

Committee: General Assembly (GA)

Topic: Proliferation of Nuclear Energy



Theme of AUSMUN 2024

The theme for this year's AUSMUN is "Forging Tomorrow with Yesterday's Lessons". Dating back to 500 BC, great minds such as Confucius have spread this ideal: "Study the past, if you would divine the future". During a typical Model United Nations conference, delegates are expected to learn from their country's past and, in many cases, actively rewrite it. Historical knowledge when used effectively can lead to informed decisions; by reflecting on what has and has not worked in the past, collectively we are able to gain perspective on current and future policy. We encourage delegates to keep this ideal in mind while wrestling with the nuances and complications inherent in the ideas of modern day problems.

AUSMUN is committed to actively serving its community and combating pressing issues. As we continue to expand in numbers, we further seek to expand our positive impact on the world around us. We are proud to announce that we have partnered with Dress for Success, a non-profit organization that enables women to become economically independent by offering professional clothing, a network of support, and the resources necessary for both personal and professional growth. By participating in AUSMUN 2024, in addition to debating "model" policy, you are actively bettering society and changing the world.

The 2024 AUSMUN board is honored to host all delegates for our largest conference yet. We cannot wait to see what delegates bring forward to each committee in their efforts to embody values of collaboration and this year's theme. Looking twenty twenty-forward to seeing you!

Rationale

With the threat of a climate calamity and the dire need to find new sources of energy, it is more relevant now than ever to consider nuclear energy. Non-renewable sources such as oil, coal, and natural gas have been shown to perpetuate negative effects on the world through the promotion of climate change, global warming, pollution and more. These effects will eventually become so harmful that non-renewable resources will not be worth harvesting. However, while a switch to alternative energy sources will become necessary to secure the future of humanity and the well-being of the planet as a whole, options such as nuclear energy may also have unwanted drawbacks. Many citizens and governments harbor concerns over the safety of utilizing fission power as its use may harm both people and the environment in the event of uncontrolled reactions. On the other hand, proponents of the recourse see the high power output, low carbon emissions, relatively low amount of waste and extremely low fail rates to be too promising a temptation to pass up and believe in the ability of governments and private organizations to regulate the use of nuclear reactors safely. The question of how to safely navigate energy needs while balancing sustainability concerns is one delegates must answer, expressing their nation's views on the use of nuclear energy and working together to find a solution to this issue.

Background of the Issue

Nuclear fission, the process used in current nuclear power plants, was first developed and tested through the Manhattan Project in 1945, infamously creating the first nuclear weapons. The technology would not be used for power generation until the 1950s. First used to fuel

submarines, it made its way to the commercial market with the first nuclear power plant opened in the United States in 1957 (History 2021). Nuclear energy use has waned and expanded throughout the decades, being seen as a significant step forward toward clean, efficient energy production as well as far more sustainable compared to fossil fuels. The leading climate scientist in the U.S., Dr. James Hansen, has reported that an estimated 1.8 million lives have been saved globally by nuclear energy that would have been taken by the pollution caused by the exploitation of fossil fuels (Jogalekar, 2013). Nuclear energy also creates a large amount of power, with the relative fuel use being minor compared to the huge amount of energy released during fission reactions. However, there still remains the issue of generating dangerous waste, and it has been long debated where and how the waste should be stored. In addition to arguments against the use of nuclear energy, it has been noted that uranium may also be a finite resource, although it can be exploited at a far more sustainable rate than fossil fuels. In response, other radioactive fuels can and have been developed for use, including the safer and more common thorium (Thorium, 2020). Nuclear energy is also net energy negative, meaning the energy used to supply and construct the plant is more than the energy produced. The actual production of energy itself is carbon neutral, but the mining, enrichment, transportation, and other costs associated with nuclear energy contribute to its carbon footprint (Tyner, 1988). The biggest pushback for nuclear energy has been the vast amount of media-covered accidents, which have characterized nuclear energy as unsafe and dangerous. Despite the case for this type of energy being dangerous, recent advancements have contributed to nuclear energy becoming much safer. Many of these accidents have occurred due to mismanagement or in the case of Fukushima, natural disasters. Areas that are disaster-prone with events such as tsunamis, hurricanes, and earthquakes are not ideal for nuclear energy, but modern plants do have numerous safety features

to ensure that even in dramatic events, a disaster would not occur (Wilkerson, 2016). However, the deployment of nuclear energy has been slowed by a few widely publicized incidents, primarily Chernobyl, Three Mile Island, and Fukushima (ibid). These accidents have put a fear of nuclear energy in the public conscience despite advancements in safety and the extreme nature of most of these accidents. Nuclear power has declined in recent years in favor of other renewable sources more accepted by the public, but it still accounts for around 10% of the world's total electricity production. (Ritchie, 2020).

Contemporary Evidence

Within recent decades the effects of climate change have been ever more prominent. Although the oil and natural gas industry has provided the world with energy, it has also adversely affected our climate. To curb disturbing trends of extreme heating and cooling alongside unpredictable weather patterns, a drastic transformation of how the planet receives power is becoming increasingly necessary. It is in this light that nuclear energy presents an option that is both sustainable and effective. However, its use has been a heavily debated topic seeing as it presents a complex issue regarding safety and sustainability. Not only does its utilization produce radioactive waste, but an uncontrolled reaction could result in the unprecedented pollution of all corners of the biosphere (Nuclear Explained, 2022). Nuclear reactors utilize uranium, or more specifically U-235, for fuel because U-235 atoms are easily split apart (Nuclear and the environment, 2021). Furthermore, extensive amounts of water are required for the cooling process of the reactor. In short, nuclear reactors heat up in the process of creating energy, therefore using water to cool these systems. These systems can use up to one

billion gallons of water a day which is why many power plants are built near bodies of water. This water is eventually pumped back into the body of water it originated from, which can increase the temperature of the water source and pose a risk to native aquatic life (World Nuclear Association, 2020). Another issue is the dangerous processes necessary to extract uranium from the ore. One process, called milling, crushes the ore and uses strong chemicals to dissolve the uranium, which is then cooled into rods. The leftover wastes from the process remain radioactive for years and pose harm to the environment (“US EPA”, 2021). These negative impacts, as well as the urgency for renewable energy sources, make the regulation and reformation of how we choose to use nuclear energy pertinent. Although there are large issues at hand with the implementation of nuclear energy, many countries have begun to take different approaches to resolve them. France, Japan, Belgium, and Russia have begun to recycle leftover plutonium, a man-made element that is created from the process of nuclear fission to generate electricity. Additionally, China has begun to create new thorium reactors with plans to become a major pioneer in the rising industry. Overall, many countries have begun to realize the ability of nuclear energy and the prospects it could bring, choosing to pick the benefits over the potential risks.

Directive

With a complex and multifaceted topic such as this one, it is important to create an equally complex solution that addresses the issue wholly. As many of the problems faced within this topic are country-specific, communication between nations is vital in creating a functioning solution. We advise the room to focus most directly on the positives and negatives of nuclear energy, whether nuclear energy should be included in the future of energy production, its

impacts, and whether prospective energy sources should be implemented globally. The following are questions delegates should consider when researching and debating:

1. Is nuclear energy safe and affordable enough to be implemented as a reliable energy source worldwide?
2. What are the risks and benefits of using nuclear energy as it impacts countries' economies?
3. If the world should switch to nuclear energy, what safeguards should be put in place to minimize the risks of nuclear disasters?
4. What role should developed countries play in assisting developing countries to increase their access to nuclear energy?

Resources for Delegates

[Nuclear Power in the World Today](#)

[How Nuclear Energy Works](#)

[Pros and Cons of Nuclear Energy](#)

[Advantages and Disadvantages](#)

[Nuclear Energy Generation Data](#)

Delegations

1. **Argentina** - Argentina has three nuclear reactors in use but plans to build more in the future, one of which China National Nuclear Corporation would build in an agreement

between the two nations. Furthermore, Argentina has a hold on large amounts of uranium, which could be the main source of fuel for the Americas in the near future.

[Nuclear Power in Argentina](#)

[Argentina: the future of uranium](#)

2. **Australia** - Australia has never had a nuclear power station despite hosting 33% of the world's uranium deposits. Despite various efforts made by the Australian government, coal, gas, and oil have always been cheaper in comparison. Nuclear power is currently illegal in every state and territory, but renewed interest in the last decade has challenged these laws.

[Should Australia Build Nuclear Power Plants](#)

[Australian Electricity Options: Nuclear](#)

[Uranium Mining in Australia](#)

3. **Brazil** - The Federative Republic of Brazil has developed two nuclear power plants equivalating roughly 3% of the country's electrical usage. The country is a key advocate for the effectiveness of nuclear energy, helping to broker the 2010 Tehran Agreement. Although relations have since improved, the country is extremely secretive regarding nuclear energy, not allowing the IAEA to view certain aspects of its facilities.

[Nuclear Power in Brazil](#)

[IAEA and Brazil's ABDAN Agree to Step Up Cooperation on Nuclear Power](#)

4. **Canada** - Canada is one of the world's largest exporters of uranium, second only to Kazakhstan. In addition, 15% of Canada's energy is sourced from nuclear energy with plans to increase the amount in the coming years. Canada also remains a powerful nation in regards to nuclear research, and contributes to the global understanding of nuclear power for sustainability.

[Nuclear Power in Canada](#)

[Uranium and nuclear power facts](#)

5. **China** - China is the second largest user of nuclear energy worldwide, currently in possession of 54 nuclear reactors. Furthermore, although only 5% of China's total energy production originates from nuclear energy, the nation's current leaders plan to build 150 more reactors over the next fifteen years.

[China's Climate Goals Hinge on a \\$440 Billion Nuclear Buildout](#)

[Top ten nuclear energy-producing countries](#)

6. **Ethiopia** - In addition to voting in favor of the Treaty on the Proliferation of Nuclear Weapons, Ethiopia has signed a roadmap of bilateral cooperation for the development of atomic energy for strictly peaceful purposes with Russia. The country has also signed several agreements with the IAEA as well as Korea and China. The country is currently rapidly developing its nuclear energy.

[Ethiopia to Develop Nuclear Power with Korea's Support.](#)

[Ethiopia - Energy](#)

7. **Finland** - The Republic of Finland has established itself as a leader regarding the proliferation of nuclear energy. With five total nuclear reactors producing 33% of the country's energy needs, Finland is actively expanding nuclear energy development while simultaneously investing in other forms of renewable energy. The start of the Olkiluoto 3 reactor will only increase Finland's reliance on nuclear energy.

[Overview of the OL3](#)

[Nuclear Power in Finland](#)

8. **France** - While 70% of France's electricity originates from nuclear energy, current government policy is dedicated to reducing this to 50% by 2035, with a previous goal of meeting the mark by 2019 having been met with failure. France's role in energy production, and thus its position in the conference, cannot be understated, as the country is the world's largest exporter of electricity, making around 3 billion dollars a year from exporting electricity to neighboring countries. The current recently re-elected president, Emmanuel Macron, has vowed to open six new nuclear reactors and re-establish France's nuclear prowess which it has "fallen behind" globally.

[Nuclear Power in France](#)

[France Announces Nuclear Power Buildup](#)

9. **Germany** - Majorly opposed to nuclear energy, Germany has nearly removed all nuclear reactors after the 2011 Fukushima disaster. In addition, Germany is a large exporter of natural gas, oil, and coal, which has discouraged further development of nuclear energy in the country.

[Nuclear Power in Germany](#)

[Germany rules out extending the lifespan of its nuclear facilities](#)

10. **India** - The country of India operates a total of 23 nuclear reactors. India, along with three other nations, did not sign the Nuclear Non-Proliferation Treaty due to their support of a complete nuclear weapons ban. India has ambitious plans to increase the number of nuclear reactors to ten over the next three years in accord with their infrastructure development programme.

[Nuclear Power in India](#)

[India plans to build ten nuclear plants over next three years](#)

11. **Iran** - One nuclear reactor is currently in operation in Iran, after many years of construction. Iran's nuclear crisis, fueled by its nuclear enrichment programs which it has stated are entirely peaceful, has been suspected to be a cover to develop nuclear weapons in the US and other Western countries. A deal was reached to lessen sanctions in turn for the end of nuclear research, however the Trump administration abandoned these policies and returned sanctions to their prior status.

[Nuclear Power in Iran](#)

[Iran Nuclear Crisis](#)

12. **Israel** - Currently operating only research reactors, Israel has looked into civilian nuclear energy production in the past. Israel is a nuclear powerhouse, but maintains a policy of nuclear "opacity," neither confirming nor denying its nuclear weapons programs.

[Nuclear Threat Initiative - Israel](#)

[Nuclear Energy in Israel](#)

13. **Italy** - Italy is the second largest net importer of electricity, primarily from France and Switzerland. Following the Chernobyl disaster, it instituted a nuclear phase-out in 1987 which has led to a high reliance on imported oil and gas, making electricity on average much more expensive for Italians compared to other European nations. Recent legislation posed by the Italian government to switch to nuclear has been repeatedly shut down through referendums.

[Nuclear Power in Italy](#)

[Italy 2022 - Country Nuclear Power Profiles](#)

14. **Japan** - Japan has 33 nuclear reactors in operation but have had a total of 27 shutdowns. After the Fukushima incident, there were widespread protests to remove nuclear energy, and large amounts of Japan's energy had to be imported. There continues to be political unrest regarding a balance of popular demand to ban nuclear power and governmental demand for energy sourcing.

[Nuclear Power in Japan](#)

[Nuclear Power 10 Years After Fukushima: The Long Road Back](#)

15. **Kazakhstan** - 41% of the world's uranium from mines is produced in Kazakhstan, making it the leading global exporter. It has made several proposals to construct nuclear

power plants but currently has not constructed any. Kazakhstan instead produces nuclear fuel pellets, aiming to eventually sell fuel alongside uranium.

[Uranium and Nuclear Power in Kazakhstan](#)

[Kazakhstan looks to Nuclear](#)

16. **Mexico** - Mexico has two nuclear power plants, accounting for 4% of the country's energy, although they mainly rely on natural gas, which accounts for 55%. The government supports a plan to increase the amount of nuclear power but the reliance on fossil fuels has made this difficult to do.

[Nuclear Power in Mexico](#)

[Mexico 2021](#)

17. **Nigeria** - Though it has no nuclear reactors as of now, Nigeria plans to diversify its energy sources with the use of nuclear energy. Nigeria frequently deals with blackouts and other power-related issues, but they believe nuclear energy would lessen the energy scarcity.

[Nigeria moving ahead on nuclear power plant plan](#)

[Nigeria Commits Itself to Building Africa's Second and Third Nuclear Power Plants](#)

18. **North Korea** - North Korea has no nuclear reactors, although they own multiple nuclear weapons. Furthermore, North Korea plans to begin building nuclear generators and

already has millings to extract uranium. There have been several nuclear tests conducted despite international disapproval, most recently occurring in 2017.

[North Korea - The Nuclear Threat Initiative](#)

[N.Korea can produce more uranium than the current rate, report says](#)

19. **Pakistan**- Nuclear energy currently provides 8% of Pakistan's energy, with 6 currently operable reactors supplied by China. It is not a party to the global Nuclear Non-Proliferation Treaty because of its weapons program, meaning Pakistan has limited access to the global nuclear market, limiting its civil nuclear capabilities.

[Nuclear Power in Pakistan.](#)

[Pakistan's largest Chinese-built Nuclear Plant starts Operating](#)

20. **Russia** - 35% of the world's enriched uranium is produced by Russia. Nuclear development has become a key part of its strategy to export influence abroad by constructing nuclear reactors and exporting nuclear technology. Over 20 new reactors are planned for construction and foreign orders amounted to \$133 billion in 2017. Recent events between Ukraine and Russia have delayed these efforts.

[Nuclear Power in Russia](#)

[Russia's Role in the World's Nuclear Energy Industry](#)

21. **South Africa**- South Africa is the only nation within Africa with a working nuclear power plant. Its two nuclear reactors account for 5% of the country's total electricity. The country plans to continue to use nuclear power in future years.

[Nuclear Power in South Africa](#)

[South Africa planning to start nuclear procurement](#)

22. **South Korea** - South Korea is a large user of nuclear energy with 24 active nuclear reactors accounting for around one-third of South Korea's electricity. South Korea exports many parts of its technology, but many question if South Korea should continue to use nuclear energy.

[Nuclear Power in South Korea](#)

[S. Korea likely to return to nuclear power generation under new govt](#)

23. **Spain** - Spain plans to phase out all nuclear reactors by 2035 and lessen their reliability on nuclear power. However, they plan to continue to use other renewable energy sources including wind, the greatest contributor to their renewable energy usage in 2021.

[Spain is Seeking to Lessen its Dependence on Nuclear Energy](#)

[Spain on track to complete nuclear power phase-out by 2035](#)

24. **Sweden** - Nuclear energy produces 40% of Sweden's electricity. Part of Sweden's strategy beginning in the 1960s has been to lessen reliance on oil and gas, and nuclear has been a key part. There have been recent movements, particularly by the Green Party, to phase out nuclear energy, and it has become a hotly debated issue in the country.

[Sweden Split over Nuclear](#)

[Nuclear Energy in Sweden](#)

[Opinion: Sweden's Irrational Nuclear Fear](#)

25. **Switzerland** - The population of the Swiss Confederation is considered divided concerning the proliferation of nuclear energy, with 58% being in favor of the new Energy Act, an initiative phasing out nuclear energy. The country is currently situated on the junction between the Eurasian and Apulian plates, causing concern about the safety of Nuclear energy.

[Nuclear Power in Switzerland](#)

[Where Does Switzerland's Energy Strategy Go](#)

26. **Turkey** - Nuclear energy is an essential component of Turkey's future energy strategy: to decrease dependence on harmful fossil fuels while simultaneously meeting the growing energy demand. The country currently has no operational commercial nuclear reactors but has ambitious plans to build multiple in the coming years. Turkey is committed to the principles set in the Non-Proliferation Treaty.

[Turkey Arms Control and Disarmament](#)

[Turkey Aiming for 20 GW Nuclear by 2050](#)

27. **UAE** - The United Arab Emirates is new to nuclear energy, as it opened its first reactor in 2020, the first of four planned to fuel 25% of its electricity needs. Despite being one of the largest exporters of oil, it has invested heavily in new nuclear reactors as a part of its clean energy initiative and is part of its economic strategy to diversify from fossil fuels.

[The UAE's Nuclear Power](#)

[UAE: A Newcomer to Nuclear Power](#)

28. **Ukraine** - Ukraine has a total of 15 nuclear reactors which generate nearly half of all its electricity. However, the country still receives the majority of its fuel from Russia, and while current leaders have announced plans to lessen such reliance, such a major change in sourcing and the impacts it may have on the national economy mean that such a transformation would take time.

[Nuclear Power in Ukraine](#)

[A brief guide to Ukraine's nuclear power plants](#)

[Ukraine Demonstrates Problem with Nuclear Power](#)

29. **United Kingdom** - The UK generates nearly 15% of its energy via nuclear. In addition, the UK released an extensive and well-thought-out ten-point plan for a green industrial revolution, where one solution was to deliver new and advanced nuclear power.

[Nuclear Power in the United Kingdom](#)

[United Kingdom Nuclear Energy](#)

30. **United States** - The United States is the largest producer of nuclear power on the global scale, accounting for more than 30%, and producing 843 billion kWh in 2019. Domestically, 20% of its electricity is from nuclear energy. However, its growth has remained relatively stagnant over the past few decades despite the new reactors set to be constructed in the coming years.

[US Nuclear Industry](#)

[Nuclear Power in the USA](#)

Works Cited

“History of Nuclear Energy.” *Learn about nuclear energy*,

<https://whatisnuclear.com/history.html>. Accessed 14 April 2022.

Jogalekar, Ashutosh. “Nuclear power may have saved 1.8 million lives otherwise lost to fossil fuels, may save up to 7 million more.” *Scientific American Blogs*, 2 April 2013,

<https://blogs.scientificamerican.com/the-curious-wavefunction/nuclear-power-may-have-saved-1-8-million-lives-otherwise-lost-to-fossil-fuels-may-save-up-to-7-million-more/>. Accessed 14 April 2022.

“Nuclear power and the environment - US Energy Information Administration.” *EIA*,

<https://www.eia.gov/energyexplained/nuclear/nuclear-power-and-the-environment.php>. Accessed 14 April 2022.

“Radioactive Waste From Uranium Mining and Milling | US EPA.” *US Environmental Protection Agency*, 9 August 2021,

<https://www.epa.gov/radtown/radioactive-waste-uranium-mining-and-milling>. Accessed 19 April 2022.

Ritchie, Hannah, and Max Roser. “Nuclear Energy.” *Our World in Data*, 2020,

<https://ourworldindata.org/nuclear-energy>. Accessed 14 April 2022.

“Thorium.” *World Nuclear Association*, November 2020,

<https://world-nuclear.org/information-library/current-and-future-generation/thorium.aspx>. Accessed 14 April 2022.

Tyner, Gene, et al. "The net-energy yield of nuclear power." *ScienceDirect*,
ScienceDirect, January 1988, The net-energy yield of nuclear power. Accessed 26
April 2022.

"What is nuclear waste and what do we do with it?" *World Nuclear Association*,
[https://world-nuclear.org/nuclear-essentials/what-is-nuclear-waste-and-what-do-w
e-do-with-it.aspx](https://world-nuclear.org/nuclear-essentials/what-is-nuclear-waste-and-what-do-we-do-with-it.aspx). Accessed 26 April 2022.

World Nuclear Association. "Cooling Power Plants | Power Plant Water Use for Cooling -
World Nuclear Association." *World-Nuclear.org*, 2020,
[world-nuclear.org/information-library/current-and-future-generation/cooling-pow
er-plants.aspx](https://world-nuclear.org/information-library/current-and-future-generation/cooling-power-plants.aspx).

Wilkerson, Jordan. "Reconsidering the Risks of Nuclear Power - Science in the News."
Science In The News, Harvard University, 25 October 2016,
<https://sitn.hms.harvard.edu/flash/2016/reconsidering-risks-nuclear-power/>.
Accessed 14 April 2022.