International Atomic Energy Agency
Background Guide

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Committee Background

International Atomic Energy Agency

About the Topics

The United Nations can very well claim its founding to be a direct result of the properties of uranium and the physics of the first half of the 20th century. Ever since the detonation of Little Boy and Fat Man in 1945, uranium has been a flashpoint for global diplomacy and since then also represented the worst outcome for the future: a nuclear apocalypse. Thankfully, there has been no use of nuclear weapons in wartime since then—and it is the priority of all of mankind to ensure that it remains that way.

For simplicity, the isotopes 235U and 238U will be referred to as 235 and 238, respectively. 235 is the primary ingredient in nuclear weapons owing to its fissile nature, but thankfully, it is extremely difficult to process from the overwhelmingly more common 238. The enrichment of 235 is highly technical but will yield fuel suitable for a nuclear reactor at around 3%. Enrichment to this level is often viewed with concern on the world stage, but is seen as an acceptable limit on total purity. The 2015

Joint Comprehensive Plan of Action, commonly known as the Iranian Nuclear Deal, limited Uranium enrichment to 3.67% 235 enriched to 20%-85% is capable of fueling nuclear weapons.[1] The United Nations sees enrichment to such a level a grave threat to the overall safety of the world, and has endeavored to prevent such enrichment since its creation.

While uranium holds tremendous power of destruction, it also holds tremendous power, literal power and energy, that could be used to run the world. Cheaper and cleaner than fossil fuels and many other fuel alternatives, the possibilities offered by uranium have not been ignored.[2] [3] 235 powers most of the nuclear reactors in the world, producing 10.1% of total energy in 2020, producing the energy of 148 Hiroshima bombings.[4] The peaceful opportunities afforded by 235 vastly outnumber the destructive, and it is the job of this agency to realize those opportunities while remaining cognizant of the risks posed should enrichment be unchecked. With the global climate crisis looming, nuclear energy presents a proven method of generation that is not subject to local weather conditions in its efficacy.


Yellowcake, a concentrated uranium powder

Without proper regulation, though, uranium enrichment could follow a path more apt to the creation of nuclear weapons than nuclear energy. Even 238 can lead to nuclear weapons if allowed to decay into Plutonium-239, a vastly more potent isotope for the purposes of weaponization.[5] The enrichment of 235 has been an object of nations such as the Democratic People's Republic of Korea and the Islamic Republic of Iran directly linked to their nuclear weapons programs. These enrichment programs have been targets of heavy sanctions that have been labeled by some as being ineffective.[6] As such, a key task of this agency will be to determine a novel method of preventing enrichment beyond the 3% standard.

Furthermore, even without fissile reaction, the byproducts of nuclear wastes should also be considered. Whether it is proper disposal or the possibility of weaponization of radioactive nuclear wastes, the atomic age has never ended and regulations and policies must be put into place.

[1] US Department of State, Joint Comprehensive Plan of Action.

[2] World Nuclear Association, "Economics of Nuclear Power"

[3] US Department of Energy, "3 Reasons Why Nuclear is Clean and Sustainable"

[4] US Energy Information Agency, "Nuclear explained"

[5] Washington DoH Office of Radiation Protection, "Plutonium (Pu) Fact Sheet"

History of the Committee

The IAEA was founded in 1957 out of an explicit vision for peace proposed by US President Eisenhower, and a directive to further no military purposes through its work.[7] The IAEA has actualized this goal mainly through research funding and programs that encourage general safety around nuclear energy. One responsibility given to the IAEA following the passing of the Nuclear Non-Proliferation Treaty (NPT) is to inspect nuclear facilities in various member states for compliance.

One notable criticism of the NPT has been its recognition of a"inalienable" right to nuclear power. Nuclear power either requires enriched uranium or has the potential to generate Pu-239, meaning that nuclear power is not the white to the black of nuclear weapons, it is in fact gray. Cognizant of this fact, multiple existing international treaties have limited or banned uranium enrichment. Following the fall of Gadaffi, gas centrifuges for uranium enrichment were one of the first pieces of the Libyan nuclear program to be dismantled and destroyed.

Introduction to the Committee

The United Nations International Atomic Energy Agency (IAEA) is an independent nongovernmental organization that reports to the Security Council and the General Assembly. Founded in the 1950s due to the rising fears of emerging nuclear technologies and their uses, the IEAE aims to"promote the safe, secure and peaceful use of nuclear technologies". [8]With its double focus on the promotion and control of the Atom, the agency moves to discuss and act upon the controversial potential uses of atom-splitting technologies as weapons and energy sources. The first statute of the IAEA was published in 1957 and unanimously approved by 81 member states. Since its approval, the Statute has been amended in 1963, 1973, and 1989.[9]

At its creation, the IAEA was based out of its Vienna headquarters, which remains as headquarters today. Currently, the IAEA also has regional offices in Toronto and Tokyo and liaison offices in New York City and Geneva. The three IAEA-owned laboratories are based in Vienna, Seibersdorf, and Monaco.

The IAEA operates in two bodies: the Technical Cooperation program and the regular program (which contains all other departments). The two bodies have their own respective funds and share additional funding from member-state and non-member-state donors. The funds originate from the Regular Budget Fund, the Technical Cooperation Fund, and the Extrabudgetary Program Funds, all of which are primarily funded by

[7] IAEA, "History"

[8] IAEA, "International Atomic Energy Agency"

[9] IAEA, "Statute"

Topic 1

The Future of Uranium Enrichment and Diplomacy

Introduction

The use of nuclear power is inherently risky by nature. Rising in popularity due to the increased awareness of the harms of climate change, nuclear power contributes to about 10% of worldwide electricity.[11] With many countries increasing their usage of nuclear power to cut carbon emissions, there are many safety concerns the IAEA is poised to address. In recent (and not-so-recent) events, it has become more apparent than ever that provisions must be made to counter and prevent widespread disaster when nuclear power plants and materials come into contact with armed conflict.

A modern nuclear energy power plant

[11] World Nuclear Association, "Nuclear Power in the World Today"

A Brief Overview of Nuclear Power

Nuclear power today comes in the form of fission reactions, where the nucleus of atoms is essentially 'split', a process that results in the release of large amounts of energy called fission. Fission requires that an atom is split into fragments, generally due to a collision with an incident neutron. To perform this 'splitting', a material that is fissionable must be used, normally uranium-235. 235 is used for three main reasons: it emits prompt neutrons when it undergoes fission (produces large amounts of energy), it is a naturally occurring isotope, and it can be weaponized. There are other materials that can be used to produce nuclear energy, notably thorium-232, but they are not as popular with relatively less research done into it in comparison with uranium.[12] Each time this fission reaction occurs, the energy released is in the form of heat and radiation. In a plant, the heat that is reduced is used to produce power in a similar way to fossil fuel plants: with a steam-powered turbine. Nuclear power plants consist of two isolated cyclical systems: the fission process (which happens within the containment structure) and the cooling process (the rest of the plant). As a result, it is ideal to construct power plants with certain specifications in mind, a nearby water source being a major consideration.

The nuclear reactor disasters in Chernobyl and Fukushima

Despite being a renewable energy source, nuclear power is not without its drawbacks. In recent history, the disasters of Fukushima and Chernobyl are testaments to this fact. In the case of such unprecedented disasters, a nuclear plant poses a threat as large chemical explosions occur and radioactive material is released. This is a particularly alarming threat in the case of man-made disturbances, a major threat being armed conflict. While humans are able and constantly withstand radiation in day-to-day life, much of the radioactive material housed in fission plants produce gamma rays, which cause surrounding molecules to react in different ways, and in humans leads to the damaging of tissues and changing of cell structure and DNA, resulting in the long-term effect of cancer.

Lastly, most importantly, the path to uranium enrichment for nuclear energy overlaps with the path for nuclear weaponry. Weapons of immense catastrophic destructive potential, nuclear weapons not only hold tremendous militaristic power but also tremendous diplomatic power. Through this connection, despite the peaceful capabilities of nuclear energy, it will forever be tied with its dangerous close cousin and should be treated with exceptional care.

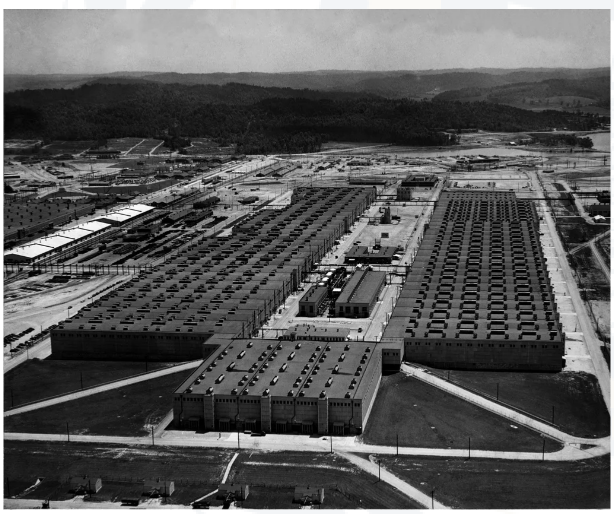
[11] World Nuclear Association,"Nuclear Power in the World Today"

[12] IAEA News Center, "Thorium's Long-Term Potential in Nuclear Energy: New IAEA Analysis."

History

Chicago Pile-1

On December 2nd of 1942 under the squash courts of the University of Chicago, the first nuclear chain reaction occurred under the supervision of Enrico Fermi, marking a monumental moment in the history of man; for the first time, men wielded and controlled the powers hidden in atoms.[13] Although the uranium used in the"Chicago Pile" was natural uranium, it was clear from the beginning that there was little future in nuclear energy without enrichment. Requiring a massive amount of uranium at the time, the experiment proved that nuclear fission was possible, but it was clear to the scientists present that if they desired to extract more power, enrichment would be required.



Clinton Engineering Works

A lesser-known counterpart to the famed Los Alamos Laboratory in New Mexico, Oak Ridge Laboratory (then known as Clinton Engineering Works) in Tennessee was also founded as a part of the Manhattan Project during World War II. While Los Alamos had the crucial role of being responsible with the science and engineering behind construction of the first atomic weapons; Oak Ridge's role was not any less crucial, they were responsible with the enrichment of the uranium and plutonium powering the bombs.[14]

Facing the challenge of creating the first large scale uranium enrichment, as a part of the Manhattan Project, Oak Ridge Laboratory initiated 3 different programs to achieve the goal of enriching uranium: Y-12, pursuing electromagnetic separation; K-25, pursuing gaseous diffusion; and S-50, pursuing liquid thermal diffusion.[15] The work done at Oak Ridge for the Manhattan Project unlocked the future of nuclear power. However, despite the decades that have passed, nuclear enrichment would still remain a goliath of a task necessary for any implementation of nuclear energy.

[13] Wellerstein,"Remembering the Chicago Pile, the World's First Nuclear Reactor"

[14] US Department of Energy,"Oak Ridge: Clinton Engineering Works"

[15] US Department of Energy,"Oak Ridge: Clinton Engineering Works"

In 1953, the then President of the United States, Dwight D. Eisenhower, in a speech to the United Nations titled "Atoms for Peace," sought to address the rising concern of nuclear power and weaponry at the early rise of the nuclear arms race. To alleviate the understandable concerns of the heating geopolitical climate with the nuclear arms race between the Soviet Union and United States, the United States pursued a policy of reduced secrecy and a more honest approach to address the population. Instead of focusing on the dangers of nuclear weapons however, Eisenhower used to speech to discuss about the benefits and announced to the world the potential for a peaceful future of nuclear energy and to "solve the fearful atomic dilemma" and ensure "the miraculous inventiveness of man shall not be dedicated to his death, but consecrated to his life."[16] An important moment in the history of nuclear policy, it marked the shift away from nuclear technology tied to national secrecy and into a more public sphere. The greatest impact, however, was not the speech but the program that followed it. Disclosing previously secret research involving nuclear technology, it was a departure from the Quebec Agreement signed during World War II that directly characterized nuclear developments with purely militaristic context rather than peaceful. Opening up nuclear research to both civilians and countries, it was a critical step in the international development and adoption of nuclear energy. However, the program also included many regulations in place, many of which dealt with limiting the levels of uranium enrichment, seeking to ensure the technologies would only be used for peaceful purposes.Working with many countries around the world, the United States offered its support in creation of research reactors, reactors with the primary focus to generate neutrons for research. With definite scientific and political intent, this initiative was quickly matched by a similar initiative by the Soviet Union. Spreading quickly, nuclear reactor technology has been adopted around the world.

Eisenhower delivering the "Atoms for Peace" to the United Nations

Current

With the wide adoption of nuclear energy by 50 nations around the world and contributing over 10% of energy, nuclear energy has come a long way since the early experimental reactors built in the early 1950s. However, the main issues barring nuclear energy still remain.

[16] Eisenhower, "Atoms for Peace"

Directives

The current landscape of uranium enrichment is intricately linked to geopolitical tensions, regional conflicts, and technological advancements. The potential for nuclear proliferation, the safety of nuclear facilities, and the balance between nuclear energy for peaceful purposes and the prevention of nuclear weapons development continue to be critical challenges that require international cooperation and robust diplomatic efforts.

As the International Atomic Energy Agency, work to strive closer to a future where the benefits of nuclear energy are embraced and away from nuclear wastelands.

Some potentially helpful guiding questions:

- How does the nuclear-weapon capabilities or lack of them affect your position?
- Given the increased agency involvement due to the Russo-Ukrainian conflict, how can the IAEA adjust to this new norm?
- With the contentious history behind the nuclear capabilities and research, how should the committee push for benefits of nuclear energy while being cognizant of the dangers?
- With existing direct conflicts between member nations and IAEA, should there be major changes in policy for the IAEA?
- Should there be modifications that would resolve some current potential issues with the NPT?
- 70 years after the start of the Atoms for Peace, what could we take away from nuclear diplomacy as we trudge further along the 21st century?

Topic 2

Regulations and Preventions on Dirty Bombs

Introduction

As representatives from countries around the world, you hold a critical role in addressing the growing concerns related to the illicit use of fissile materials and the potential threat of dirty bombs. A "radiological dispersal device," commonly known as a "dirty bomb," is a device that merges a conventional explosive, like dynamite, with radioactive substances. The labels dirty bomb and RDD are frequently employed interchangeably. Generally, RDDs wouldn't emit sufficient radiation to cause fatalities or serious ailments. In fact, the regular explosive would pose more danger to individuals than the radioactive materials. Nevertheless, the detonation of an RDD could instigate fear and chaos, pollute property, and demand potentially expensive decontamination efforts.This committee aims to collaborate and establish effective regulations to prevent the misuse of nuclear materials while facilitating legitimate uses for peaceful purposes. The discussions here will shape the future security landscape and safeguard global peace. The potential for devastation posed by dirty bombs, colloquially known as radiological dispersal devices, looms as a grave concern in our inte-

-rconnected world. These weapons combine conventional explosives with radioactive materials, resulting in not only immediate physical destruction but also prolonged environmental contamination and the spread of fear and panic. The psychological impact alone of a dirty bomb detonation can be profound, destabilizing societies and economies.The crux of this issue lies in the precarious intersection between advancements in nuclear technology, the clandestine movement of radioactive substances, and the intentions of malevolent actors. As the global community seeks to harness nuclear energy for beneficial applications, the inherent risks of unintended proliferation and the potential for non-state entities to acquire radioactive materials underscore the necessity of collaborative action.

History

The history of nuclear technology and its applications has been marked by both promising advancements and potential risks. The chronicle of the dirty bomb remains unwritten, as, fortunately, there has been no instance so far of employing a conventional explosive infused with radioactive elements. Following World War II, the emergence of nuclear weapons highlighted the urgency of regulating nuclear activities. International treaties, such as the Nuclear Non-Proliferation Treaty (NPT): a treaty first opened to signature in 1968 and then put into force in 1970, and the Comprehensive Nuclear-Test-Ban Treaty (CTBT): adopted by 1996 needing to be ratified by forty four different nations, were established to curb the proliferation of nuclear weapons, promote disarmament, and facilitate nuclear energy.

Current

In the present day, the threat of dirty bombs, which combine conventional explosives with radioactive materials, poses a significant challenge to global security. The potential for such devices to cause panic, long-term health impacts, and environmental contamination demands urgent attention. The trade in illicit fissile materials and the potential for non-state actors to acquire these materials underscore the need for comprehensive and effective regulations. With the Russian/Ukrainian

Rafael Grossi, head of the IAEA, finds no sign of undeclared nuclear activity in Ukraine. The Guardian, 2022 many allegations have been made on either side about the attempts of dirty bomb creations.

[1] The Guardian, "UN nuclear inspectors shut down Russian 'dirty bomb' claim against Ukraine"

Directives

“Working for the safe, secure and peaceful application of nuclear science and technology, contributing to international peace and security,” the focus of this committee is to ensure international peace and security through new and better resolutions on the processing of fissile materials and create regulations in place to prevent misuse. As delegates, your deliberations and resolutions will shape the global response to the challenges posed by dirty bombs and the potential misuse of fissile materials. It is imperative that your discussions lead to practical and effective solutions that balance the legitimate uses of nuclear technology with the necessity of preventing its misuse for harmful purposes.

Some potentially helpful guiding areas and questions:

Strengthening International Cooperation:

- How can countries collaborate to improve the tracking and regulation of fissile materials' trade?
- What mechanisms can be established for better intelligence sharing and joint efforts against illicit material trafficking?

Enhancing Security Measures:

- What specific security protocols can be implemented at nuclear facilities, research institutions, and transportation routes to prevent unauthorized access to fissile materials?
- How can countries address cyber threats that could compromise the security of these materials?

Promoting Legislative Frameworks:

- What legislative measures can countries adopt to criminalize unauthorized possession, use, or trafficking of radioactive materials?
- How can these laws be structured to ensure effective deterrence against potential offenders?

Capacity Building and Assistance:

- What strategies can be employed to assist developing nations in securing their nuclear facilities and effectively regulating fissile materials?
- How can technology transfer and technical assistance be best facilitated among countries?

Risk Assessment and Emergency Preparedness:

- What methods can be utilized to assess the potential risks and consequences associated with dirty bombs and radioactive materials? event of an incident involving these materials?

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Work Cited

US Department of State, Joint Comprehensive Plan of Action. July 14, 2015. https://2009-2017.state.gov/e/eb/tfs/spi/iran/jcpoa.

“Statute.” International Atomic Energy Agency, 1989. https://www.iaea.org/sites/default/files/statute.pdf.

“International Atomic Energy Agency.” International Atomic Energy Agency, Accessed 2023. https://www.un.org/en/global-issues/atomic-energy.

“Budget.” International Atomic Energy Agency, Accessed 2023. https://www.iaea.org/about/overview/budget.

“Nuclear Agreement - JCPOA.” European Union, 18 August 2021. https://www.eeas.europa.eu/eeas/nuclear-agreement-%E2%80%93-jcpoa_en.

“Nuclear Power in the World Today.” World Nuclear Association, August 2023. https://world-nuclear.org/information-library/current-and-future-generation/nuclear-power-in-the-world-today.aspx.

“Oak Ridge: Clinton Engineering Works.” Department of Energy, Accessed 2023. https://www.osti.gov/opennet/manhattan-project-history/Places/OakRidge/oak-ridge.html.

“Thorium-232.” Washington State Department of Health, July 2002. https://doh.wa.gov/sites/default/files/legacy/Documents/Pubs/320-082_th232_fs.pdf?uid=62f9bbec6c4f8.

"Thorium's Long-Term Potential in Nuclear Energy: New IAEA Analysis." IAEA News Center, 13 March 2023. https://www.iaea.org/newscenter/news/thoriums-long-term-potential-in-nuclear-energy-new-iaea-analysis.

“Ukraine, Russia, War, and Nuclear Energy.” World Nuclear Association, 22 August 2023. https://www.world-nuclear.org/information-library/country-profiles/countries-t-z/ukraine-russia-war-and-nuclear-energy.aspx.

Blas, Javier.“The Long Arm of the Kremlin and the Politics of Uranium.” Washington Post, 3 August 2023. https://www.washingtonpost.com/business/energy/2023/08/03/niger-coup-the-long-arm-of-russia-and-the-politics-of-uranium/23879d0e-31b5-11ee-85dd-5c3c97d6acda_story.html

member states, meaning all contributions are voluntary.[10] The budget is results-based and reviewed annually by the agency and is dependent on the feasibility and success of the committee's action.

The Statute of the IAEA authorizes the committee to aid and encourage research, acquire, and act as an intermediary negotiator in the trade of materials, facilities, services, and equipment to promote the safe and peaceful use of atomic technologies. Notably, the committee also has the power to create and administer safeguards and safety standards.

[10] IAEA, "History"

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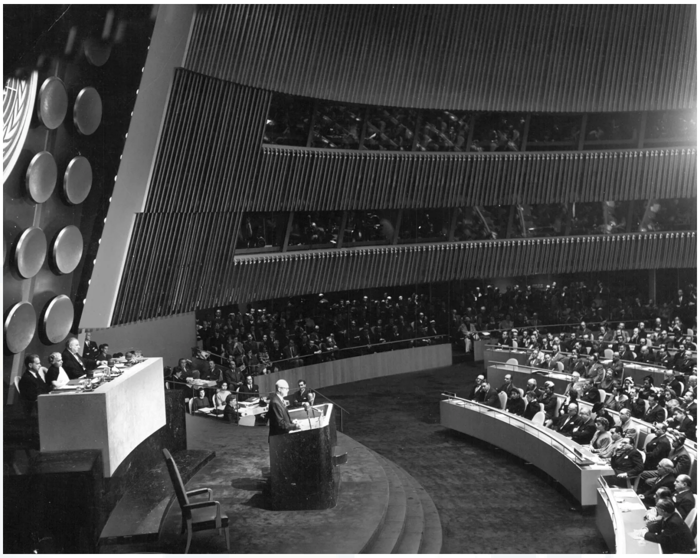
Eisenhower delivering the "Atoms for Peace" to the United Nations

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[16] Eisenhower, "Atoms for Peace"

The main method of classifying uranium is the concentration of uranium-235 The standard divisions of grades of weapons are low-enriched uranium (LEU) and highly-enriched uranium (HEU). The main difference between LEU and HEU is nuclear weapon capabilities; HEU is any uranium with concentration above 20% and is the theoretical minimum grade of uranium required for an weapon (although 20% grade weapon would require hundreds of tons of uranium and is not practical) and LEU is any uranium with concentration less than that.[17]

With the main obstacle of creation of nuclear weapons not being the mechanism itself but rather the fissile material, the difficulty behind uranium enrichment is the main obstacle for nuclear weaponry. The overlap between enrichment for nuclear weapons and nuclear energy proves to be a large complication though. One common process done by most reactors is to reprocess the spent fuel both to reduce waste and save costs through recycling the valuable fuel. However the same reprocessing technology also could allow uranium to be enriched to levels high enough to be weaponized.

In the initial decades after the start of the Atoms for Peace initiative, the research reactors mainly used HEU for the fuel. While the United States began a program to convert HEU research reactors to LEU reactors in the 1980s due to proliferation fears, many countries still possess valuable HEU from the era which serves as a risk towards nuclear weaponry.[18]

It is impossible to continue the discussion of modern nuclear enrichment and weaponry without bringing up the Nuclear Non-Proliferation Treaty (NPT). With the "'inalienable' right to nuclear power," any discussion of restricting nuclear reprocessing technology may encounter resistance.

With the NPT including many regulations and systems in place to discourage proliferation, the main regulatory mechanism behind NPT is the IAEA but there has also been many incidents of conflicts between countries andt the IAEA. Additionally, there are also active debates about the responsibilities and roles behind the NPT. While some nations argue for tighter restrictions on reprocessing technology from some nations without current nuclear weapons capabilities, some nations without nuclear weapons capabilities believe that nuclear-weapon states have not upheld their end of the bargain and have not done much for nuclear disarmament.[19]

Furthermore, apart from some fundamental with the NPT, there has also been a series of current hot topics regarding nuclear enrichment that has thrown the topic back into the public spotlight

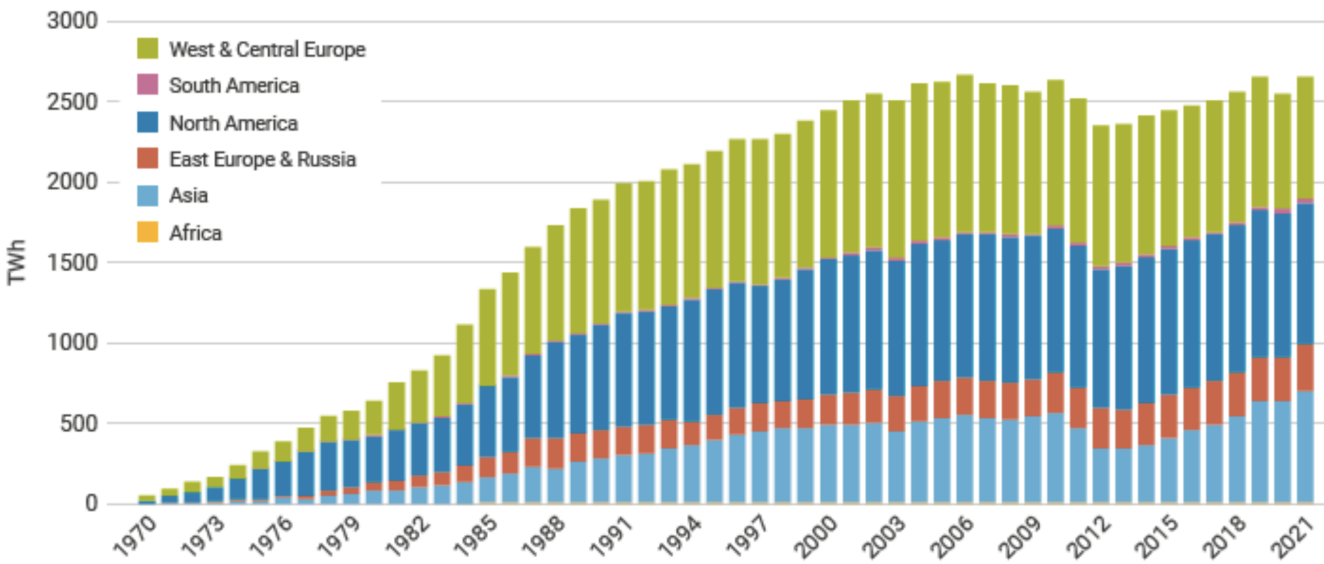
[17] Office of Nuclear Energy, "Nuclear Fuel Facts: Uranium"

[18] Argonne National Laboratory, "Reduced Enrichment for Research and Test Reactors"

[19] NPT Review Conference, "Humanity 'One Misunderstandin, Miscalculation ... Conference Begins"

The Iran nuclear deal, officially known as the Joint Comprehensive Plan of Action (JCPOA), aimed to curb Iran's nuclear ambitions in exchange for sanctions relief.[20] However, the deal faced challenges and was eventually abandoned by the United States in 2018. Iran subsequently resumed some uranium enrichment activities beyond the JCPOA's limits. Negotiations have been ongoing to revive the agreement and ensure Iran's compliance with non-proliferation commitments. The outcome of these negotiations will significantly impact global efforts to prevent nuclear proliferation.

The ongoing conflict in Ukraine has raised concerns about potential impacts on nuclear enrichment as well. Despite being at the forefront of many advancements in nuclear energy, ever since the end of the Cold War, the US and many nations shifted more and more away from their previous self-reliant process of mining and enrichment. Russia, however, was the country that filled that hole. Controlling nearly half of the world's enriched uranium supply, the Russian-Ukrainian conflict threatens nuclear plants around the world.[21] Additionally, with the recent coup d'etat in Niger, the seventh largest uranium producer and its subsequent suspension of uranium exports to France has incited the global uranium and enrichment supply.



[20] European Union, "Nuclear Agreement - JCPOA"

[21] NBlas, "The Long Arm of the Kremlin and the Politics of Uranium"

Work Cited

The Guardian. "UN Nuclear Inspectors Shut Down Russian Dirty Bomb Claim Against Ukraine." Last modified November 4, 2022, https://www.theguardian.com/world/2022/nov/04/un-nuclear-inspectors-shut-down-russian-dirty-bomb-claim-against-ukraine.

Eisenhower, Dwight D. "Atoms for Peace." IAEA, 8 December 1953. https://www.iaea.org/about/history/atoms-for-peace-speech.

NPT Review Conference. "Humanity 'One Misunderstanding, Miscalculation Away from Nuclear Annihilation', Secretary-General Warns as Non-Proliferation Treaty Review Conference Begins." United Nations, 1 August 2022. https://press.un.org/en/2022/dc3845.doc.htm.

Office of Nuclear Energy. "Nuclear Fuel Facts: Uranium." Department of Energy, Accessed 2023. https://www.energy.gov/ne/nuclear-fuel-facts-uranium.

Wellerstein, Alex. "Remembering the Chicago Pile, the World's First Nuclear Reactor." New Yorker, 2 December 2017. https://www.newyorker.com/tech/annals-of-technology/remembering-chicago-pile-worlds-first-nuclear-reactor