsenals, and even thinking about expanding the nuclear club. On the question what will happen in the upcoming period, no one has the answer. North Korea declares readiness for a total war in response to any provocation from the United States, the United States is consolidating its military forces in the North Korean region and organizing military exercises with South Korea and Australia, preparing for a possible blow. We can only wisely observe and expect international organizations such as the EU and the United Nations to intervene in this apparently ready conflict and through diplomatic mechanisms to make both sides talk and reconcile.

It is a fact that every year the percentage of the world population that accepting the possibility of using nuclear weapons in the near future is growing bigger and bigger. Today, in the 21st century, when we talk about peace, security, development, modernization, technology, freedom and democracy, the whole world is witnessing the possibility of an outbreak of a nuclear war that is in sight.

5.5. International Conflict Management through example of Iran-US Nuclear Agreement

Historically, managing international conflicts always requires the presence of an actor - a state that has authority on the international scene in order to be able to press the parties to the conflict and to make them through talks and agreements to solve the problem. In this paper, I am writing about the International Conflict Management which is affected by nuclear character, that is, the production, possession and proliferation of nuclear weapons. The best way to describe and explain managing such conflicts is through the example of Iran. In order to get a clear picture on this issue, I will try to describe the Iranian case from the very beginning.

In 1968, Iran signed the Nuclear Non-Proliferation Treaty (NPT), but the story shifted in the early 1980s when Iran, along with Iraq, secretly began its nuclear program.[160] In August 2003, Iran's opposition shared information that Tehran secretly developing enrichment facilities. Since then, Iran has become one of the most exciting cases for the United Nations, where the International Atomic Energy Agency has conducted its most intense investigations of its existence.[161] The two major nuclear facilities were at issue: one in Natanz to produce enriched uranium, the other in Arak for the production of plutonium. The then government of Iran came up with the assertion that these facilities are only intended for civilian use, that is, nuclear energy reactors, but on the other hand raw material can be used to produce atomic bombs.[162] The Iranian case became interesting to the international community mostly due to its secrecy.

In the period from June 2003 to September 2010, the IAEA, as a body of the United Nations, issued 30 reports related to the Iranian nuclear program and its underlying nuclear activities from the past.

Over the years, four nuclear reactors in Iran have been discovered:

- Natanz Commercial-Scale Fuel Enrichment Plant (15,400 centrifuges of which 8800 for enriched uranium)

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[160] Iran and the IAEA, United States Institute of Peace, by Michael Adler, (accessed on Nov. 2017) http://iranprimer.usip.org/resource/iran-and-iaea

[161] Great Powers and International Conflict Management: European and Chinese Involvement in the Darfur and Iran Crises, by Emma van der Meulen and Frans-Paul van der Putten, January 2009, (accessed on Nov. 2017) https://www.clingendael.org/sites/default/files/pdfs/20090225_cscp_sec_paper_great_powers.pdf pp. 23-25

[162] Iran and the IAEA, United States Institute of Peace, by Michael Adler, (accessed on Nov. 2017) http://iranprimer.usip.org/resource/iran-and-iaea

- Natanz Pilot Fuel Enrichment Plant

- Fordow Fuel Enrichment Plant (2700 centrifuges of which 700 for enriched uranium)

- Arak Heavy Water Reactor [163]

Hence, in September 2005, the IAEA found that Iran did not stick to the Nuclear Non-Proliferation Treaty (NPT) and that it worked secretly on a nuclear program. During this period, Iranian authorities claimed that these nuclear facilities were for civilian use, but at the same time they did not allow IAEA inspectors as a United Nations body to make full inspection. As a result of Iran's resistance and ignoring reactions from the international community, in February 2006, the IAEA board decided to transfer the case to the United Nations Security Council in order to undertake certain sanctions.

From this period, the Iranian file was split between America and the International Atomic Energy Agency and the period of sanctions began. The main role was played by the IAEA, which continuously monitored Iran's activities, while the Security Council was in charge of determining sanctions. Iran has continued to ignore sanctions by claiming it uses its nuclear reactors only for civilian purposes. Iran was sanctioned four times, but that was not enough for Iran to change its position towards the IAEA and to actively co-operate.[164]

These pressures and adjustments lasted until 2013, when the six major powers led by the United States began negotiations with Iran on the issue of the Iranian Nuclear Program. (Six Major Powers called P5 + 1 - Russia, China, Germany, France, United Kingdom and the United States).[165]

On November 24, 2013, the parties reached the so-called Joint Plan for Action, which entered into force on January 20, 2014. This agreement involves defrosting part of the sanctions against Iran, providing open Iranian doors and cooperates with IAEA inspectors and significantly reduces nuclear centrifuges, which means a reduction in uranium production.[166] Earlier in the

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[163] Iran Nuclear Agreement, Congressional Research Service, by Kenneth Katzman and Paul K. Kerr, September 2017

[164] Iran and the IAEA, United States Institute of Peace, by Michael Adler, (accessed on Nov. 2017)
http://iranprimer.usip.org/resource/iran-and-iaea

[165] IRAN NUCLEAR AGREEMENT- SUMMARY AND ANALYSIS, House Committee on Foreign Affairs, (accessed on Nov. 2017)
https://foreignaffairs.house.gov/files/12_HFAC%20-%20IRAN%20-%20Agreement%20Section%20by%20Section.pdf

[166] Iran Nuclear Agreement, Congressional Research Service, by Kenneth Katzman and Paul K. Kerr, September 2017

day, Iran began complaining about the agreement, and as a result, the US in cooperation with the European Union threatened with additional sanctions.

The ultimate nuclear deal was reached after 18 months of permanent negotiations, when Iran and the Six Great Forces reached a final comprehensive agreement on July 14, this agreement is known as the Joint Comprehensive Action Plan (JCPOA).[167]

The JCPOA Agreement covers the following conditions:

- Centrifuge Limitation -> Tehran must not use more than 5 060 IR-1 centrifuges for enriched uranium for the next 10 years.

- Level of Enrichment Limitation -> over the next 15 years, Iran must refrain from producing enriched uranium containing more than 3.67% uranium-235.

- Facility Limitation -> in the next 15 years, Iran can only produce enriched uranium in the Natanz facility. It is forbidden to build any other facilities for the production of enriched uranium.

- LEU Stockpile Limitation -> over the next 15 years, Iran must not store more than 300 kilograms of LEU in its repositories containing 3.67% uranium -235.

- Fordow Conversion -> over the next 15 years, Iran has agreed to convert the Fordow facility into a nuclear, research and technology center. Also, the number of IR-1 centrifuges is limited to 1,044.

- Centrifuge Production -> should not produce IR-1 centrifuges in the next 10 years, unless the number of centrifuges revealed a defect diminished by 500. Only after 8 years Iran will be able to re-start centrifuges.

- Centrifuges R & D -> in the next 10 years, Iran must refrain from producing R & D technology. It can only use gas centrifuges.[168]

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[167] Iran and the IAEA, United States Institute of Peace, by Michael Adler, (accessed on Nov. 2017) Http://iranprimer.usip.org/resource/iran-and-iaea

[168] Iran Nuclear Agreement, Congressional Research Service, by Kenneth Katzman and Paul K. Kerr, September 2017, p.10-12

JCPOA implementation estimated timeline - (Appendix XII)

(Appendix XII: See page 195)

The JCPOA agreement also contained certain measures that would contribute to improving Iran's transparency with the IAEA, such as:

* Firstly, Iran has agreed to implement an additional protocol that will allow the IAEA to collect information on state nuclear activities.

* Secondly, the additional protocol allows United Nations inspections to investigate secret activities.

* Thirdly, Iran must comply with IAEA requirements for certain information related to possible military dimensions of the nuclear program.[169]

The International Atomic Energy Agency must confirm several things before implementing the Iranian Agreement, such as:

• Reduced its supply of excess heavy water and stopped construction on the Arak reactor

• Reduced its capacity to 5,060 centrifuges, enrichment levels to 3.67 percent, and its uranium stockpile to 300 kg

• Ceased enrichment activity at Fordo

• Is conducting R & D within the parameters specified by the JCPOA

• Notified to the IAEA that it has temporally applied the Additional Protocol [170]

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[169] Iran and the IAEA, United States Institute of Peace, by Michael Adler, (accessed on Nov. 2017) http://iranprimer.usip.org/resource/iran-and-iaea

[170] Iran and the IAEA, United States Institute of Peace, by Michael Adler, (accessed on Nov. 2017) http://iranprimer.usip.org/resource/iran-and-iaea

5.5.1. The role of the IAEA in the Iranian issue

From the very beginning, to this day, the International Atomic Energy Agency (IAEA) has played the most important role in implementing the agreement, where it is responsible for overseeing Iran's compliance with the treaty measures. The IAEA represents the eyes and ears of the international community that follow the machinery and scientists of Iran. With Iran's increasing nuclear ambitions, the role of the IAEA increased, by increasing inspections, frequent unannounced visits, using remote cameras etc. All these measures have contributed to exerting pressure on Iranian authorities, where the ultimate goal is to determine whether nuclear material is used only for civilian purposes or for military purposes. The IAEA is considered to be the main actor in resolving the Iranian issue because it has been consistently involved in all activities, also was authorized to monitor all locations where there is nuclear material, followed Tehran's compliance with Security Council resolutions. [171]

5.5.2. The role of the United States in the Iranian issue

The IAEA could not achieve all of these successes in the Iranian issue alone, if United States were not actively involved. The United States played a very important role throughout the course of the negotiations, and today in the implementation of the JCPOA agreement. The United States is a strategic partner with the outside countries of the Middle East, helping them in training, operational guidance and military hardware. Hence, countries bordering Iran are largely feeling more secure, relying on the United States and considering them as a measure of protection. In the past, the United States has installed several military bases, which guarantee the security of the entire region, and at the same time expanded its nuclear umbrella, which in the case of nuclear Iran, should be activated and prevented. The United States has often reassured its Middle East partners that they can fully rely on their security support. Hence, the guarantee of regional security and support from the United States, in some way, reduces the initiatives for nuclear proliferation.[172]

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[171] The Iran Nuclear Deal: Prelude to Proliferation in the Middle East? By Robert Einhorn and Richard Nephew, Arms Control and Non-Proliferation, May 2016

[172] The Iran Nuclear Deal: Prelude to Proliferation in the Middle East? By Robert Einhorn and Richard Nephew, Arms Control and Non-Proliferation, May 2016

In the recent period, US regional partners have become concerned that the United States does not show determination in the fight against Iran and the reduction of Iranian influence in the region. Hence, some countries are already looking for other defense partners such as Russia. It is very important for Arab countries to have a strategically strong partner that will guarantee them security, while on the contrary, these states can become more aggressive and reach for themselves the various means of countering the Iranian influence.

It is important to mention that the other five major powers, like the European Union, played a major role in dealing with the Iranian question. All countries in the world are in some way dependent on the great powers. Most often it is economic or military support and therefore, these forces play a significant role in conflict management, where at any time they can trigger economic sanctions on the states that pose a threat, and thus exert pressure, which will enable the states that pose a threat to succumb to the international community and give up their initiatives.

The JCPOA agreement was reached during Osama's term and was considered as a historic agreement. While Trump's administration does not share the same opinion today. Trump said that up to five years ago, while the sanctions were active, Iran was lost, before dying, and that, it would not pose a threat anymore as a result of the strict sanctions. Trump's administration considers this deal to be harmful and should be abolished, but for the time being, in the next 5 months, Trump decided to continue the will of other countries. Trump publicly accused Obama and Hillary Clinton (as a former secretary of state) that under this nuclear deal, Iran became the World Power and accused them of showing the highest incompetence. Trump also said through the social network Twitter that the nuclear deal with Iran poses a direct threat to national security, that is, he called it a disaster that must be stopped urgently. [173]

Finally, we can conclude that in order to maintain peace, security and the management of international conflicts in the world, it is necessary to involve all states, especially the great powers. United Nations agencies and bodies cannot cope alone with today's threats and challenges, so collective participation is a prerequisite for maintaining peace and security.

[173] Iran Nuclear Deal: What is it?, Fox News, by Kaitlyn Schallhorn, January 2018, (accessed on Dec. 2017) http://www.foxnews.com/politics/2018/01/12/iran-nuclear-deal-what-is-it.html

CONCLUSION

Is ICM successful in nuclear non-proliferation?

Finally, we need to answer the set thesis from the title itself: "International Conflict Management through Prevention of Proliferation of Nuclear Weapons of Mass Destruction". In other words, the question is: "Does international conflict management succeed in nuclear non-proliferation," does international institutions and the great powers manage to cope with the threats of nuclear proliferation?

Depending on the parameters we measure, the answer to this question can be positive and negative. The policy of nuclear non-proliferation of the United States began 53 years ago, following China's first successful nuclear test in an effort to prevent the emergence of Domino Effect, which would make countries in the region to look after the launch of nuclear programs. Hence, the policy of nuclear non-proliferation culminated with the Treaty of Nuclear Non-Proliferation (NPT) in 1968 and all other agreements that followed. Even after fifty years, experts have not yet reached a common position on the question whether these conflict management policies through the prevention of proliferation of nuclear weapons have been successful or not. A section of public figures and experts argue that the policy of nuclear non-proliferation of the United States is a failure, and this failure is drawn from the inability of the United States to prevent and the nuclear programs of Pakistan, North Korea, India and Iran. On the other hand, some experts say that nuclear proliferation is very small, and that the "Domino Effect" is a myth that is not valid.

The fact is that the failures are always visible to the public, in our case, the failures of the US nuclear non-proliferation policy toward Pakistan, Iran and North Korea are visible and therefore gaining significance. On the other hand, the US's decades-long effort to implement this policy is easily forgotten and invisible. This is so because the prevented nuclear initiatives and the claims of states do not exist on documents like the decisions of the states, because these decisions are made in silence.

From all this, we can conclude that the role of the United States and its nuclear non-proliferation policy is essential and this policy has helped to drastically reduce the rate of states that decide to embark on the path of nuclear proliferation. After China went nuclear, India,

Japan, Australia and Taiwan followed her example and reached for their nuclear programs, but thanks to the non-proliferation policy of the United States, Taiwan, Australia and Japan renounced their nuclear claims, while India succeeded in its nuclear goals and joined the nuclear club in 1974. Following the successful nuclear test by India in 1974, the United States strengthened its policy by introducing stricter policies to sanction those who have nuclear pretensions. This enhanced policy has resulted in success, especially on countries that were in any way dependent on the United States, where intimidated by stringent sanctions have been canceled out of their nuclear claims. The only states that ignored the non-proliferation policy of the United States are those countries that are considered hostile and out of the US influence, such as Libya, Iraq, Iran and North Korea.

The question of whether international conflict management is successful in nuclear non-proliferation depends on what the true goals of this policy are. If we consider that the goal is the complete destruction of nuclear weapons, envisaged at the core of the NPT agreement, as the cornerstone of this policy, then this way of pursuing a policy of nuclear non-proliferation is a failure. However, if we take into account the current successes of this policy, where this regime increases the costs of implementing a nuclear program, discourage much of the countries that have nuclear pretensions, we can conclude that the policy of non-proliferation of the United States is essential.

The conclusion of this question remains for individual choice and perception, and my conclusion is that the policy of nuclear non-proliferation is unsuccessful by referring to the Nuclear Non-Proliferation Treaty. Also, I believe that the NPT agreement and this US policy of nuclear non-proliferation are discriminatory and their ultimate goal is to strengthen the superiority of other countries. The US cannot promote the NPT agreement and impose sanctions on those who have nuclear pretensions when they themselves own, develop and expand their nuclear arsenal. Therefore, on the one hand, I would give one voice to the past successes of the NPT agreement and the non-proliferation policy, because the nuclear club is holding to those minimum, plus those who are not signatories to the NPT (Israel, North Korea, Pakistan, and India), while on the other hand this policy is a complete failure, because today there are still nuclear-weapon states. To complete this section, I will refer to the first sentence of this paper

which says: "You cannot continue to have a cigarette hanging from your mouth and ask everyone else not to smoke." [174]

Above all, the failure lies in the reluctance of none of the five legally recognized nuclear states to apply the II Article of the NPT agreement. Then, the NPT treaty faces several disadvantages such as:

- the treaty does not provide dealing with non-state actors

- Articles I, II and VI of the NPT have been violated

- there is no provision in the NPT treaty that obliges countries that are not signatories to comply with the agreement

- there is a hole in the IW member of the NPT, where NNWS produces nuclear energy in order to generate power.

The US and its allies argued that ICM is a success in dealing with nuclear proliferation, and if we analyze their goals, then their claim is true. Their enhanced nuclear non-proliferation policy deters most countries from launching a nuclear program, making strengthened the superiority of United States in the world, leading to economic, military, and security dependence on other countries from the United States. The problem arises in the question, who decides which state can own and produce nuclear weapons, and which does not? Hence, arise the so-called "hostile states". Security, territorial integrity and independence are the reasons why each country is reaching for nuclear weapons. Here another question is raised, which is: who is the bad guy in this case? When did the United States become the guardians of international peace and security in the world? Who gave them the right to decide which state is the enemy? The answer lies in keeping the primacy in the world, ranging from economic, to military primacy.

Who does International Conflict Management?

International conflict management is not just a task and merit of the United States. The United Nations, as the largest international organization, with its organs: the Security Council and the International Atomic Energy Agency bear the greatest responsibility in dealing with

[174] Mohamed El Baradei, Director General of the International Atomic Energy Agency (IAEA), (accessed on Dec. 2017) https://www.theguardian.com/commentisfree/2007/feb/27/britaincannotexpectotherco

nuclear non-proliferation. The Iranian issue is best described by the actions of the United Nations. Maintaining international peace and managing international conflicts requires the collective participation of all countries, especially the great powers. The IAEA itself has no instruments for exerting pressure and sanctions and, therefore, the collective support of agencies and organs of the United Nations is of particular importance in dealing with today's threats and challenges and achieving the set goals. United Nations bodies have expertise and tools for monitoring, controlling and dealing with challenges, but support from the major powers, along with other countries, by putting pressure on disobedient states and by enforcing sanctions, provide the authority on which agencies will rely.

Hence, we can conclude that International Conflict Management is not depending only on one actor, but on the cooperation of all actors (states, international organizations, non-governmental organizations) who, acting together, form an international control mechanism that will constantly make efforts to maintain peace and security and promoting nuclear non-proliferation.

Nuclear Non-proliferation means the limitation of countries that produce and own nuclear weapons. Prior to the 1990 Nuclear Non-Proliferation Treaty (NPT), about 30 nuclear-weapon states were envisaged, but thanks to the NPT agreement, there are now only 9 nuclear states, of which 5 are legally recognized, and the rest are not signatories to the NPT. As examples of successful non-proliferation we can mention the following:

- South Africa -> dismantles its nuclear weapons and pervades the NPT Club.

- Argentina -> gave up the nuclear program and joined the NPT Club.

- Brazil -> gave up the nuclear program and joined the NPT club.

- Belarus, Kazakhstan and Ukraine -> returned nuclear weapons from their territory to the Soviet Council and joined the NPT Club.

- Libya -> has abandoned a nuclear weapons program

- Myanmar -> has abandoned the nuclear program

- Iraq -> gave up the nuclear program and joined the NPT Club.

Was there an ICM in Iran and North Korea - differences?

Iran and North Korea have been granted the status of lasting national security issues by the United States and other countries, due to long-standing unsuccessful diplomatic efforts. Economic sanctions from the great powers and the United Nations conviction were not enough to force North Korea to give up its nuclear program. In the Iranian Case, economic sanctions have played an important role and resulted in the JCPOA agreement in 2015, when Iran accepted the IAEA's requirements to reduce nuclear centrifuges, which would limit the production of enriched uranium to a minimum that is not sufficient for production of bomb. Although it is a fact that Iran always finds a ways to ignore this agreement, so the countries in the region are afraid of becoming a nuclear Iran. However, with the opening of the doors of the IAEA inspectors, Iran has changed its status from a "hostile state" into "friendly" and is under constant control of the policies of the United States and the other five Great Powers. Iran kneeled due to the overall efforts of the United Nations and the Great Powers, whose sanctions froze Iran, and this resulted in a renegotiation and signing of the JCPOA agreement.

On the other hand, we have North Korea, which ignored sanctions and warnings, and became a nuclear power. For decades, the US has been trying to negotiate, but Pyongyang has responded with a series of provocations, including nuclear and ballistic missile tests. With the emergence of nuclear power, North Korea in its region has spawned great vibration of concern by other states, especially South Korea and Japan. This concern and constant unpredictability spread by N. Korea, may be blamed for reaching nuclear programs by the countries in the region. Today, with the current situation, I can detect three reasons why North Korea does not succumb to sanctions and does not give up its nuclear weapons. *Firstly,* today North Korea is a nuclear power, and this implies that talks with this country must be at a different level, with a reserve, unlike in Iran where economic sanctions and threats of military intervention have yielded results. Pyongyang's mood and aggressive politics must not be underestimated. *Secondly,* in the Iranian question, all major powers were involved in economic sanctions along with the United Nations, while here in North Korea's case, there is a loophole that makes China. Today, North Korea has been sanctioned by the United Nations and the Great Powers, but problem is coming from China, that appears as the main economic partner of North Korea and therefore N. Korea manages to overcome all sanctions. The point of all this is the lack of consensus by the Great Powers and the

collective action, which results with failure. In the case, if China acted together with other Great Powers with collective economic sanctions, before North Korea became a nuclear power, North Korea's chances of succumbing economically and abandoning its nuclear program would be substantially greater. *Third,* and perhaps most importantly is the unity of the Korean people and the obedience to the state and its leader. Their unity and determination to fight and achieve distorted justice from decades ago, make them more resilient and immune to economic sanctions. In another country, elsewhere, it will be very easy to find an opposition that is willing to negotiate and give up many things, at the cost of coming to power. The fact is that North Korea is continuing its nuclear proliferation strategy and no one can predict what will happen in the future. Whether the North Korean issue will be resolved peacefully, or will be a trigger for a nuclear war, depends on Leaders of the Great Powers and Pyongyang's reactions.

If the situation with the Iranian issue and North Korea is not resolved in the coming years, then the states in their region are likely to take quiet steps towards nuclear production, and this automatically means falling off the reputation of the NPT agreement and the United Nations. That's why the Great Powers, headed by the UN, cannot allow the expansion of the nuclear club, but rather to make efforts to reduce nuclear states, and themselves to be an example of the world, thus beginning to reduce their nuclear arsenal.

International conflict management was and still is present in Iran and North Korea, but both cases are special stories about themselves. The Iranian issue can be considered a success after sitting at a negotiating table of Iranian authorities, and the international community must make efforts to persuade Pyongyang to sit at the negotiating table, so this crisis that is affecting the entire globe public, can be resolved in peaceful way.

Estimates for the future

Estimates of the future are built on probability theory, since the interpretation of the success of the policy of Non-proliferation of nuclear weapons is hiding behind more gray walls that are unpredictable and can very easily change the course of situations. Great efforts need to be made to strengthen nuclear non-proliferation regimes, strengthening the authority of the NPT agreement as the cornerstone of the non-proliferation policy and the authority of the United

Nations. As we have said several times, all of this requires collective support from all countries, in particular the Great Powers to the International Organizations and the Non-proliferation Policy of Nuclear Weapons.

With the support received, the IAEA, as a UN agency, will be able to carry out its verification practices by performing unannounced inspections and will be able to respond promptly to information received about countries that secretly build nuclear facilities and ensure that they are not for military purposes.

My personal view is that the UN can not function with its 100% because in terms of resolutions and decisions, the Security Council brings the decisions unanimously, which means that if the United States votes for a resolution and accepts it, then the state itself should take measures to reduce the nuclear arsenal with the ultimate goal, Nuclear Free World. Therefore, if the Great Powers want to achieve and present success in the policy of nuclear non-proliferation, then they should be the greatest example of the world. They are the ones that hold the primacy in the possession and proliferation of nuclear weapons. Here I must mention the economic pretensions for US natural resources to the states of the Middle East, and beyond, where states are feeling insecure and fighting for independence and autonomy.

Finally, my recommendation with respect to strengthening the authority of the United Nations is that one type of double control mechanisms must be created or voted, which, in addition to the authority and function of other countries in the world, will also have authority to control, monitoring and the punishment of the Great Powers. This would reduce the superiority of the Great Powers in relation to other states, which is expected that smaller states will not feel threatened or perpetrated by the Great Powers. The feeling of International Justice will be felt by all states, which will lead to the minimization of new nuclear pretensions.

Intensive nuclear disarmament will result with a drastic reduction in the risk of nuclear weapons being found in the hand of non-state actors, terrorist organizations, etc. Finally, we can conclude that, considering the current situation, the regime and the policy of nuclear non-proliferation and International Conflict Management are not successful in their work, and the main problem for this result is, that the ones who have the main votes in International Institutions, are the ones that have most of the nuclear arsenal in the world

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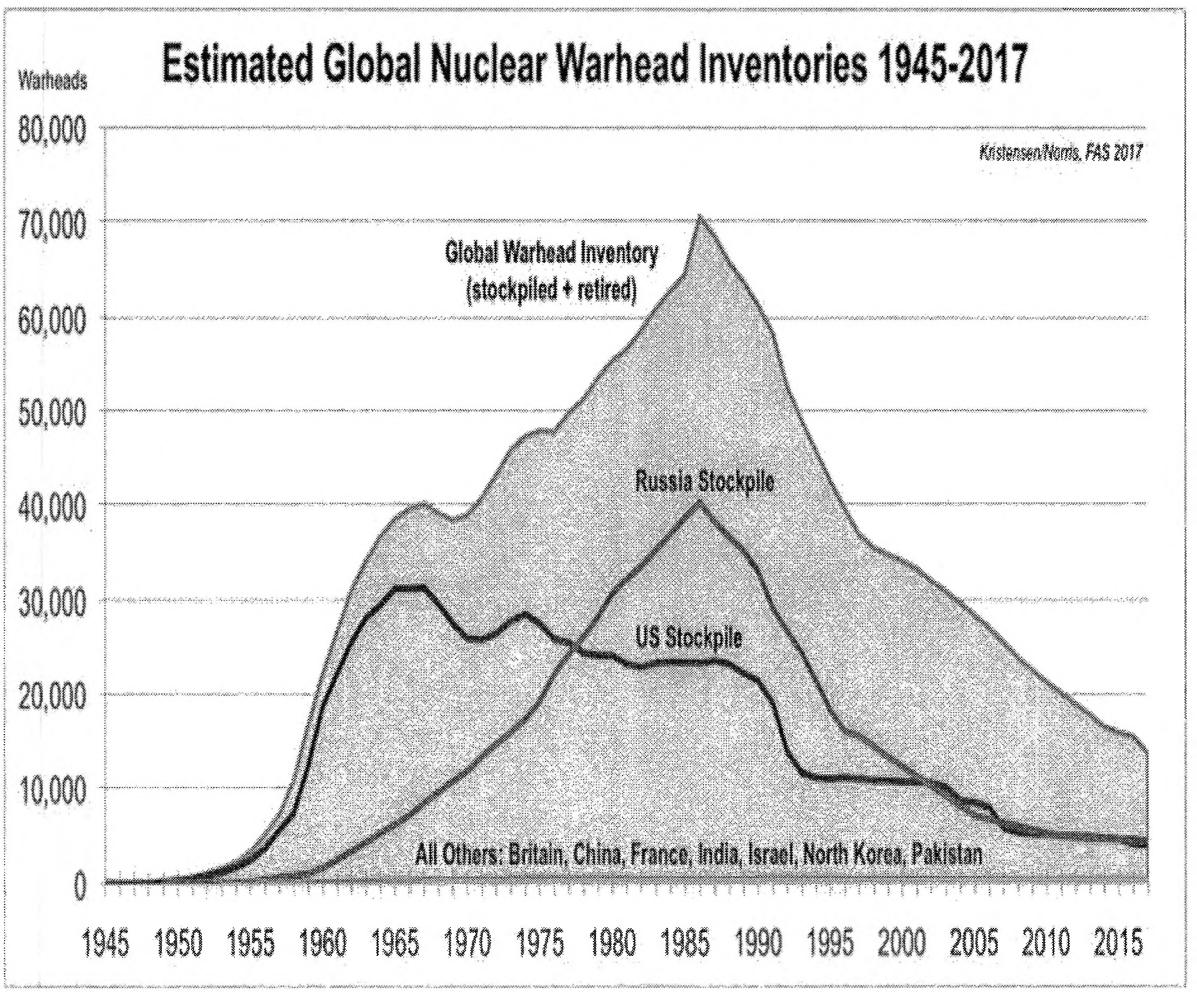
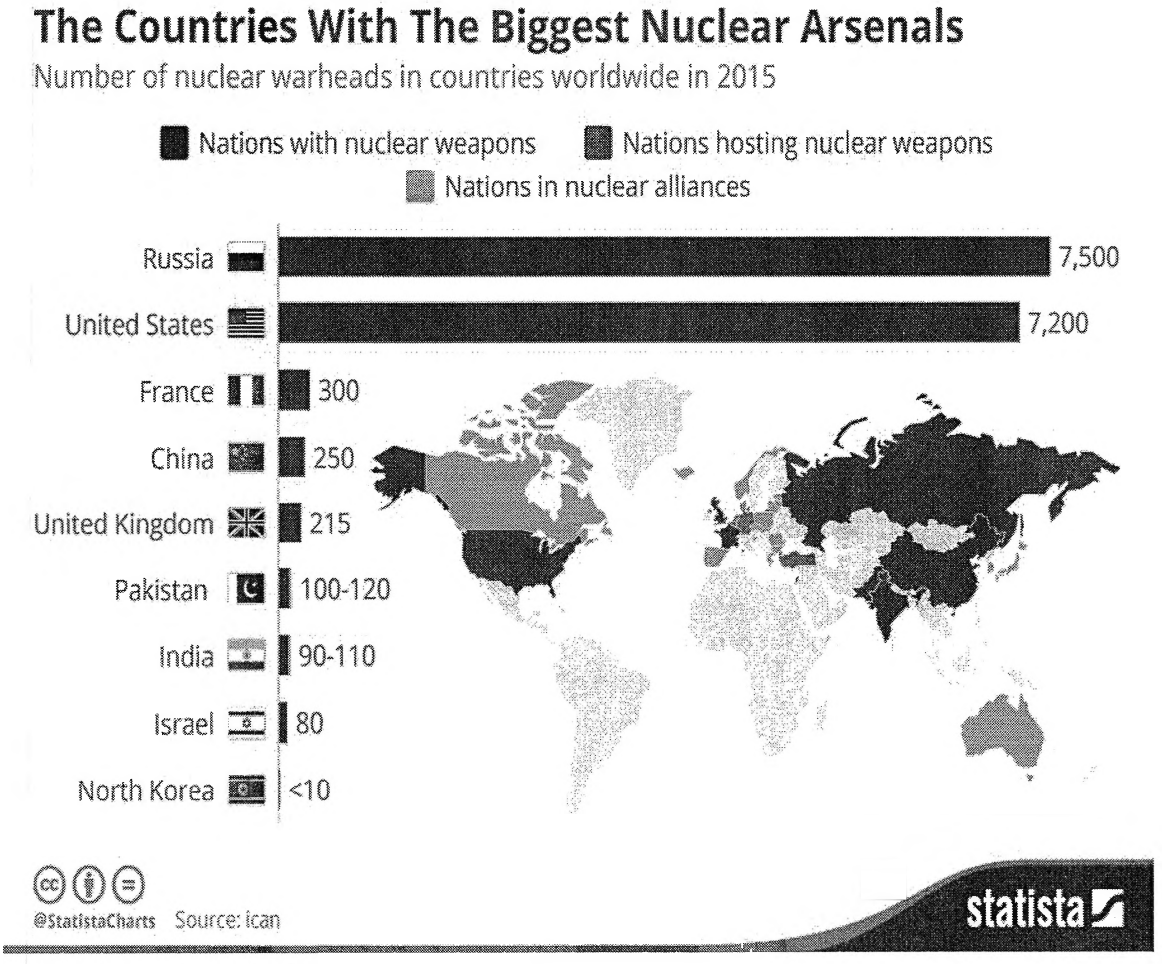
Appendix

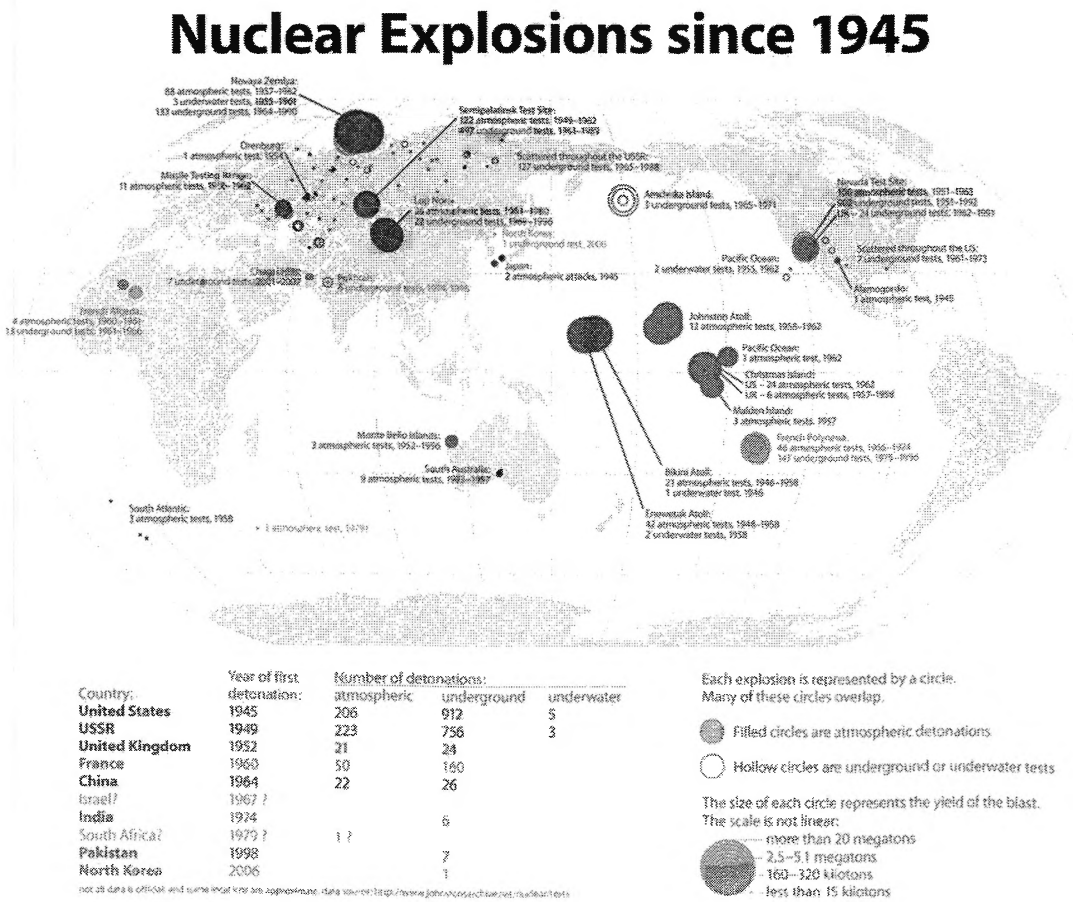
Appendix I: The number of nuclear warheads that the states owned since 1945-2017 (p.57)



Appendix II: The number of nuclear warheads that the states owned in 2015 (p.58)



Appendix III: The number of nuclear explosions since 1945 (p.61)



Country:	Year of first detonation:	Number of detonations: atmospheric	underground	underwater
United States	1945	206	912	5
USSR	1949	223	756	3
United Kingdom	1952	21	24	
France	1960	50	160	
China	1964	22	26	
Israel?	1967 ?			
India	1974		6	
South Africa?	1979 ?	1 ?		
Pakistan	1998		7	
North Korea	2006		1	

not all data is official and some level are approximate; data source: http://www.johnstonsarchive.net/nuclear/tests

Source: Nuclear Weapons, published in Our World in Data, by Max Roser and Mohamed Nagdy, (accessed on August 2017)
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Appendix IV: The number of nuclear tests from the nine nuclear actors from 1945-2016 (p.61)

Year	United States	USSR/ Russia	United Kingdom	France	China	India	Pakistan	North Korea	Total
1945	1								1
1946	2								2
1947	0								0
1948	3								3
1949	0	1							1
1950	0	0							0
1951	16	2							18
1952	10	0	1						11
1953	11	5	2						18
1954	6	10	0						16
1955	18	6	0						24
1956	18	9	6						33
1957	32	16	7						55
1958	77	34	5						116
1959	0	0	0						0
1960	0	0	0	3					3
1961	10	59	0	2					71
1962	96	79	2	1					178
1963	47	0	0	3					50
1964	45	9	2	3	1				60
1965	38	14	1	4	1				58
1966	48	18	0	7	3				76
1967	42	17	0	3	2				64
1968	56	17	0	5	1				79

1969	46	19	0	0	2				67
1970	39	16	0	8	1				64
1971	24	23	0	5	1				53
1972	27	24	0	4	2				57
1973	24	17	0	6	1				48
1974	22	21	1	9	1	1			55
1975	22	19	0	2	1	0			44
1976	20	21	1	5	4	0			51
1977	20	24	0	9	1	0			54
1978	19	31	2	11	3	0			66
1979	15	31	1	10	1	0			58
1980	14	24	3	12	1	0			54
1981	16	21	1	12	0	0			50
1982	18	19	1	10	1	0			49
1983	18	25	1	9	2	0			55
1984	18	27	2	8	2	0			57
1985	17	10	1	8	0	0			36
1986	14	0	1	8	0	0			23
1987	14	23	1	8	1	0			47
1988	15	16	0	8	1	0			40
1989	11	7	1	9	0	0			28
1990	8	1	1	6	2	0			18
1991	7	0	1	6	0	0			14
1992	6	0	0	0	2	0			8
1993	0	0	0	0	1	0			1
1994	0	0	0	0	2	0			2
1995	0	0	0	5	2	0			7
1996	0	0	0	1	2	0			3

1997	0	0	0	0	0	0			0
1998	0	0	0	0	0	2	2		4
1999-2005	0	0	0	0	0	0	0		0
2006	0	0	0	0	0	0	0	1	1
2007-2008	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	1	1
2010	0	0	0	0	0	0	0	0[2]	0
2011	0	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	1	1
2014	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	2	2
Total	1,030	715	45	210	45	3	2	5	2,055

Source: The Nuclear Test Tally, published in Arms Control Association, (accessed on September 2017)
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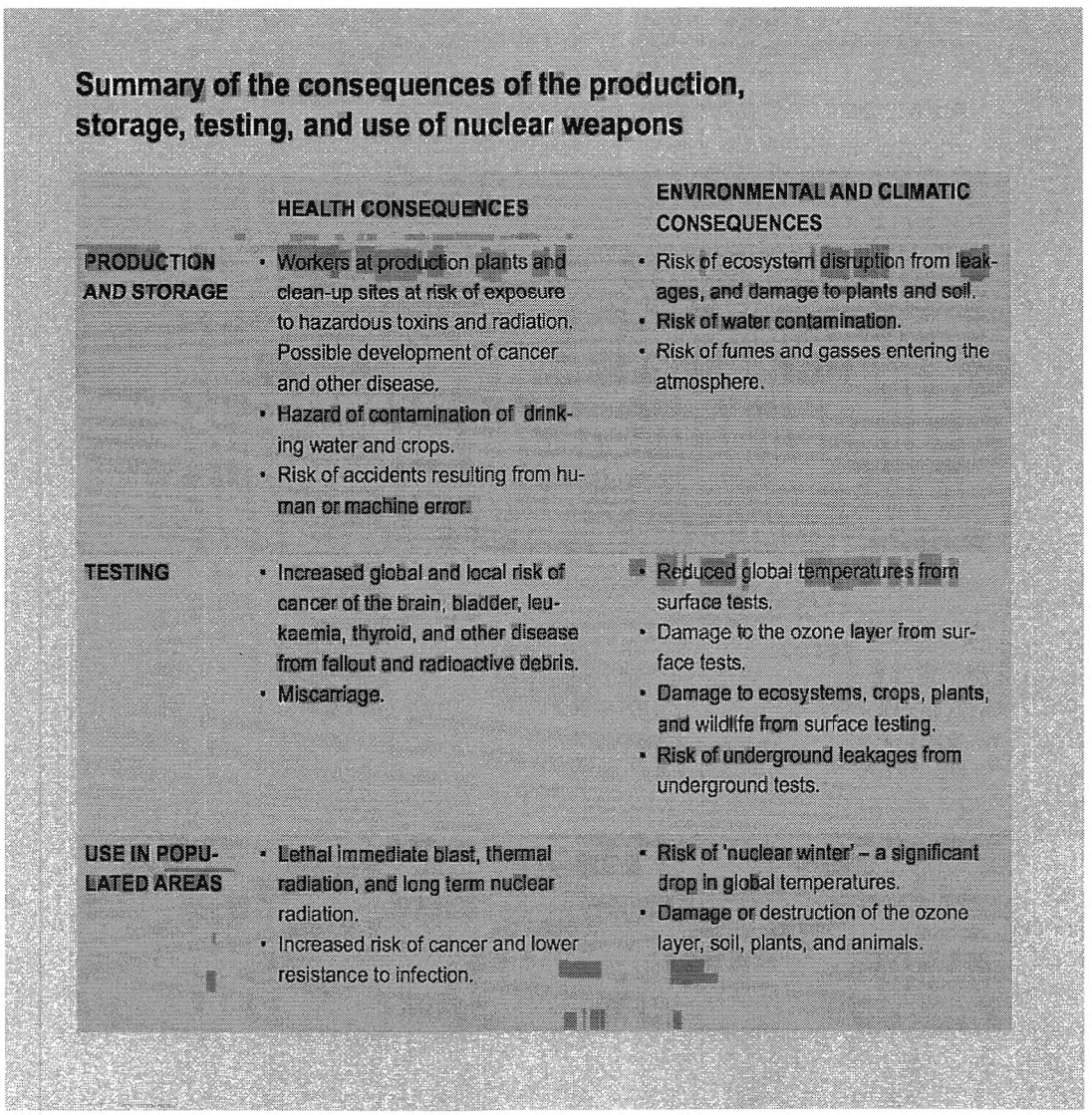
Appendix V: Estimates by Global Zero 2011. Figures in USD (p.64)

NUCLEAR WEAPONS SPENDING			
	Country	**Year 2010**	**Year 2011**
1	**United States**	**$55.6 bn**	**$61.3 bn**
2	**Russia**	**$9.7 bn**	**$14.8 bn**
3	**China**	**$6.8 bn**	**$ 7.6 bn**
4	**France**	**$5.9 bn**	**$ 6.0 bn**
5	**Britain**	**$4.6 bn**	**$5.5 bn**
6	**India**	**$4.1 bn**	**$4.9 bn**
7	**Israel**	**$1.9 bn**	**$1.9 bn**
8	**Pakistan**	**$1.8 bn**	**$2.2 bn**
9	**North Korea**	**$0.7 bn**	**$0.7 bn**
	Total:	**$91.0 bn**	**$104.9 bn**

Source: Prepared by Tim Wright, Australian Director of the International Campaign to Abolish Nuclear Weapons, in September 2011

Appendix VI: General consequences of the production, storage, testing and use of NW (p.87)



Summary of the consequences of the production, storage, testing, and use of nuclear weapons

	HEALTH CONSEQUENCES	ENVIRONMENTAL AND CLIMATIC CONSEQUENCES
PRODUCTION AND STORAGE	• Workers at production plants and clean-up sites at risk of exposure to hazardous toxins and radiation. Possible development of cancer and other disease. • Hazard of contamination of drinking water and crops. • Risk of accidents resulting from human or machine error.	• Risk of ecosystem disruption from leakages, and damage to plants and soil. • Risk of water contamination. • Risk of fumes and gasses entering the atmosphere.
TESTING	• Increased global and local risk of cancer of the brain, bladder, leukaemia, thyroid, and other disease from fallout and radioactive debris. • Miscarriage.	• Reduced global temperatures from surface tests. • Damage to the ozone layer from surface tests. • Damage to ecosystems, crops, plants, and wildlife from surface testing. • Risk of underground leakages from underground tests.
USE IN POPULATED AREAS	• Lethal immediate blast, thermal radiation, and long term nuclear radiation. • Increased risk of cancer and lower resistance to infection.	• Risk of 'nuclear winter' – a significant drop in global temperatures. • Damage or destruction of the ozone layer, soil, plants, and animals.

Source: Health and Environmental Effects, published in International Law and Policy Institute(ILPI), by Kjolv Egeland, February 2014 (accessed on Sept. 2017) http://nwp.ilpi.org/?p=2177

Appendix VII: Nuclear Disarmament Treaties (p.89)

4.1. -> Here I list all agreements and contracts related to nuclear disarmament and the control of nuclear weapons:

- The Geneva Protocol
  - **Opened for Signature:** 17 June 1925 (Geneva)
  - **Entered into force:** For each signatory as from the date of deposit of its instrument of ratification or accession.
  - **Number of Parties**: 133
  - **Depositary:** France

  Bans the use of poison gas and bacteriological weapons in warfare.

- The Antarctic Treaty (ATS)
  - **Opened for Signature:** 1 December 1959 (Washington)
  - **Entered into Force:** 23 June 1961
  - **Depositary:** United States

  Demilitarizes the Antarctic continent and provides for scientific cooperation on Antarctica.

- Limited Test Ban Treaty (LTBT)
  - **Opened for signature:** 5 August 1963
  - **Entered into force:** 10 October 1963
  - **Duration:** The Treaty is of unlimited duration
  - **Number of Parties**
  - **Depositories:** Russia, United Kingdom, and United States

  This prohibits nuclear weapons tests in the atmosphere, in outer space, under water, and in any other environment if the explosions cause radioactive debris to be present outside the territory of a responsible state.

- Outer Space Treaty
  - **Opened for Signature:** 27 January 1967
  - **Entered into Force:** 10 October 1967
  - **Number of Parties:** 103
  - **Number of Signatories:** 89
  - **Depositaries:** Russia, United Kingdom, and United States

  This prevented states from placing nuclear weapons or other Weapons for Mass Destruction into Earth's orbit, and prohibited states from installing such weapons on the Moon or celestial bodies or stationing them in outer space in any other manner.

  * Treaty for the prohibition of Nuclear Weapons in Latin America and Caribbean (Treaty of Tlatelolco)
  - **Opened for Signature:** 14 February 1967
  - **Entered into Force:** 25 April 1969

  This treaty prohibits Latin American states from not only acquiring and possessing nuclear weapons, but also from allowing the storage or deployment of nuclear weapons on their territories by other states.

- Strategic Arms Limitation Talks I (SALT I)
  - **Signed:** 26 May 1972
  - **Entered into Force:** 3 October 1972
  - **Duration:** Five years, unless replaced earlier by an agreement on more complete measures limiting strategic offensive arms.
  - **Parties:** Soviet Union and United States

  These negotiations between the United States and the Soviet Union slowed the arms race in strategic ballistic missiles armed with nuclear weapons by curbing the manufacture of strategic missiles capable of carrying nuclear weapons.

- Treaty of Non-proliferation of Nuclear Weapons (NPT)
  - **Opened for signature:** 1 July 1968
  - **Entered into force:** 5 March 1970
  - **Duration:** Indefinite (extended in 1995)
  - **Depositaries:** Russia, UK, and US
  - **States Parties:** 191

  This treaty is the basis of international cooperation on stopping the spread of nuclear weapons by promoting disarmament, nonproliferation, and peaceful uses of nuclear energy.

- Seabed Arms Control Treaty
  - **Opened for Signature:** 11 February 1971
  - **Entered into Force:** 18 May 1972
  - **Number of Parties:** 95 States
  - **Number of Signatories:** 21 States
  - **Depositories:** Russia (originally the Soviet Union), United Kingdom, and United States

  This treaty sought to prevent the introduction of international conflict and nuclear weapons in areas already free of them.

- Biological Weapons Convention (BWC)
  - **Opened for Signature:** 10 April 1972
  - **Entered into Force:** 26 March 1975
  - **Duration:** Unlimited.
  - **Number of State Parties**: 173
  - **Depositaries:** Russia, the United Kingdom, United States
  - **Review Conference:** Every 5 years

This was the first multilateral disarmament treaty that banned the development, production, and stockpiling of an entire category of weapons of mass destruction.

- Anti – Ballistic Missile (ABM) Treaty

  - **Signed:** 26 May 1972
  - **Entered into Force:** 3 October 1972
  - **Duration:** Ceased to be in force on 13 June 2002, after the US formally withdrew from the Treaty
  - **Parties:** United States and USSR (Russia, Belarus, Kazakhstan, Ukraine)

  The United States and the Soviet Union agreed to each have only two ABM deployment areas so restricted and located that the ABM areas cannot provide a nationwide defense or become the basis for developing one.

- Threshold Test Ban Treaty (TTBT)
  July 3, 1974

  This treaty between the United States and the Soviet Union established a nuclear threshold through the prohibition of the testing of new or existing nuclear weapons with a yield exceeding 150 kilotons.

- Peaceful Nuclear Explosions treaty (PNET)

  - **Signed:** 28 May 1976
  - **Entered into Force:** 11 December 1990
  - **States Parties:** United States and Soviet Union

- **Duration:** Five years with automatic extension for successive five-year periods unless either State Party notifies the other of its termination. Neither Party, however, may withdraw from the treaty, while the Threshold Test Ban Treaty (TTBT) is in force.

This treaty between the United States and the Soviet Union prohibits peaceful nuclear explosions not covered by the Threshold Test Ban Treaty, and verifies all data exchanges and visits to sites of explosions through national technical means.

- Strategic Arms Limitation Talks II (SALT II)

  - **Signed:** 18 June 1979
  - **Entered into Force:** Never entered into force; superseded by the START I Treaty in 1991
  - **Duration:** Until 31 December 1985; unless the Treaty is replaced earlier by an agreement further limiting strategic offensive arms
  - **Parties:** Soviet Union and United States

This treaty between Soviet Union and United States replaced the Interim Agreement with a long-term comprehensive treaty that provided broad limits on strategic offensive weapons systems.

- South Pacific Nuclear-Free Zone (SPNFZ) - Treaty of Rarotonga

  - **Opened for Signature:** 6 August 1985
  - **Entered into Force**: 11 December 1986
  - **Duration:** Treaty is of a permanent nature and shall remain in force indefinitely.
  - **Organs:** Consultative Committee, Director

This treaty prohibits the manufacture, possession, or control of nuclear explosives, the damping of radioactive wastes at sea within the defined zone, and the testing or stationing nuclear explosive devices within state territories.

- Intermediate – Range Nuclear Forces Treaty
  - **Signed:** 8 December 1987
  - **Entered into force:** 1 June 1988
  - **Duration:** Unlimited
  - **Parties:** United States and Soviet Union

    12 former republics of the USSR, six of which — Russia, Ukraine, Belarus, Kazakhstan, Turkmenistan, and Uzbekistan — had inspectable facilities on their territory.

    Belarus, Kazakhstan, Russia, and Ukraine are active participants in the process of implementing the Treaty. Turkmenistan and Uzbekistan have assumed a less active role, foregoing attendance at sessions of the Special Verification Commission (SVC) and participation in inspections.

This treaty between the United States and the Soviet Union requires destruction of ground-launched ballistic and cruise missiles with certain ranges, and associated equipment within three years of the Treaty entering into force.

- Strategic Arms Reduction Treaty I (START I)
  - **Signed:** 31 July 1991
  - **Lisbon Protocol:** Signed 23 May 1992
  - **Entered into Force:** 5 December 1994
  - **Duration:** 15 year duration with option to extend for unlimited five year periods, if all parties agree
  - **Expired:** 5 December 2009
  - **Parties:** United States, Russian Federation, Belarus, Kazakhstan and Ukraine

This treaty between the United States and the Soviet Union was the first to call for

reductions of U.S. and Soviet strategic nuclear weapons and served as a framework for future, more severe reductions.

- Open Skies Treaty
  - **Signed:** 24 March 1992
  - **Duration:** Unlimited
  - **Ratifications:** 34 (Kyrgyzstan has not yet ratified)
  - **Depositaries:** Canada and Hungary

  This treaty establishes a regime of unarmed aerial observation flights over state territories and enhances mutual understanding of and increase transparency in military forces and activities.

- Strategic Arms Reduction Treaty II (START II)
  - **Signed:** 3 January 1993
  - **Ratified by US Senate**: 26 September 1997
  - **Ratified by the Russian State Duma:** 14 April 2000
  - **Ratified by the Russian Federation Council:** 19 April 2000
  - **Russia Declares It Null and Void:** 14 June 2002

  This treaty between the United States and the Russian Federation implemented reductions in two phases in order to meet the established limit on strategic weapons for both states.

- Chemical Weapons Convention (CWC)

  - **Opened for Signature:** 13 January 1993
  - **Entered into Force:** 29 April 1997
  - **Duration:** Indefinite
  - **Membership:** 192 State Parties, 1 Signatories
  - **Signatories:** Israel

- **Depositary**: UN Secretary-General

This is a multilateral treaty that requires, within a certain timeframe, the ultimate destruction of chemical weapons and the prohibition of development, production, stockpiling and use of chemical weapons.

- Trilateral Statement by the Presidents of the United States, Russia and Ukraine
  January 14, 1994 (Moscow)

In this statement, Ukraine agreed to transfer all nuclear warheads on its territory to Russia in exchange for security assurances and financial compensation.

- Southeast Asian Nuclear-Weapon-Free-Zone (SEANWFZ) Treaty (Bangkok Treaty)

  - **Opened for Signature:** 15 December 1995
  - **Entered into Force:** 28 March 1997
  - **Duration:** The treaty is of a permanent nature and shall remain in force indefinitely.
  - **Organs:** Commission for the Southeast Asia Nuclear Weapon-Free Zone, Executive Committee

Number of Parties: Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam. None of the nuclear weapon states (NWS) has yet signed the protocols, largely due to U.S. and French objections regarding the unequivocal nature of security assurances and over the definitions of territory, including exclusive economic zones (EEZ).

- African Nuclear-Weapon-Free-Zone (ANWFZ) Treaty (Pelindaba Treaty)

  - **Opened for signature:** 11 April 1996
  - **Entered into Force:** 15 July 2009
  - **Depositary:** The Commission of the African Union

- **Duration:** The Treaty is of a permanent nature and shall remain in force indefinitely

This treaty establishes a nuclear weapons free zone in Africa. The United States has signed, but not yet ratified Protocols to the Treaty.

- Comprehensive Nuclear Test Ban Treaty (CTBT)

  - **Opened for Signature:** 24 September 1996
  - **Duration:** Indefinite
  - **Depository:** UN Secretary-General
  - **Number of Signatories**: 183 *of the 44 States noted in (Article XIV) Annex 2: 41*
  - **Number of Ratifications**: 164 *of the 44 States noted in (Article XIV) Annex 2: 36*[175]

  This is legally binding global ban on all nuclear explosive testing. United States has signed in 1996, but the U.S. Senate voted against ratification in October, 1999.

- Mine Ban treaty (Ottawa Treaty)
  - **Opened for signature:** December 3, 1997
  - **Entered into Force:** 1999

  This treaty seeks to eradicate landmines by prohibiting the use, stockpiling, production, and transfer of antipersonnel mines. The United States and other significant military powers are not signatories.

- Strategic Offensive Reductions Treaty (SORT)
  - **Signed:** 24 May 2002
  - **Entry into Force:** 1 June 2003

- **Duration:** The Treaty shall remain in force until 31 December 2012 and may be - - extended by agreement of the Parties or superseded earlier by a subsequent agreement
- **Parties:** Russian Federation and United States

This treaty required the United States and the Russian Federation to reduce their deployed strategic nuclear forces. It took effect and expired on December 31, 2012. Both could then change the size of their deployed strategic nuclear forces.

- Central Asia Nuclear-Weapon-Free-Zone (CANWFZ)
  - **Opened for signature:** 8 September 2006
  - **Entered into force:** 21 March 2009
  - **Ratified:** Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan & Uzbekistan
  - **Duration:** Unlimited
  - **Depositary:** Kyrgyzstan
  - **Organs:** None

The idea of a CANWFZ dates back to the 1992 initiative by Mongolia declaring itself a nuclear-weapon-free zone (NWFZ), in which Mongolia also called for a regional NWFZ. The first formal CANWFZ proposal was made by Uzbek President Islam Karimov at the 48th session of the UN General Assembly in 1993. On 8 February, 2005, the five Central Asian states adopted a final draft of the treaty text at a meeting in Tashkent, Uzbekistan.

- New Strategic Arms Reduction Treaty (NEW START)
  - **Signed:** 8 April 2010
  - **Entered into Force:** 5 February 2011
  - **Duration:** 10 year duration with option to extend for no more than 5 years
  - **Parties:** United States, Russian Federation

This treaty obligates the United States and Russia to reduce strategic nuclear forces to 1,550 warheads on up to 700 deployed delivery vehicles, within a total of 800 deployed

and non-deployed delivery vehicles. Reductions must occur within 7 years, treaty remains in force for 10 years. \

- Arms Trade Treaty (ATT)
  - **Opened for Signature:** 3 June 2013
  - **Entered into Force:** 24 December 2014
  - **Duration:** Unlimited
  - **Deadline for initial report on national implementation:** 24 December 2015
  - **Deadline for first annual report:** 31 May 2016
  - **Membership:** 130 Signatories, 92 States Parties as of 1 May 2017

  This treaty establishes common international standards for regulating the international trade in conventional arms, and seeks to prevent and eradicate the illicit trade in conventional arms and prevent their diversion. [176]

- Treaty on the Prohibition of Nuclear Weapons (TPNW)
  - **Opened for Signature:** 20 September 2017
  - **Duration:** Indefinite
  - **Depository:** UN Secretary-General
  - **Number of Signatories:** 53
  - **Number of Ratifications:** 3
  - **Entry into Force:** 90 Days after ratification by 50 states[177]

  This treaty prohibits the use, threat of use, development, production, manufacturing, acquisition, possession, stockpiling, transfer, stationing and installment of nuclear weapons or assistance with any prohibited activities.

Despite all these numerous agreements between the countries in the world, and most of all between Russia and the United States, and years of negotiation and bargaining, nuclear

disarmament has not been achieved in the way it was conceived and is facing significant problems and shortcomings. Of all the agreements, treaties and conventions that have been adopted in the past 70 years, each takes a special place, importance and contribution to the reduction, control and attempts to completely disarm nuclear weapons in the world. I have described all the agreements above by showing the most important features that are marked. Now, here I want to focus most on the NPT - the Nuclear Non-Proliferation Treaty, which rises highest and of special importance. Firstly, the original text of the agreement will be presented, with all its members, and then I will try to give a more concrete picture of its importance, and will also show some problems / shortcomings it faces and how effective it is. In the end, one section will focus on recommendations for the future and ways to achieve nuclear disarmament.

Source: Q&A: Nuclear Disarmament, published in BBC News, May 2010 (accessed on Sept. 2017)
http://news.bbc.co.uk/2/hi/in_depth/6103398.stm

Facts Sheet on Disarmament Issues, Published in United Nations Office for Disarmament Affairs, (accessed on Sept. 2017)
https://www.un.org/disarmament/factsheets/

Treaties and Agreements, published in Arms Control Association, (accessed on Sept. 2017)
https://www.armscontrol.org/treaties

Appendix VIII: Treaty on the Non-Proliferation of Nuclear Weapons: Status and full text of the NPT (p.89)

4.2 TREATY ON THE NON- PROLIFERATION OF NUCLEAR WEAPONS

STATUS OF THE TREATY:

- Opened for signature at London, Moscow and Washington: 1 July 1968
- Entered into force: 5 March 1970

- Depositary Governments: Russian Federation, United Kingdom of Great Britain and Northern Ireland, and United States of America
- Number of Signatory States: 93
- Number of State Parties: 191

TEXT OF THE TREATY:

The States concluding this Treaty, hereinafter referred to as the "Parties to the Treaty",

Considering the devastation that would be visited upon all mankind by a nuclear war and the consequent need to make every effort to avert the danger of such a war and to take measures to safeguard the security of peoples,

Believing that the proliferation of nuclear weapons would seriously enhance the danger of nuclear war,

In conformity with resolutions of the United Nations General Assembly calling for the conclusion of an agreement on the prevention of wider dissemination of nuclear weapons,

Undertaking to co-operate in facilitating the application of International Atomic Energy Agency safeguards on peaceful nuclear activities,

Expressing their support for research, development and other efforts to further the application, within the framework of the International Atomic Energy Agency safeguards system, of the principle of safeguarding effectively the flow of source and special fissionable materials by use of instruments and other techniques at certain strategic points,

Affirming the principle that the benefits of peaceful applications of nuclear technology, including any technological by-products which may be derived by nuclear-weapon States from the development of nuclear explosive devices, should be available for peaceful purposes to all Parties to the Treaty, whether nuclear-weapon or non-nuclear-weapon States,

Convinced that, in furtherance of this principle, all Parties to the Treaty are entitled to participate in the fullest possible exchange of scientific information for, and to contribute alone or in co-operation with other States to, the further development of the applications of atomic energy for peaceful purposes,

Declaring their intention to achieve at the earliest possible date the cessation of the nuclear arms race and to undertake effective measures in the direction of nuclear disarmament,

Urging the co-operation of all States in the attainment of this objective,

Recalling the determination expressed by the Parties to the 1963 Treaty banning nuclear weapons tests in the atmosphere, in outer space and under water in its Preamble to seek to achieve the discontinuance of all test explosions of nuclear weapons for all time and to continue negotiations to this end,

Desiring to further the easing of international tension and the strengthening of trust between States in order to facilitate the cessation of the manufacture of nuclear weapons, the liquidation of all their existing stockpiles, and the elimination from national arsenals of nuclear weapons and the means of their delivery pursuant to a Treaty on general and complete disarmament under strict and effective international control,

Recalling that, in accordance with the Charter of the United Nations, States must refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any State, or in any other manner inconsistent with the Purposes of the United Nations, and that the establishment and maintenance of international peace and security are to be promoted with the least diversion for armaments of the world's human and economic resources,

Have agreed as follows:

Article I

Each nuclear-weapon State Party to the Treaty undertakes not to transfer to any recipient whatsoever nuclear weapons or other nuclear explosive devices or control over such weapons or explosive devices directly, or indirectly; and not in any way to assist, encourage, or induce any non-nuclear-weapon State to manufacture or otherwise acquire nuclear weapons or other nuclear explosive devices, or control over such weapons or explosive devices.

Article II

Each non-nuclear-weapon State Party to the Treaty undertakes not to receive the transfer from any transferor whatsoever of nuclear weapons or other nuclear explosive devices or of control over such weapons or explosive devices directly, or indirectly; not to manufacture or otherwise acquire nuclear weapons or other nuclear explosive devices; and not to seek or receive any assistance in the manufacture of nuclear weapons or other nuclear explosive devices.

Article III

1. Each non-nuclear-weapon State Party to the Treaty undertakes to accept safeguards, as set forth in an agreement to be negotiated and concluded with the International Atomic Energy Agency in accordance with the Statute of the International Atomic Energy Agency and the Agency's safeguards system, for the exclusive purpose of verification of the fulfillment of its obligations assumed under this Treaty with a view to preventing diversion of nuclear energy from peaceful uses to nuclear weapons or other nuclear explosive devices. Procedures for the safeguards required by this Article shall be followed with respect to source or special fissionable material whether it is being produced, processed or used in any principal nuclear facility or is outside any such facility. The safeguards required by this Article shall be applied on all source or special fissionable material in all peaceful nuclear activities within the territory of such State, under its jurisdiction, or carried out under its control anywhere.

2. Each State Party to the Treaty undertakes not to provide: (a) source or special fissionable material, or (b) equipment or material especially designed or prepared for the

processing, use or production of special fissionable material, to any non-nuclear-weapon State for peaceful purposes, unless the source or special fissionable material shall be subject to the safeguards required by this Article.

3. The safeguards required by this Article shall be implemented in a manner designed to comply with Article IV of this Treaty, and to avoid hampering the economic or technological development of the Parties or international co-operation in the field of peaceful nuclear activities, including the international exchange of nuclear material and equipment for the processing, use or production of nuclear material for peaceful purposes in accordance with the provisions of this Article and the principle of safeguarding set forth in the Preamble of the Treaty.

4. Non-nuclear-weapon States Party to the Treaty shall conclude agreements with the International Atomic Energy Agency to meet the requirements of this Article either individually or together with other States in accordance with the Statute of the International Atomic Energy Agency. Negotiation of such agreements shall commence within 180 days from the original entry into force of this Treaty. For States depositing their instruments of ratification or accession after the 180-day period, negotiation of such agreements shall commence not later than the date of such deposit. Such agreements shall enter into force not later than eighteen months after the date of initiation of negotiations.

Article IV

1. Nothing in this Treaty shall be interpreted as affecting the inalienable right of all the Parties to the Treaty to develop research, production and use of nuclear energy for peaceful purposes without discrimination and in conformity with Articles I and II of this Treaty.

2. All the Parties to the Treaty undertake to facilitate, and have the right to participate in, the fullest possible exchange of equipment, materials and scientific and technological information for the peaceful uses of nuclear energy. Parties to the Treaty in a position to do so shall also co-operate in contributing alone or together with other States or international organizations to the further development of the applications of nuclear energy for peaceful

purposes, especially in the territories of non-nuclear-weapon States Party to the Treaty, with due consideration for the needs of the developing areas of the world.

Article V

Each Party to the Treaty undertakes to take appropriate measures to ensure that, in accordance with this Treaty, under appropriate international observation and through appropriate international procedures, potential benefits from any peaceful applications of nuclear explosions will be made available to non-nuclear-weapon States Party to the Treaty on a non-discriminatory basis and that the charge to such Parties for the explosive devices used will be as low as possible and exclude any charge for research and development. Non-nuclear-weapon States Party to the Treaty shall be able to obtain such benefits, pursuant to a special international agreement or agreements, through an appropriate international body with adequate representation of non-nuclear-weapon States. Negotiations on this subject shall commence as soon as possible after the Treaty enters into force. Non-nuclear-weapon States Party to the Treaty so desiring may also obtain such benefits pursuant to bilateral agreements.

Article VI

Each of the Parties to the Treaty undertakes to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a treaty on general and complete disarmament under strict and effective international control.

Article VII

Nothing in this Treaty affects the right of any group of States to conclude regional treaties in order to assure the total absence of nuclear weapons in their respective territories.

Article VIII

1. Any Party to the Treaty may propose amendments to this Treaty. The text of any proposed amendment shall be submitted to the Depositary Governments which shall circulate it to all Parties to the Treaty. Thereupon, if requested to do so by one-third or more of the Parties to the Treaty, the Depositary Governments shall convene a conference, to which they shall invite all the Parties to the Treaty, to consider such an amendment.

2. Any amendment to this Treaty must be approved by a majority of the votes of all the Parties to the Treaty, including the votes of all nuclear-weapon States Party to the Treaty and all other Parties which, on the date the amendment is circulated, are members of the Board of Governors of the International Atomic Energy Agency. The amendment shall enter into force for each Party that deposits its instrument of ratification of the amendment upon the deposit of such instruments of ratification by a majority of all the Parties, including the instruments of ratification of all nuclear-weapon States Party to the Treaty and all other Parties which, on the date the amendment is circulated, are members of the Board of Governors of the International Atomic Energy Agency. Thereafter, it shall enter into force for any other Party upon the deposit of its instrument of ratification of the amendment.

3. Five years after the entry into force of this Treaty, a conference of Parties to the Treaty shall be held in Geneva, Switzerland, in order to review the operation of this Treaty with a view to assuring that the purposes of the Preamble and the provisions of the Treaty are being realised. At intervals of five years thereafter, a majority of the Parties to the Treaty may obtain, by submitting a proposal to this effect to the Depositary Governments, the convening of further conferences with the same objective of reviewing the operation of the Treaty.

Article IX

1. This Treaty shall be open to all States for signature. Any State which does not sign the Treaty before its entry into force in accordance with paragraph 3 of this Article may accede to it at any time.

2. This Treaty shall be subject to ratification by signatory States. Instruments of ratification and instruments of accession shall be deposited with the Governments of the United

Kingdom of Great Britain and Northern Ireland, the Union of Soviet Socialist Republics and the United States of America, which are hereby designated the Depositary Governments.

3. This Treaty shall enter into force after its ratification by the States, the Governments of which are designated Depositaries of the Treaty, and forty other States signatory to this Treaty and the deposit of their instruments of ratification. For the purposes of this Treaty, a nuclear-weapon State is one which has manufactured and exploded a nuclear weapon or other nuclear explosive device prior to 1 January 1967.

4. For States whose instruments of ratification or accession are deposited subsequent to the entry into force of this Treaty, it shall enter into force on the date of the deposit of their instruments of ratification or accession.

5. The Depositary Governments shall promptly inform all signatory and acceding States of the date of each signature, the date of deposit of each instrument of ratification or of accession, the date of the entry into force of this Treaty, and the date of receipt of any requests for convening a conference or other notices.

6. This Treaty shall be registered by the Depositary Governments pursuant to Article 102 of the Charter of the United Nations.

Article X

1. Each Party shall in exercising its national sovereignty have the right to withdraw from the Treaty if it decides that extraordinary events, related to the subject matter of this Treaty, have jeopardized the supreme interests of its country. It shall give notice of such withdrawal to all other Parties to the Treaty and to the United Nations Security Council three months in advance. Such notice shall include a statement of the extraordinary events it regards as having jeopardized its supreme interests.

2. Twenty-five years after the entry into force of the Treaty, a conference shall be convened to decide whether the Treaty shall continue in force indefinitely, or shall be extended for an additional fixed period or periods. This decision shall be taken by a majority of the Parties to the Treaty.

Article XI

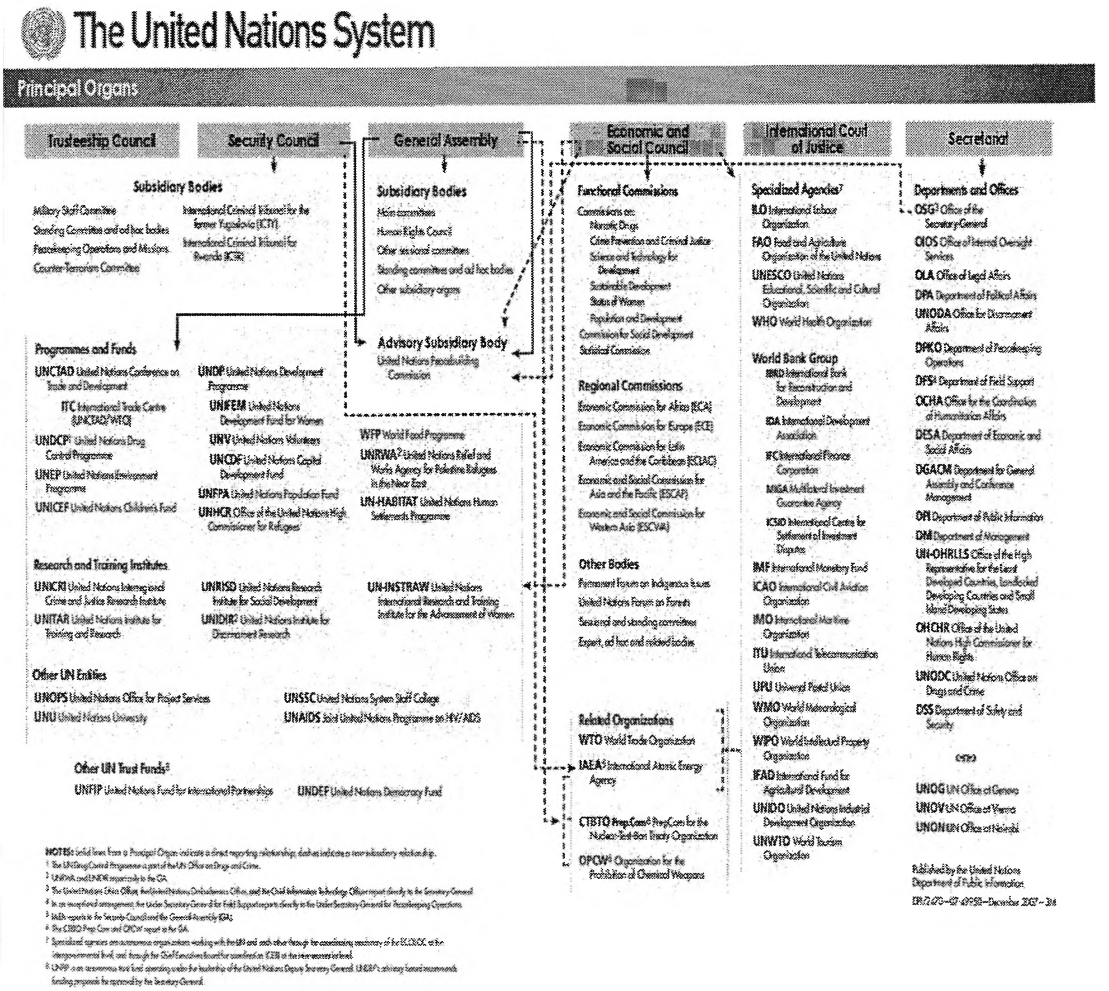
This Treaty, the English, Russian, French, Spanish and Chinese texts of which are equally authentic, shall be deposited in the archives of the Depositary Governments. Duly certified copies of this Treaty shall be transmitted by the Depositary Governments to the Governments of the signatory and acceding States.

IN WITNESS WHEREOF the undersigned, duly authorized, have signed this Treaty.

DONE in triplicate, at the cities of London, Moscow and Washington, this first day of July, one thousand nine hundred and sixty-eight.[178]

Source: Treaty on the Non-Proliferation of NW, published in United Nations Office for Disarmament Affairs, (accessed on Sept. 2017)
http://disarmament.un.org/treaties/t/npt/text

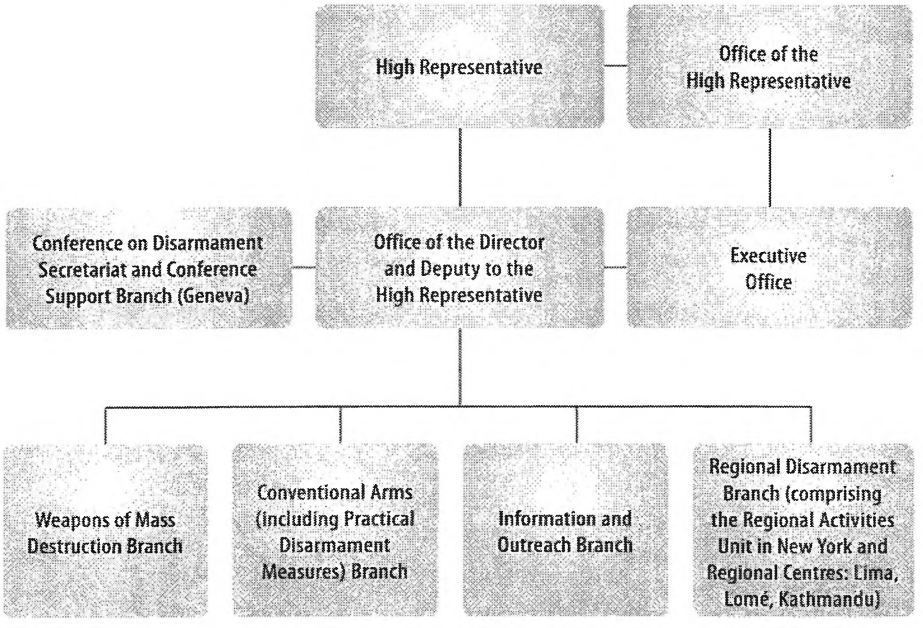
Appendix IX: United Nations System (p.110)



Source: What is the United Nations System?, *published in Globalization, by Stubbornbull*, June 2016 (accessed on Oct. 2017)
https://images.flatworldknowledge.com/carpenteribus/carpenteribus-fig06_008.jpg

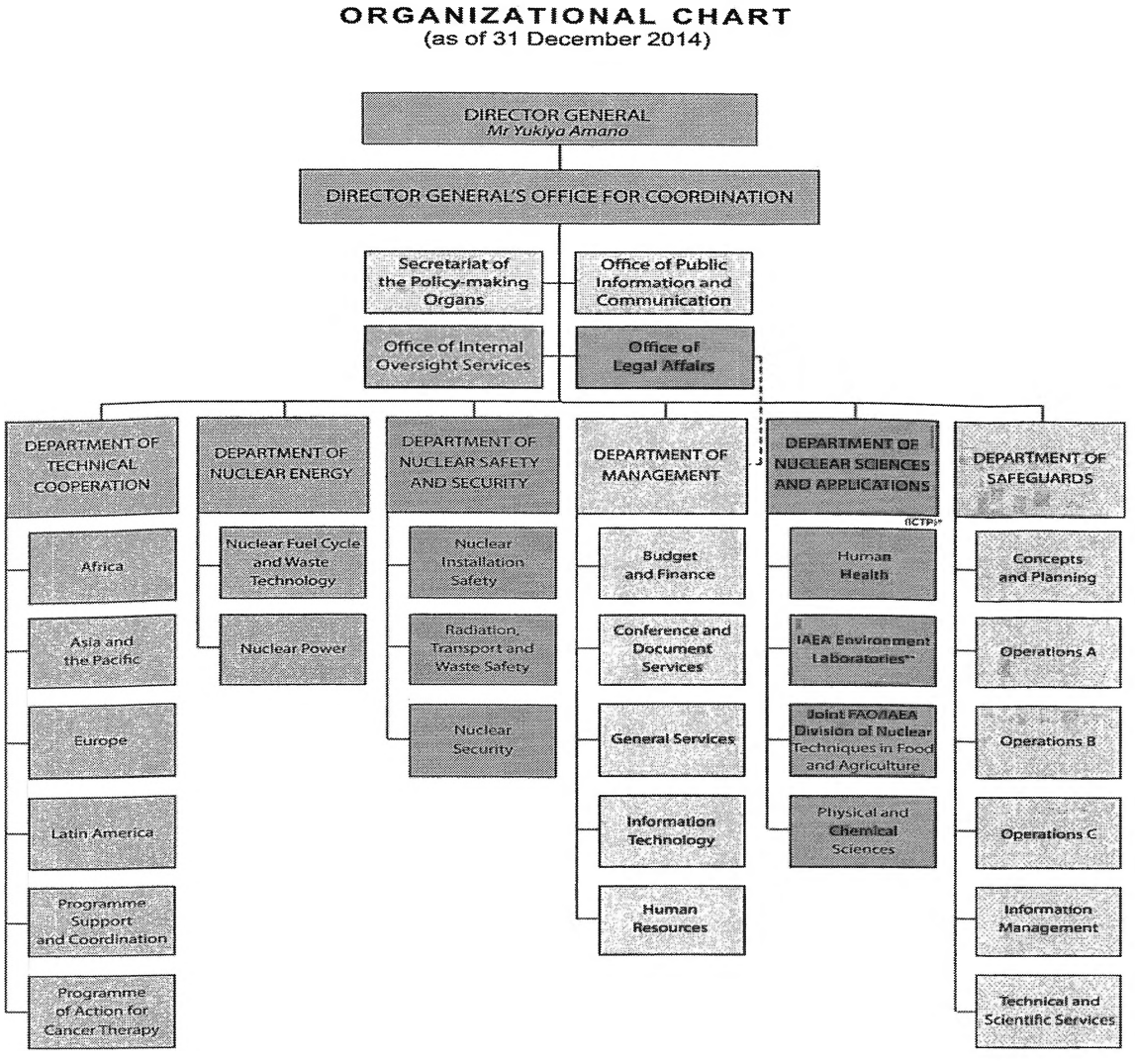
Appendix X: The organizational structure of the UN Disarmament Office (p.114)

Organizational Structure of the United Nations Office for Disarmament Affairs



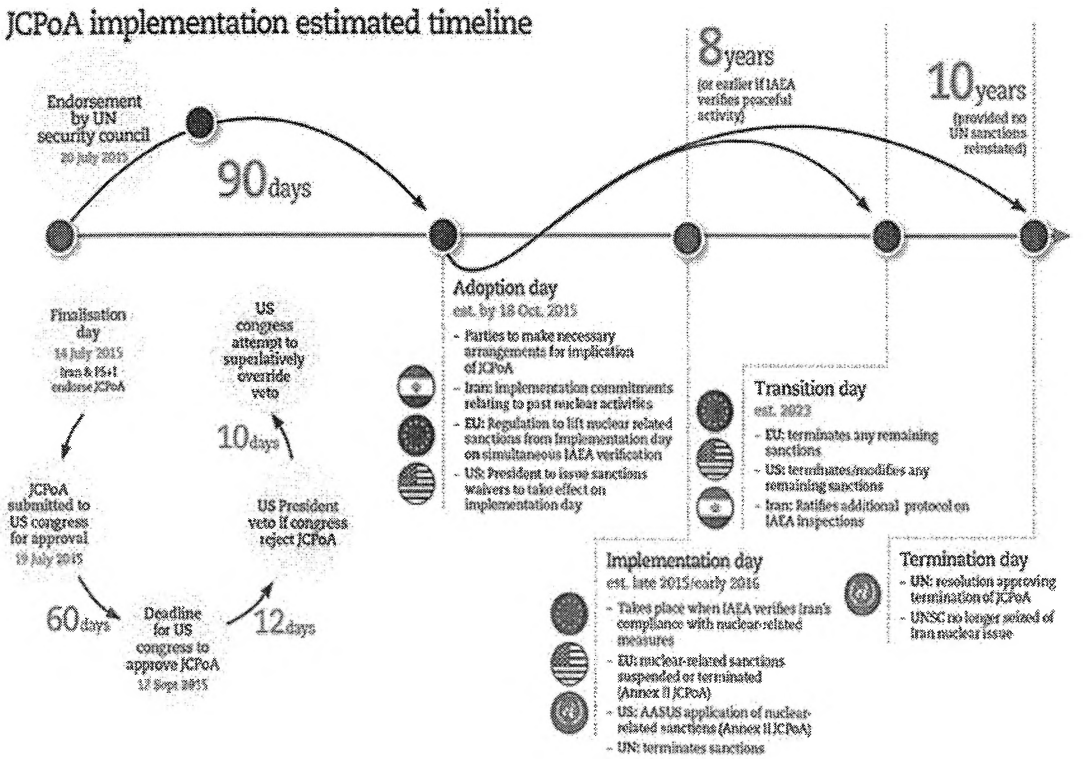
Source: Who We Are?, United Nations Regional Centre for Peace, Disarmament, and Development in Latin America and the Caribbean, (accessed on Oct. 2017) https://unodaweb.s3accelerate.amazonaws.com/wpcontent/uploads/assets/HomePage/ODAPublications/Yearbook/2007/PDF/org-chart.pdf

Appendix XI: The organizational structure of the IAEA (p.118)



Source: Organizational Chart of International Atomic Energy Agency (IAEA), December 2014 (accessed on Oct. 2017)
https://www.iaea.org/sites/default/files/orgchart_9.pdf

Appendix XII: JCPOA implementation estimated timeline (p.130)



Source:
https://www.clydeco.com/images/made/uploads/Blogs/sanctions/images/CC008358_JCPoA_Timeline_800x450px_800_450_90_s_c1_c_c.jpg