Deleglobe Model United Nations 2022

UNDP

Committee Background Guide

Written by: Samuel Knijnik

BACKGROUND GUIDE

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Written by: *Samuel Knijnik Werneck Martins*

Special thanks: *Eduardo Burmeister Guariglia*

Henrique Sant'anna de Oliveira

Zezhou Wang

Hammon Vieira Dutra

International Atomic Energy Agency (IAEA)

LETTER FROM THE SECRETARIAT:

My name is Samuel, I am the founder of Deleglobe and it is an honor to introduce myself as your host! I live in Porto Alegre, Southern Brazil, and have taken part in MUN-associated activities since 2019, and it was instant love when I stepped inside a committee room for the first time. Since I was a little boy, I have always been addicted to the international background once my alphabetization process was basically with the World Cup 2006 Sticker Album. This unique piece that made me learn about different countries and want to understand everything about the rest of the world is doubtlessly something that changed my life. After the sticker album, an Atlas book came, brutally feeding that hungry boy with more international knowledge to a point he knew every single country flag and capital city out there.

Today, that little boy has kinda brought his craziness to a limit when he decided to create Deleglobe! More importantly, he looks eagerly forward to sharing endless knowledge through a genuinely unforgettable experience at DegloMUN by Deleglobe. As the founder of Deleglobe, I am committed to sharing passion in everything I do within this project's scope for I truly believe

that we cannot make others feel passionate about something that we're sharing without passion at all.

For those who are novice participants in this crazy but life-changing thing called Model United Nations, what I can essentially point out about my first actual conference is that, even though I am an absolute chatterbox, it was all about a boy who had a lot more to share. However, he limited himself; he was shy and thought he had nothing important to say there. Nonetheless, he was surrounded by incredible friends, who told him to continue and not give up. Something that makes me feel eternally grateful is that these people who knew my essence encouraged me to be myself and give everything I got because they knew I could reach the top. Subsequently, I started thinking out of the box and being the opposite of that shy boy I had been. Accordingly, positive results began to come up as a natural consequence of my commitment, and I have never stopped being fearless in my work since then. Inevitably, my advice for each of you still in such an arduous process is simple: trust yourselves and never give up on your friends.

Regarding the importance of supporting today's youth, I declare myself open to help you with basically everything you need because I am convinced that you are absolutely capable of reaching higher than you ever thought you could. Summing up, I hope you commit yourselves so as to truly achieve that most superb version of yourself and, more importantly, enjoy the conference because being happy is always the most important part! I hope my mission of sharing inspiration goes successful and wish you all a formidable time!

With love,

- Samuel Knijnik, founder of Deleglobe.

COMMITTEE INTRODUCTION

The United Nations Development Programme was established in 1966 as a merger of the Expanded Programme and the United Nations Special Funds.

The original Expanded Programme aimed to support economic development while the United Nations Special Funds was committed to providing technical assistance and developmental

training. After the merger, the UNDP assumed both of these roles. From eradicating desert locusts in the 1970s to supporting Argentina's return to democracy in the 1980s to fighting HIV in the 1990s, the UNDP has played a critical role in tackling critical development challenges in the world. Currently, the UNDP is largely focused on tackling its 17 Sustainable Development Goals by 2030 (one of which is electrification), as well as monitoring the status of Human Rights and gender equality around the world. Additionally, it partners with both the private sector and world governments to secure the funding needed to address these issues.

One good resource to better understand the history of the committee is the UNDP 50 year anniversary guide, titled "UNDP at 50; A Short History." That provides a clear, succinct overview of the origins of the committee, its activities and initiatives over the last five decades, and what it hopes to achieve in the future.

When it comes to this committee's jurisdiction and range, it is vital to see UNDP as it essentially is: a UN body that operates as a joint coalition for general development that determines special guidelines for countries to be directed to proper pathways of human development as a whole, evaluates whether countries and regions, considering each territorial, social, and cultural particularity, need special attention on reaching development on a specific field, and draws agendas and plans of development that count on UN special funds. Therefore, all solution proposals and potential actions to be taken must work as auxiliary measures that will grant that the objectives that receive investment from this fund's budget are properly accomplished. In other words, it means that solutions are there to present mechanisms to help, metaphorically, "70 million dollars solving child hunger in Namibia", as an exemple, and all solutions must consider that each proposal serves as an action that will be funded by the own yearly budget that UNDP receives from the Fifth Committee of the UN General Assembly (ECOFIN) and the Advisory Committee for Administrative and Budgetary Questions (ACABQ), except for in-state actions, such as clauses that will suggest, urge, or request that countries employ national efforts to solve the related problem. The UNDP can expose guidelines for countries to behave in a specific field, although they are not inherently mandatory. Nonetheless, to mean that in-state actions determined by the UNDP are not mandatory does not mean that they do not rigorously serve as an international guideline that can determine exactly what "following the guidelines for reaching development" is, and that leads to countries that do not follow what this committee plans being further classified as "emerging" or

"developing" country on a specific field. To better understand that, here's an example: if the UNDP agrees to recommend that development is reached by prioritizing renewable sources of energy over non-renewable, Germany is not mandated to follow it; however, if Germany keeps using non-renewable sources of energy in a long term, it will be of worldwide notoriety that, on the ambit of sources of energy, "lacks development". Keep that in mind, because factors like that are going to be crucial for the understanding of the topic of discussion's complexity.

Discussing the topic of atomic energy for sustainable development, delegates will have to fundamentally have in mind that the most feasible solutions for the specific context in which they'll be exposed to are those that consider territorial, economic and historical particularities of each and every region of the globe; it is all about capillarity and providing proper conditions for countries to be able to consider adopting the model of atomic energy or not, since many do not exactly have access to conditions to apply it, regardless of their interest (or not) to adopt this model presently, or whenever they decide to consider such a change. Furthermore, it is fundamental to draw special attention to the root causes that bring about a problematic scenario in universalizing atomic energy as a major source in many countries, which are not necessarily "problems" but it can only be determined when the committee establishes a clear concept on this topic. For instance, if countries come to a consensus about atomic energy being fundamental (or even beneficial) to reach sustainable development, that means not being able to access ought to be linked to a "problematic scenario that countries face as an obstacle to reach sustainable development or at least to access a major source that will help them accomplish these goals".

In this sense, here's a helpful question to be brought to discussion:

- "How has the situation been drawn to a *status quo* in which most countries do not count on this source of energy as a major source that serves affordably, safely, renewably, and efficiently?"

Look at these four elements once again:

- Affordability;
- Safety;
- Renewability;
- Efficiency.

In analysis, measures to strike the root causes expose a bias: is sustainable development feasible and accessible? In conclusion, it is essential to consider as this committee's ultimate goal the provision of accessibility on deciding whether to adopt atomic energy or not; countries that depend on energy generated by other nations need to draw even more attention to this matter.

UNDERSTANDING "SUSTAINABLE DEVELOPMENT"

To adequately understand what this committee requires from delegates to debate, a fundamental concept that must be unwrapped is "sustainable development". Sustainable development is an organizing principle that aims at a consensus between human development and natural resources capability on which society and the economy depend .The expected result is to create a society where the resources supply human needs without undermining the natural environment, therefore, bringing balance to the human development and natural needs.

Sustainable development has its roots in ideas from sustainable forest management developed in Europe during the 17th and 18th centuries. Responding and awareness due to the decrease of timber John Evelyn argued, in his 1662 essay Sylva, that "sowing and planting of trees had to be regarded as a national duty of every landowner, in order to stop the destructive over-exploitation of natural resources." The *Brundtland Report*, released in 1987, includes a definition of sustainable developed that is widely spreaded around the world:

Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:

The concept of 'needs', in particular, the essential needs of the world's poor, to which overriding priority should be given; and the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future necessities. Furthermore, although the concept of sustainable development developed itself beyond the initial idea, it could focus on a more broadly social-economic side of the question, specially in the regards of inclusion and economic growth. The Agenda 21, a mark on the sustainable development history, added information,integration and participation as essential matters so countries can achieve development

that fit in the pillars of sustainable development. There are three pillars to sustainable development: the environmental, the economic and the social pillars. Some authors broaden the topic adding extra pillars like culture, institutions or governments. The United Nations Sustainable Development Goals were implemented in 2015 as universal measures to reduce poverty, protect the planet and ensure prosperity. The 17 goals are to be completed by 2030 tackling social economic and environmental issues, in this commit we will focus on the environmental and energy-related questions.

Goal number 7 discusses the need of possessing affordable and clean energy. Considering that energy produces 73% of the world's carbon emissions, clean energy is needed. There are 3 ways to go when talking about clean energy and reducing the massive carbonic footprint: Solar energy, Eolic energy and nuclear energy. However solar and eolic energy are inconsistent, not all days are sunny days and winds may not be as strong as needed,on the contrary, nuclear power is consistent- the reason why 10% of the world's electricity is produced by it. Carbonic emissions in these 3 ways of power generation are reduced. The 7th point also talks about the number of people who do not have access to electricity- 1 out of 10- and the need to enhance accessibility to electrical energy, and also how countries will ensure universal access to affordable, reliable and modern energy sources.

As a brief conclusion to this section, it is vital to reinforce that this committee is not restricted to SDG number 7, and an affirmation that delegates must bring in notoriety is that SDG 7 is just more directly linked to the topic of atomic energy than others, but the issue to be debated can (and must) end up containing essential points that are inherently linked to other SDGs that will end up being indirectly affected by the discussion of “Atomic Energy for Sustainable Development” as a whole.

SOURCES OF ENERGY IN THE PRESENT TIME

Energy is a contentious issue in today's world; some nations have an abundance of energy resources, some have more limited access, but all nations need it to run their economy. Despite this, in using energy sources such as coal, natural gas and oil, carbon dioxide and other greenhouse gasses are emitted in the atmosphere. This contributes to the phenomenon of climate change. In this committee, delegates can discuss ways in which to transition to cleaner energy sources. In making this transition, countries will reduce their carbon footprint, as well as achieve "energetic independence" – a powerful concept in geopolitics that means to countries that do not purchase energy from another country. Political, economic, and social considerations must be considered in any and all proposals, and coalition building is necessary to pass any resolution.

SDG 7: ACCESSIBLE AND CLEAN ENERGY

Access to affordable, reliable, sustainable and modern energy is the focus of SDG 7. It is underpinned by three targets: ensuring universal access to energy services, increasing the share of renewables in the energy mix, and improving energy efficiency. The priorities for implementing sdg7 are to enhance international cooperation and promote investment and to expand

infrastructure and upgrade technology in developing countries. While SDG 7 contains the fewest number of targets of any sdg (along with SDG 13), it is no less important a development priority. Indeed, modern energy is fundamental to human development: it launched the industrial revolution more than two centuries ago and has contributed to the near-continuous economic growth that has been achieved globally since that time. The services that energy makes possible – from mobility to manufacturing, agriculture to heating and lighting – are ubiquitous in the industrialized world, and have been around for so long that people commonly take for granted what makes these services possible. Not everyone has enjoyed the benefits that modern energy forms can provide, however. Energy resources are unevenly distributed around the world, and where they exist and are relatively easy to produce, the necessary energy extraction and conversion infrastructure (e.g. gas drilling, oil refineries, wind turbines, electricity transmission lines) requires significant sums of money to bring online. Constraints to financial and human capital often result in some among us being left out of the modern energy society. Achieving the targets of SDG 7 will impact, and be impacted by, progress along the many other SDG-related dimensions Yet, while this is the focus of the current chapter, it is also important to note that there are interlinkages (some positive, others negative) between the three energy targets themselves. For example, distributed sources of renewable energy (solar, biogas) could help rural communities achieve energy access. Doing this via a more centralized, infrastructure-heavy approach would also be possible, but there is a risk that elevated energy prices could cause some households to forego access to the network. The energy efficiency target, meanwhile, is a "win-win" strategy on essentially all accounts. Every unit of energy saved, either through technological or behavioral/conservation means, is a unit that does not need to be produced. This, in turn, lowers the energy requirements for renewables expansion and universal access provision, thereby easing the burden of attaining each. The text that follows provides an overview of interactions at the goal level between SDG 7 – the 'entry level goal' for this assessment – and the other 16 SDGs. Taking into account all the underlying targets of this entry goal, a set of key interactions is identified between the SDG 7 targets and those of other sdgs, principally interactions within the range of the highest magnitude or strongest impacts based on available scientific literature and expert knowledge. The typology and a seven-point scale for characterizing the range of positive and negative interactions described in the opening chapter to this report is used to assess the selected target-level interactions and the context in which they

typically occur. Illustrative examples from different world regions show how these linkages manifest in practice. Policy options are identified for how to maximize positive interactions and minimize negative interactions between now and 2030, and beyond.

Energy is connected to all human activities and is the engine for economic sectors like agriculture, industry, commerce and transportation. Still, at least one billion people live without even access to electricity; that means development is already far from humanity in integrity, and sustainable development is, consequently, even farther. Therefore, it is necessary that delegates adequately ponder the balance (that is unbalanced) between access to affordable energy and access to energy and, in this sense, evaluate the capillarity of energy sources in the current scenario worldwide.

TOPIC AREA: ATOMIC (NUCLEAR) ENERGY ITSELF

It's time for humanity to face up to the facts: the climate is changing, and drastic steps must be taken in the near future to mitigate the extent to which it changes. A concerted effort must be made to improve and to innovate, especially in the energy sector. This committee will address the complicated future of nuclear energy, a power source with two faces: it is simultaneously an attractive alternative to fossil fuels and expensive renewable energy options and a devastating disaster waiting to happen—a nuclear time bomb. However, in the short-term future, the international community, led by the UN, will have to decide whether to continue shunning nuclear energy or to embrace it. In the next century, the viability of fossil fuels will be put to the test as a result of man-made climate change, and as of yet the international community has no effective alternative energy source other than nuclear energy. To meet its 2050 climate mitigation goals under the 2015 Paris Climate Accords, the European Union will likely have to transition a significant portion of its electricity production to nuclear power, with some estimates predicting that at least 25% of its energy will need to come from nuclear power. Nevertheless, although the Paris Climate Accords recognize nuclear power as a necessary ingredient for the world to reach its climate mitigation goals, they provide no clear standard for implementing nuclear energy around the world—if that even constitutes a sound policy idea at all. That will be the task of this committee: to set a course for nuclear energy in the 21st century, one that accounts for the imminent dangers of climate change but also maintains nuclear security around the world.

Figure owned by "Massachusetts Peace Action". Photo taken by Seth Wenig, 2019.

In a 1939 letter to US President Franklin Delano Roosevelt, the historical theoretical physicist Albert Einstein once predicted "that the element uranium may be turned into a new and important source of energy in the immediate future." However, in that very same letter, Einstein also foreshadowed the dark side of uranium: its central role in the creation of "extremely powerful bombs." Since 1939, both of Einstein's predictions have come true, albeit in a different order than he expected. On 4 August 1945, the United States dropped the world's first atomic bomb on the city of Hiroshima, Japan, but it was not until 20 December 1951 that a small nuclear reactor generated the first electricity from nuclear energy. This dual, self-contradicting nature of nuclear technology—simultaneously a disturbing weapon and a powerful energy generator—has made it particularly controversial over its lifetime.

In the post-World War II years, however, nuclear technology was at the forefront of energy advances, and many countries were optimistic that it could be harnessed to provide cheap, clean energy for the foreseeable future. The 1960s saw the introduction of new innovations like General Electric's light-water reactor in Oyster Creek, New Jersey, that made nuclear energy far cheaper than energy generated by conventional gas power plants. These innovations made nuclear energy

more feasible and more appealing in the United States and internationally. Between 1954 and 1980, the number of nuclear power plants under construction around the world grew exponentially from close to zero to over 234. In 1973 alone, US utilities ordered a record 41 new nuclear power plants, and by 1987, there were over 400 operable nuclear reactors in the world. In the late 1990s nuclear energy provided 17.6% of the world's electricity—but here it reached its zenith. Nevertheless, nuclear energy's startling popularity was also the cause of its decline. As demand for the construction of new plants increased, it became more difficult for contractors to produce and ship the materials required to build the reactors in a short amount of time. As a result, many projects were delayed or completely stalled, and costs nearly tripled. Moreover, accidents like the partial meltdown of the Three Mile Island Nuclear Generating Station in the US (1979) and the total meltdown of the Chernobyl Nuclear Power Plant in the USSR (1986) drew more attention to the safety risks involved in the construction of nuclear power plants. Regulatory concerns and safety issues like the vulnerability to nuclear reactors in California to earthquakes slowed the growth of the nuclear energy industry. After the Three Mile Island accident, all 51 nuclear power plants under construction in the US faced significant delays, some lasting over 10 years. Between 1978 and 2013, not a single new reactor began construction in the US, and the nuclear energy industry was effectively shut down by strict regulations and exorbitant costs. Outside of the US, other countries—including France, Canada, Japan and South Korea—have managed to reduce the cost of producing nuclear energy, even if the global trend in the popularity of nuclear energy has been in decline. Still, the progress of their nuclear energy programs has been delayed due to public safety concerns, especially in the aftermath of the Japanese Fukushima Daiichi nuclear accident in 2011. Since then, Japan has been slow to reopen its 54 nuclear reactors; in 2018, only nine were operational. The most influential concerns about nuclear energy in recent years are undoubtedly those related to its safety rather than its costs. Until countries can address the public's deep uncertainty about—and even distrust of—nuclear energy, the large-scale construction of nuclear plants may remain unique to the 20th century.

As of 2018, 50 countries have some form of a functioning nuclear power program. These countries include Argentina, the US, Iran, Russia, most of Europe, South Africa, Nigeria, and Indonesia. However, there are some notable exceptions: Iceland, Australia, and Norway, for instance, have never had nuclear reactors, although Australia is one of the world's leading producers of uranium.

Others, like Israel and North Korea, are believed to have advanced research and development programs into nuclear energy, but they do not yet have functional nuclear reactors for commercial use. As of 2012, Official International Atomic Energy Agency (IAEA) reports count 435 operational nuclear power plants with a total combined output of 368,304 megawatts (MW) and an average lifespan of 26 years. This number is down from 444 operational nuclear power plants in 2008, the largest number of plants ever in operation at one time. In the next few years, 63 more plants that are currently under construction may come into operation, adding 61,032 MW of power to the total output of all nuclear power plants. These plants are located in 14 different countries: "China (26), Russia (10), India (6), South Korea (5), Ukraine (2), Japan (2), Slovakia (2), Bulgaria (2) and Taiwan (2) and one block each in Argentina, Brazil, Finland, France, and the USA." The World Nuclear Association claims that 156 more reactors are "planned," but this category of plants has historically been misleading: most "planned" plants are canceled before construction can begin. Three-fourths of nuclear power output comes from power plants in the six biggest nuclear powers—the United States, France, Japan, Russia, Germany and South Korea—and nuclear power only accounts for 13.4% of electrical power worldwide. Currently, renewable energy sources account for 19.5% of global power production, leading some to question whether to prioritize nuclear energy or renewable power sources as an alternative to carbon-emitting power sources. Aside from France, which has the highest nuclear energy output of any country (nuclear energy constitutes 17.3% of France's total energy production), the European Union (EU) appears to be moving away from nuclear energy. Only four reactors are considered "under construction" in Eastern Europe, and three EU member states have shut down their nuclear energy programs, two of them after the 2011 Fukushima Daiichi nuclear disaster. Moreover, thirteen out of the twenty-seven EU member states do not produce nuclear energy for themselves, and as of 2012, only two nuclear reactors are under construction in Western Europe: one in Finland and another in France. These numbers may have changed in recent years, but the overall trend for the past decade has been negative, with nuclear energy suffering political and economic setbacks in a range of countries in Europe.

The IAEA optimistically aims to improve these figures over the next few decades, reaching a total nuclear energy capacity of 1,200 gigawatts (GW) by 2050 that meets 25% of global electricity needs. However, this will require a massive commitment of resources and a reshuffling of the global energy

industry because it would "make nuclear power the single largest source of electricity [...], and hence a major contributor to the 'decarbonization' of electricity supply." It is unclear if the global community has the willpower or the ability to make this optimistic plan come to life. With an increase in construction, costs may rise along with demand for uranium and other sources of nuclear fuel—and hesitant taxpayers will be the ones to ultimately foot the bill. Moreover, the number of nuclear power plants that could possibly go into operation at any one time is limited by the number of trained, skilled nuclear technicians. In order to meet global demand for nuclear power, massive numbers of individuals would have to be hired, trained, and put to work inside nuclear power plants. However, if the global community could pull all of this off, it would take a significant step toward meeting climate change mitigation goals and decarbonizing the world's energy supply. But first, what does a typical nuclear program look like? A nuclear power program can take many forms depending on the economic, social, and physical resources available to the country developing it. In its early stages, a nuclear program is likely overseen in its entirety by the government, and it may not be available for commercial power production. In many places, as was the case in the US in the 1960s, the construction of nuclear reactors is heavily subsidized and encouraged by the government. In a loosely-regulated economy, the government's sole control over the nuclear program generally lasts until the program has reached acceptable levels of safety and efficiency and can be opened up to private investment and commercial usage. In stricter, more government- centered economies with government-run utilities, the nuclear program may never become open to outside investment. A nuclear reactor is essentially a high-tech, complicated way of boiling water. In most electricity-generation methods, some power source is used to spin a turbine, which in turn creates electricity. The power source is usually high-pressure steam, created by burning coal, natural gas, or oil. Nuclear power plants, however, do not burn anything; instead, they rely on the energy released from splitting uranium atoms in a self-generating chain reaction called fission. This energy is absorbed by water that surrounds the uranium core of the nuclear reactor, generating steam that spins a turbine. Because nothing is burned in the process of nuclear fission, nuclear reactors release no immediate byproducts into the atmosphere. This differs from conventional methods of power generation, which all release byproducts in the form of greenhouse gasses like sulfur dioxide and carbon dioxide. Nuclear fission should not be mistaken for nuclear fusion, its close but very different cousin.

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As discussed above, nuclear fission is the natural process by which atoms decay and release energy and radioactive particles. Fission requires no outside prompting to occur, making it a fairly easy process to use for generating nuclear energy. All modern nuclear power plants run on the process of nuclear fission. Nuclear fusion, on the other hand, occurs when two atoms—usually hydrogen atoms—are forced together in spite of their repulsive forces in order to form a new atom— usually helium. This process only occurs in places with extremely high pressure or heat, often in the centers of stars or during hydrogen bomb detonations. Currently, researchers are trying to use lasers and strong magnetic fields to artificially create nuclear fusion, but a self-sustaining fusion reactor is decades if not centuries away from becoming a reality. In the United States, there are generally two main types of fission nuclear reactors: boiling water reactors (BWRs), which heat water until it turns to steam and spins a turbine, and pressurized water reactors (PWRs), which keeps the water under pressure so that it does not boil and then uses that pressurized water to heat another, separate water source. For both types of reactors, the greatest risk is a loss of coolant accident (LOCA), which could cause the reactors to overheat and melt down, releasing harmful radiation into the atmosphere. Although most modern reactors have an emergency core cooling system (ECCS) to stabilize the core in the event of an accident, the risk of a LOCA is always at the front of the minds of nuclear power plant operators.

TOPIC AREA: ACHIEVING SDG 7 THROUGH ATOMIC ENERGY

There is no doubt that energy is a prerequisite to sustainable development with nuclear power being its essential part. Access to reliable and affordable energy services ensures continuous development both at social and economic levels. SDG 7 is dedicated to providing affordable and clean energy since production and consumption of electricity have an impact on all three pillars of sustainable development — economic, social, and environmental. Stable supply of energy is essential for a long-term comprehensive economic and social development which makes a difference to people's everyday lives at all levels: safety on the streets, telecommunication systems, business processes and modern technologies for education and healthcare largely depend on the efficient operation of energy systems. Unreliable and unstable access to power is one of the top constraints to economic development alongside corruption, political instability, taxes, shadow economy and lack of finance, skills or land. The good news is that the number of people without access to electricity fell from 1.7 billion in 2000 to 860 million in 2018 and by 2030 is projected to fall by 36%, despite an increase in the global population. Developing countries in Sub-Saharan Africa are making progress in decreasing the number of people without access to electricity; however, the electrification rate in this region is still below 45%. Asia has made significant progress in providing access to electricity for people and, in 2016, reached the electrification rate of 89%, while in 2000 the indicator was merely 67%. It is expected that universal access to electricity can be achieved in Asian countries by 2030. Latin America and the Middle East have already reached almost 100% electricity access (99% and 95%, respectively). Even though the trend looks optimistic, by 2030 almost 8% of the world's population, which amounts to 670 million people, will still have no access to electricity. Moreover, the mere access to electricity, which to many sounds synonymous to household access to electricity, is not itself enough to drive forward social and economic development. It is its quality and quantity that matter. It is not uncommon for households to have only low-quality access: limited hours of electricity at low voltage and relatively poor reliability. Few people actually have high-quality and reliable access to power. Power supply should be sufficient and stable while prices should not fluctuate much and should demonstrate predictability in the long run.

The figure below this text is self-explanatory: on average, 4.5% of annual sales are lost due to power outages globally, while for South Asia these losses account for almost 11%. Limited access to power, therefore, goes far beyond just being an electricity and heat issue: it is an obstacle on the way to countries' sustainable development.

	Sub-Saharan Africa	East Asia and Pacific	Europe and Central Asia	Latin and Central America	South Asia	MENA
1st obstacle	ACCESS TO POWER	Corruption	Tax rate	Corruption	Political Instability	Corruption
2nd obstacle	Finance	ACCESS TO POWER	Political Instability	Skills	ACCESS TO POWER	Political Instability
3rd obstacle	Shadow economy	Skills	ACCESS TO POWER	ACCESS TO POWER	Corruption	Land
4th obstacle	Corruption	Political Instability	Corruption	Tax rate	Finance	ACCESS TO POWER
5th obstacle	Tax rate	Tax rate	Skills	Political Instability	Land	Shadow economy

TOPIC AREA: ACHIEVING OTHER SDGS THROUGH ATOMIC ENERGY

Lack of security, availability and reliability of the energy system can become a stumbling block to socio-economic development. For instance, power outages cost African countries ~1–4% of their GDP every year. Moreover, 81% of the global energy mix is still based on fossil fuels, the same percentage as 30 years ago. Recent developments in the renewable energy sector are no doubt extremely significant, and renewables have been recognized as a very rapidly developing energy sector globally both in terms of capacities being installed and in terms of the total volumes of investments. However, the energy sector is still one of the main emitters of CO2 and other GHGs that account for about 67% of total GHG emissions, which worsens climate change. According to the World Health Organization, the health sector suffers an estimated direct damage of USD 2–4 billion each year due to global climate change. As a result, one of the key issues today is how to find the right balance between these two dilemmas: ensuring security of electricity supplies to boost economic development, on the one hand, and combating climate change efficiently, on the other. While some public groups are interested in environmental sustainability, others care more about GDP and income growth, which may go against the climate agenda. Even though fossil fuels can provide the base load essential for economic growth, they barely contribute to climate change

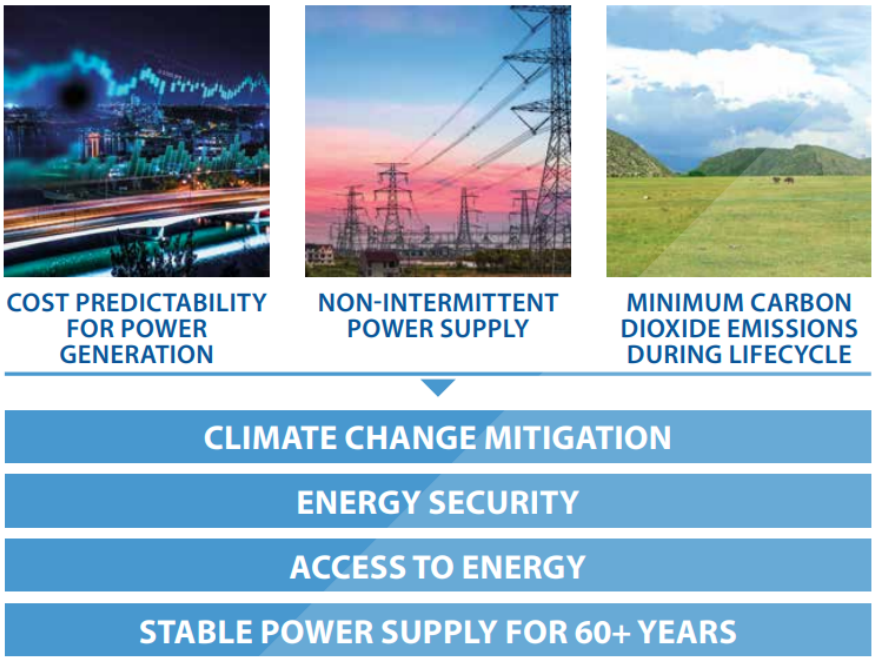
mitigation. At the same time, such low-carbon energy sources as wind and solar are intermittent and pose risks to the security of power supply, which is essential for heavy industries and medical institutions, and the role of nuclear power cannot be overestimated.

Affordability: While nuclear power plant (NPP) construction projects require substantial capital investments, their operational costs make up a relatively smaller share of generation costs. Fuel prices account for less than 20% of NPP power generation costs. While conventional energy sources highly depend on fuel prices, nuclear power costs are hardly affected by fuel price fluctuations, which is crucial when energy sources are imported. This low dependency on fuel prices provides for cost predictability even in the long run and ensures energy security for more than 60 years. Secondly, the fuel campaign for nuclear power is much longer than for other “conventional” energy sources. Uranium has the highest energy value compared to the most common fossil fuels used to generate electric power. While 1 kg of coal provides 8 kWh of electricity, 1 kg of uranium generates 50,000 kWh, a figure which would require 2.7 million kg in coal equivalent. In addition, since all power plants invariably need fuels to operate, longer fuel campaigns typical of nuclear power plants may substantially increase logistics efficiency. For example, a large coal-fired power plant at full load requires at least one daily coal delivery of over 10,000 tons, especially in "peak seasons" when demand is at its highest. Coal burning therefore heavily depends on the capacity to transport coal in sufficient amounts reliably and at reasonable prices. This means that final prices for consumers are affected not only by coal prices, but also by logistics. Nuclear power does not require frequent

fuel deliveries so that reliability of power supply and generation costs do not so much depend on fuel transportation.

Sustainability: The energy industry is one of the biggest CO2 producers. Unlike conventional power plants that have to use fossil fuels, nuclear power plants barely emit CO2 throughout the entire lifecycle. For example, coal power plants emit 820gCO2 eq/kWh during their lifecycle of which almost 760 gCO2 eq/kWh are direct emissions during operation. For nuclear power, indirect emissions of CO2 during the whole fuel cycle from mining to waste treatment is merely 12gCO2 eq/kWh. Besides, NPPs do not have any direct CO2 emissions or any biogenic CO2 emissions. Wind power plants' indirect emissions during lifecycle average 11 gCO2 eq/kWh onshore and 12gCO2 eq/kWh offshore. Solar PVs produce 48 gCO2 eq/kWh of indirect emissions.

Reliability: Nuclear power makes a significant contribution to ensuring energy security and optimizing the cost of electricity. One factor that contributes to energy security is nuclear power plants' ability to be built on a wide range of sites and generate power regardless of climatic conditions. This overcomes the main limitation of renewable energy sources that are non-dispatchable and highly dependent on weather conditions. Today only very few countries in the world can achieve a renewables-only grid — since energy storage is still very expensive. These are well-off and developed countries with predominantly residential electricity consumption and favorable geographical and climatic conditions. Energy intensive industries currently cannot rely on wind or solar power. Therefore, even though renewable sources are clean, the electricity they generate is intermittent. At the same time, nuclear power ensures reliable base load supply during the whole 60+ year lifecycle.



Nuclear energy goes further than just bringing light to houses — it gives the green light to the countries' economic growth and social development while paving the way to combating climate change. All modern economies need power even though different countries have different economic models. Some focus on heavy industry or machinery sectors development that require a reliable source of base load energy. Others develop the service sector driven by public-oriented services such as light industry, agriculture and tourism that require clean and reliable electricity supply when and where it is needed. Digital economies focus on innovation and digital aspects such as the development of data centers, high-tech and computerized services. For them, a stable and reliable source of power is one of the top priorities. Depending on its exact needs and long-term goals, each nation chooses a certain development vector. Nuclear power can be integrated effectively into any of these models. For countries with overreliance on any particular source in the energy mix, nuclear power is a tool to diversify while meeting the growing demand for reliable electricity supply and combating effects of climate change by cutting CO2 emissions. What is more, nuclear power plants can contribute to renovation of power capacities by reducing the average age of installed capacity and thus contributing to stability within the energy system. Nuclear power plants benefit countries by creating jobs during NPP construction and operation, both directly and indirectly: 1 job created at an NPP leads to 10 jobs created in other fields.

Although part of NPP project implementation costs are associated with the construction or renovation of grid infrastructure, railways, bridges, roads, etc., this infrastructure can be used for purposes not related to further operation of nuclear power plants. NPP projects lead to the creation and development of the urban environment around the nuclear power plant. Nuclear power plays an important role in boosting socio-economic development both in the short-term and long-term perspectives: construction of an NPP results in comprehensive spillover and multiplier effects on GDP throughout the NPP lifecycle. NPP construction provides outstanding opportunities for local companies to gain the required competencies to operate in international markets. By participating in NPP construction, local industries can be involved in the global value chains and international projects, which will increase their country's investment attractiveness.

Therefore, atomic energy has a significant impact in many of the Sustainable Development Goals at once.

Helping implement atomic energy and fund the construction of NPPs is a comprehensive and complex project that reaches out far beyond just the power sector. Nuclear power is indeed an efficient tool to continuously provide a number of benefits to the country employing it for more than 60 years. Countries can fully rely on NPP projects in accomplishing their ambitious sustainable development goals.

SDG 1 – No Poverty: Ensuring the world's poor have access to affordable, reliable and modern energy services enables the goal of poverty eradication. However, decarbonising energy systems by promoting renewables and boosting efficiency could result in price shocks if the costs of transition to a low-carbon economy are not buffered in some way. This could prevent universal energy access, since higher energy prices would add to the challenges of improving the standard of living for the world's poorest. Investment costs for many small scale renewable energy technologies (such as household solar photovoltaic systems) have decreased considerably in recent years, and in some areas are now the least-cost electricity supply option. If technology innovation trends continue, renewable electricity generation will become profitable in a greater number of regions. This could enable poor communities with electricity transmission access to make use of local clean energy resources, potentially allowing for revenue generation. Moreover, some of the poorer regions of the world possess some of the highest quality renewable energy supplies (e.g. biomass and solar power

in Africa). Progress in making use of those potentials could help to reduce poverty, as long as the benefits accrue to local suppliers.

In contrast, countries still have some work to do in determining what a proper, decent level of energy access actually entails, in terms of the full range of services required to escape the poverty trap.

SDG 2 – Zero Hunger: As a renewable energy source, bioenergy is likely to form an increasingly important part of the energy mix. Commercializing bioenergy production could lead to the creation of agricultural and forestry jobs, as well as to higher wages and more diversified income streams for land owners (aiding food security). However, developing agrofuels could also lead to higher global food prices (and thus reduced access to affordable food by the poor) as well as to competition between agrofuels and food crops over scarce agricultural land, water and energy for agrofuels production. Another key interaction is energy for agricultural operations. Providing energy to impoverished farmers is likely to make it easier for them to pump groundwater and mechanize their farm equipment to increase food crop yields, and will enable easier maintenance of cold chains (temperature-controlled supply chains) for marketing produce and thus improving regional diet diversity. Some forms of bioenergy – such as fuels produced from domestic wastes – do not compete with food production, although transportation of waste residues and operation of agrofuel processing plants can be energy-intensive.

SDG 3 – Good Health and Well-Being: Nuclear power ensures stable electricity generation that enables medical clinics and hospitals to provide all the required services: operate and sterilize medical equipment, refrigerate vaccines, etc.

SDG 4 – Quality Education: Well-lit, well-heated, and well-cooled schools and households are essential for creating comfortable learning spaces for children and adults and reduce dependence on natural variations in daylight. The information and communication technologies on which modern learning is based also require energy input. Ensuring energy access in countries where access to reliable energy services may be lacking can therefore reinforce education goals. The level of educational attainment within a society can influence its collective awareness about sustainable development and sustainable lifestyles, including an understanding of why transformative changes in the energy system are necessary. Knowledge and skills in the area of energy sustainability may then influence which technological, financial and political solutions are feasible to implement.

Thus, quality education is an enabling factor in achieving sdg7. Energy is also a key element of science education; and better inclusion of energy in school curricula may foster better science literacy at all levels of society.

SDG 5 – Gender Equality: Access to energy would expand the number and range of opportunities for women, for example enabling women to work from home and thereby generate an independent source of income. Impacts will initially be greatest at the household level, with society-wide implications emerging over time. The more empowered women become, the more likely they are to push local initiatives that directly benefit them from an energy-access perspective, since they are often the ones to gain most from the use of cleaner, easier-to-obtain fuels for cooking and lighting. Access to energy reduces the importance of physical gender differences in the labor force, increasing access to the professions for women. Public outdoor lighting would increase security for women and girls, potentially allowing them to continue autonomous activities outside their households after dark.

SDG 6 – Clean Water and Sanitation: Clean and accessible water supplies are essential for economic development and human health. The World Health Organization predicts that by 2025, half of the world's population will be living in water-stressed areas. Desalination of water can address the challenges water-stressed areas face, but most desalination plants are powered by fossil fuels, resulting in the emission of greenhouse gasses. Nuclear reactors, in addition to providing electricity, can be a source of clean water. Nuclear reactors produce steam heat that drives turbines to make electricity, and leftover heat can be used to boil ocean water. The steam that condenses is clean, and the remaining salt can be returned to the ocean. Nuclear science can also be used to clean water. The textile industry consumes huge amounts of water and chemicals, such as dyes, starches, acids, salts, and detergents. These would normally be treated chemically, creating secondary waste. However, nuclear electron beam technology is used instead. The electron beams break apart the chemical bonds of clothing dyes and remove pollutants, allowing recycling of the water for reuse. At one textile factory in Southern China, the technique saves up to 4.5 million cubic meters of fresh water annually, equivalent to the water consumed by about 100,000 people. Nevertheless, delegates must consider the impacts of the future climate on local hydrological conditions, as this affects water availability.

SDG 8 – Decent Work and Economic Growth: The nuclear industry generates a broad range of jobs, including engineering, technical, and other specialist roles. For each 1,000 MWe of nuclear capacity constructed, some 200,000 job-years of employment are created. Nuclear sector pay tends to be higher than average, reflecting the specialist skills of the employees. Nuclear energy projects also involve significant investment and regional infrastructure development, which contributes to economic growth and international exchange. Nuclear energy projects increase gross domestic product growth in the short and long term. In addition, nuclear energy can have a positive impact on local employment, with a higher proportion of jobs being generated near to the location of the power plant than is the case with other low-carbon generation. The nuclear industry helps to support jobs directly and indirectly. For each direct job, approximately 2.5 to 3.5 indirect and induced jobs are generated.

The net employment and competitiveness impacts of the energy system transformation on local, regional and national economies, particularly over the near term. The distributional effects of the energy system transformation, within and across countries. This is important for understanding who benefits more and who benefits less, for instance in terms of employment opportunities and incomes.

SDG 9 – Industry Innovation and Infrastructure: Apart from the fact that innovative designs allow nuclear reactors to operate in new locations and enable decarbonization in new applications beyond electricity supply, innovation is expanding the potential of nuclear technologies. The nuclear industry is pursuing the development of more efficient fuels that could enhance the performance of reactors currently in operation, as well as developing new reactor designs that will have a broader range of applications. Industrial development is frequently energy-intensive. Nuclear reactors have the large output required to support such demand. In addition to the supply of electricity, high-temperature reactors will be able to replace fossil fuels as a more sustainable supply of process heat, with applications including the production of hydrogen. New nuclear build projects support the many manufacturing companies in the supply chain that produce the components required for construction. Increasingly, new nuclear power projects are structured to support the local and host country supply chains, promoting more inclusive and sustainable industrial development. Once in operation, nuclear power plants continue to provide hundreds of high-skill employment opportunities for many decades. Nuclear techniques can help make other

industries more sustainable and safer. Nuclear non-destructive testing (NDT) is a quality-assurance procedure that helps verify the structural integrity of machines and materials without causing damage. One such technique is industrial radiography, which is used to inspect welds.

SDG 10 – Reduced Inequalities: Ensuring energy access and increasing the share of some types of renewable energy (such as agriculture and forest-based bioenergy) can enable educational, health and employment opportunities for the rural poor, with positive effects on income and equality. Universal access to energy is key to achieving equality, where all are free to exercise their development options. Good governance will help to avoid clashes between objectives. For example, policymakers must be careful to ensure that energy remains affordable to the poorest, especially if higher-cost renewables are deployed. Ideally, institutional and financial capacity should be locally sourced, although foreign investment and development funding (from rich to poor countries) is also important. Both can foster socio-economic development and help reduce inequalities between countries, as well as within them (across different social, gender, economic, ethnic, religious and racial groups). Locally available sources of renewable energy may also reduce inequalities due to international fossil fuel market variations that could result from political or speculative pressures.

SDG 11 – Sustainable Cities and Communities: Energy is central to urbanization; energy allows cities to grow and perform. Clean, efficient energy systems, in particular, create the conditions for cities and human settlements to be inclusive, safe, resilient, less-polluting, and more sustainable. An up-scaling of renewable energy and energy-efficient technologies and infrastructure systems (such as transit-orientated, mixed use developments) can have a large impact on the sustainability of a given city or community. Similarly, if cities move in a more sustainable direction in terms of transport, housing and urban planning, air quality, resource efficiency, and/or climate change mitigation, then this will create the necessary enabling conditions for achieving SDG 7, because renewables and efficiency will need to feature in the portfolio of solutions. Smart grids in cities will improve energy efficiency and facilitate the development of renewable energy at a domestic scale.

SDG 12 – Responsible Consumption and Production: Efforts to reduce waste and pollution, improve resource efficiencies, increase recycling and reuse and promote awareness about more sustainable lifestyles coincide with the requirement for more efficient use of natural resources (fossil and renewable). For example, phasing out inefficient, wasteful, and market-distorting fossil

fuel subsidies – in a way that minimizes counteracting adverse side-effects on the poor – could reinforce attempts to deploy renewables and energy-efficient technologies and consumption patterns. Responsible consumption triggers responsible production and minimizes waste, in turn minimizing the amount of energy associated with waste handling and management.

SDG 13 – Climate Action: An immediate up-scaling of renewables and energy efficiency is strongly linked to keeping global warming to well below 2°c above pre-industrial levels, the legally binding objective of the Paris Agreement. Achieving SDG 7 could put the world on track for meeting this challenge, though it would not be entirely sufficient given the scale of the decarbonisation challenge. In the reverse direction, better integrating climate change measures into national planning, improving education, awareness, and capacity on climate issues, and mobilizing funds for mitigation will all go a long way in furthering targets for renewables and energy efficiency. Under certain conditions, providing universal access to modern energy services by 2030 is fully consistent with the Paris Agreement, because it is not expected to have more than a minor effect on global carbon emissions.

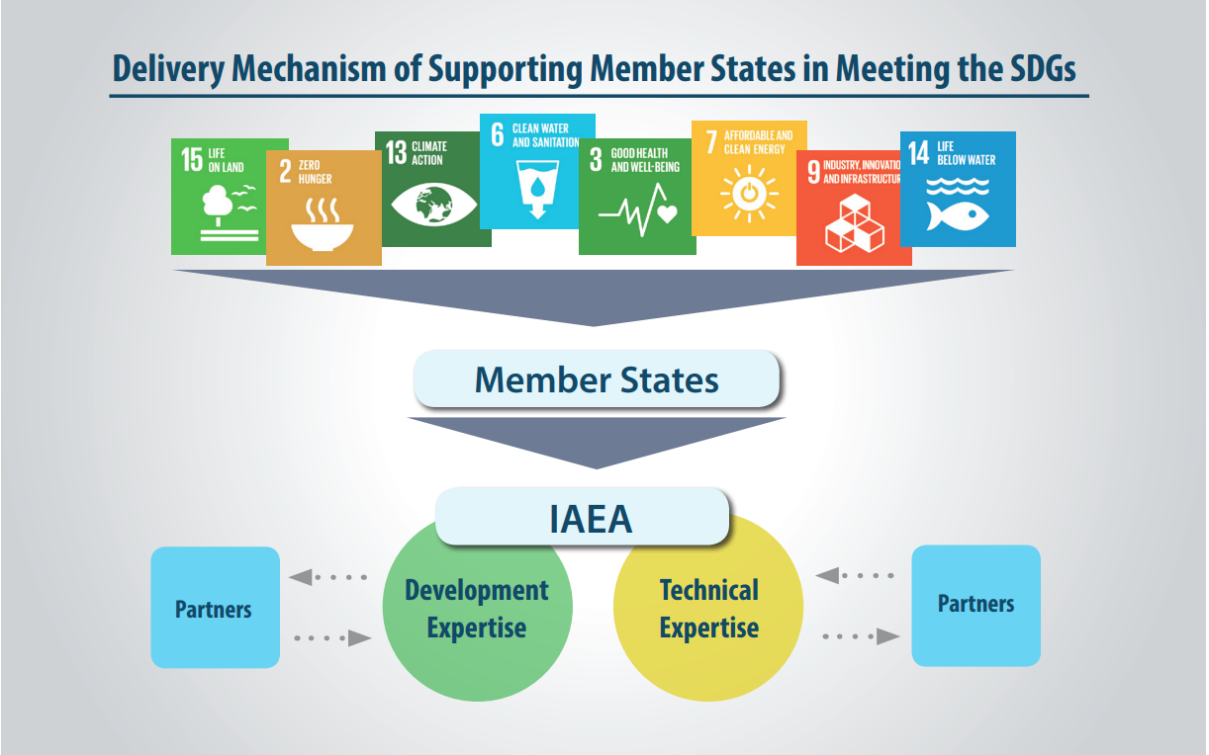
The role of human behavior in the adoption of energy-efficient, low-carbon technologies/consumption patterns and how policies can influence consumer preferences toward choices that are beneficial for both individuals and wider society.

SDGs 14 (Life Below Water) and 15 (Life on Land): For all NPP projects, an environmental impact assessment is required to ensure that all the specific features of local land and water ecosystems are taken into account to avoid any harm to the environment.

SDG 16 – Peace and Justice & Strong Institutions: Effective, accountable and transparent institutions are needed at all levels of government (local, national, international) for creating the conditions necessary to be able to ensure universal energy access, increase the share of renewables and increase energy efficiency. Strengthening the capacity of developing countries to participate at the international level (such as within United Nations agencies, the World Trade Organization, regional development banks and beyond) will be important for issues concerning trade, foreign direct investment, labor migration, policy and institutional arrangements, and technology transfer. Reducing corruption, where it exists, will help these bodies and related domestic institutions maximize their societal impacts and ensure that the optimal mixes of measures for energy access provision, renewable energy and energy efficiency are implemented effectively. Eliminating perverse

subsidies for unsustainable energy sources could help to achieve both better governance and sustainable energy goals.

SDG 17 – Partnerships for the Goals: This goal is about strengthening the means of implementation for achieving all sdgs. However, to ensure access to affordable, reliable, sustainable and modern energy for all, it is critical that all countries are able to mobilize the necessary financial resources (such as via taxes on fossil energy, sustainable financing, foreign direct investment, financial transfers from industrialized to developing countries); are willing to disseminate knowledge and share innovative technologies; follow recognised international trade rules while at the same time ensuring that ldcs are able to take part in that trade; respect each other's policy space and decisions; forge new partnerships between their public and private entities and within civil society; and support the collection of high-quality, timely, and reliable data relevant to the furthering of their aims. Additionally, over 90 Member States already have in place country programme frameworks that link IAEA support to national development priorities. IAEA technical cooperation integrates result-based management approaches for effective monitoring and management of all projects. The IAEA has been encouraging Member States to move from smaller, national projects to interventions with larger scope, scale and duration, with potential for more robust, longer-term development impact. IAEA Member States also share their knowledge, technologies and best practices through regional projects. The IAEA promotes and facilitates bilateral, South-South, sub-regional and topical collaboration among countries, regulators and institutions.



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By analyzing the relevant aspects of international institutions and the scenario of sources of energy in the present context, a logically inferable factor that must be taken into consideration is that the main point is the high initial investment, as well as the long period of investment and construction. If the future of energy is based on nuclear energy, the construction price must be significantly lower without any changes on safety and security, and a major contribution to the achievement of a myriad of SDG-related quests can already be brought about into the present reality.

Nevertheless, funding these projects of energetic development suffer from an issue with capillarity: many countries end up not being logistically able to conciliate such a change and effectively move nuclear, considering the efforts that must come up to support a phase of transition. In this sense, reallocation of funds is a crucial and determining point; this analysis takes us to the points of contention that come as some of the main challenges in the present background. Analyses on the main points of contention are, therefore, introduced at the next section of this guide.

POINTS OF CONTENTION

- **Failed Nuclear Programs:** In spite of public fears of nuclear disasters, nuclear energy is generally safe and reliable.60 Over the course of 17,000 cumulative nuclear reactor-years in 33 countries, only three major accidents have occurred—Three Mile Island in Pennsylvania (1979); Chernobyl in the USSR (1986); and Fukushima in Japan (2011). Moreover, apart from Chernobyl, no nuclear workers or members of the public have ever died from a nuclear accident, and as a result of improvements in technology, the risk of future accidents is low and declining. In contrast, the coal mining industry, which provides a third of all energy used worldwide, has devastating health effects not only on workers but on the communities surrounding mines as well. Although nuclear energy is overwhelmingly safer than most other forms of energy production in use today, it is worthwhile to examine the industry's failures in order to better understand the risks associated with it. Should nuclear energy become more critical to global energy production, an increase in the number of nuclear reactors in the world would mean a higher probability that the extraction of radioactive elements, atomic waste disposal, and exposure to radiation end up unchaining long-lasting complications to a population that is exposed to those conditions.
- **Energetic Exporting:** Some countries' positions on the universalization of atomic energy are contrary due to the role of energetic exports in their economic perspective. For instance, Bolivia, Iran, and Ukraine are major exporters of natural gas in their regional poles, and this exportation draws the basis of their economies. In this sense, countries adopting a reallocation of funds when accordingly shifting to the adoption of another major source of energy would directly impact the economy of these countries. As an example, the GASBOL gas pipeline, which is used by Brazil to import Bolivian gas, has increased the Bolivian GDP by 7%, and Iran reports 3% of their GDP being based on natural gas exportation to Iraq. Given this consideration, delegates will have to crucially ponder how supporting economic reallocations will be worldwide safe and little threatening to those nations and how a compensation on this shift to clean energy can compensate in a long term.
- **Nuclear Nationalism:** Nationalism can also serve as a strong motivation for the development of a nuclear program as well as a justification for the costs of the program. The level of scientific and technological development necessary to build a nuclear reactor

alone reflects well on a country, signifying to its citizens that it has taken a place among the world's leading nations. Even before a nation's nuclear program comes to fruition, the research and development process can serve as a unifying goal around which citizens can rally. Especially in smaller nations, nuclear programs can be an effective means of gaining recognition, respect, and significance on the world stage. This reason—among others—is why many dictatorships sponsor nuclear programs; nuclear weapons and nuclear technologies can help them to maintain the support of their people and encourage foreign nations like the United States to keep a safe diplomatic distance.

Pakistan and India are two important examples of countries with nuclear programs motivated in part by nationalism. In both countries, nuclear testing has been held up as a symbol of national achievement, and their nuclear scientists have been hailed as heroes by their respective governments. The first successful nuclear tests warranted televised national addresses from each country's prime minister amidst a sense of general triumph. Pakistan, for its part, declared the first anniversary of its 1998 nuclear tests a "Day of Deliverance" and hosted 10 days of celebrations to commemorate the tests. Cities around the country displayed scale models of the mountain where the nuclear tests occurred, and streets were decorated with pictures of Prime Minister Nawaz Sharif standing in front of a backdrop of mushroom clouds. Because of the close link between nationalism and nuclear programs in countries like India and Pakistan, it is often difficult to persuade their governments to join international nonproliferation treaties. The combination of nuclear programs and nationalism—in these cases and others—often traps countries in a dangerous game of escalation. In spite of recent shifts in public sentiment toward a rapprochement between the two countries, "there is no sign that governments in Pakistan and India are ready to curb their nuclear build ups." Though dangerous, nationalism can be a potent motivation for countries to pursue a nuclear program. Nuclear nationalism's dangers should not be understated because it can easily transform peaceful nuclear energy programs into nuclear weapons programs overnight. Expanding nuclear power could open the door for the proliferation of nuclear weapons by giving countries a plausible cover for their nuclear weapons programs. Because of the close connection between nuclear weapons and nuclear energy, the military will often become involved in any significant nuclear energy initiatives.

In the nuclear world, the boundaries between civilian and military technology are difficult to make out. This was the original purpose of the IAEA: to set clear and firm boundaries between civilian and military uses of nuclear technology. For instance, the 1970 Non-Proliferation Treaty (NPT), which the IAEA was instrumental in negotiating and enforcing, aimed to prevent countries without nuclear capabilities from becoming nuclear powers by limiting the transfer of civil nuclear technology. Despite this formal boundary, countries like Israel, India, Pakistan, and North Korea have all obtained nuclear weapons under the pretext of creating a civilian nuclear power industry. Iran has been accused of trying to do the same. Evidently, it will be difficult to prevent countries from building nuclear weapons in a world where nuclear energy programs are widespread and encouraged. By increasing the use of nuclear energy around the world, the IAEA could inadvertently enable countries to obtain the equipment, technology, and resources necessary to clandestinely construct nuclear weapons. It goes without saying that this would not fulfill the IAEA's mission statement. As Lutz Mez, a professor at the Freie Universitat in Berlin, Germany, writes, "When a nuclear infrastructure is in place and the basic material for weapons is being produced in facilities for enrichment or reprocessing—in military reactors, dual-purpose reactors or fast breeder-reactors—then it is merely a question of political will and willingness to invest in nuclear technology which decides whether a country develops nuclear weapons or not." While the IAEA could potentially increase in enforcement capabilities in order to more effectively regulate an expanded nuclear energy industry, by no means could it catch all clandestine nuclear weapons programs. Even one nuclear weapon produced under the guise of a nuclear power program could have disastrous consequences.

- **Nuclear Waste Disposal:** Delegates should pay attention to the disposal of radioactive materials in a way that does not compromise the environment, given the incidents of radioactive material waste as environmental pollutants.

  The answer to what should be done with nuclear waste is not so simple and straightforward. In fact, the problem requires more demanding geological analyzes to evaluate the soil and the environmental impacts of packaging these residues. One of the problems with nuclear waste is its high half-life, that is, the time it takes for it to return to

characteristics similar to those found in the mining process. The isotope of uranium 235 (U), for example, has a half-life of 703,800,000 years, and even with changes in temperature or seasons, it will not be reduced. Tailings, when not properly stored, can generate serious health problems for people, such as cancer and hemorrhage; they can also cause severe environmental damage, such as contamination of water and the environment itself, by spreading through the marine and terrestrial food chain, by the action of the wind, in agricultural soils and in sea currents. Contamination of soil and groundwater is still uncertain, requiring a deposit capable of keeping waste separate from the soil.

In a broader context, Plutonium, which has a half-life of 24,000 years, is not considered nuclear waste for some scientists since the material is insoluble in water and has a low probability of soil contamination by the time of residence. However, as most reactors use uranium, the problem lies in constructing a sufficiently sealed place that keeps this material inside without emitting radiation for a time that approaches the half-life, or 24 thousand years old. In contrast, hitherto, it is possible to measure the installations, for the garbage of high level of danger, being of 10,000 years as it is of Yucca Mountain in the United States because the installations are made with time-resistant material.

Regarding human security, there is a critical point to be made. The politicization of this subtopic ends up being induced by a particular conception that the presence of plants near populated areas will cause inevitable harm by the processes arising from the productive cycle, which mobilizes the memory, mainly of events such as Hiroshima, Nagasaki, Chernobyl, and Fukushima. This association leads to fear of a threat that does not necessarily exist for civilians since nuclear repositories generally have very high security and frequent control. Even so, these accidents give rise to an anti-nuclear position in public opinion due to the fear of contamination by inhaling nuclear waste or by radioactivity emitted into the environment. The challenges in allocating nuclear waste are significant, given the factors related to human safety and the environment. For this reason, it is expected that delegates bring discussions more related to the possible influences of these unlikely risks on the rate of social acceptance of nuclear implementation worldwide or even how a lack of specific orientation is capable of impacting countries not traditionally

immersed in this opportunity for atomic provision, as well as nations facing public safety difficulties in similar sectors.

UN SUPPORT FOR ATOMIC ENERGY PROGRAMS

Through the UNDP, the UN has historically provided significant support to the IAEA and countries seeking to safely develop their own nuclear energy programs. In particular, it has tried to guide countries in the direction of nuclear power generation rather than the development of nuclear weapons, especially in the context of the UN's Sustainable Development Goals (SDGs). For instance, it has provided invaluable assistance to Belarus in handling to lasting effects of the Chernobyl nuclear accident; it has worked with Thailand to increase its capacity in areas like nuclear safety and radiation technology; and it has facilitated South Africa's pivot from a nuclear weapons program to developing nuclear technologies for agriculture, water management, and medicine. It also provides technical assistance to a range of countries in order to help them handle and dispose of nuclear waste and to decrease the likelihood of future nuclear disasters. Historically, the UN has not provided significant funds to subsidize nuclear energy programs, which are often funded exclusively by the governments that operate them. However, the UNDP could potentially change its strategy in order to funnel funds toward countries looking to take on the expensive task of developing nuclear power, as a way to support IAEA funds and future plans for strategies inside the greater task of providing access to that species of energy sources.

BLOC POSITIONS

Countries' positions are directly drawn by the economic, climatic and geographic stances of each nation. Differences of interest in this situation will guide this discussion in the scope of accessibility and degree of energetic improvement to each piece of land, as well as problems presented to achieving a specific goal that is linked to the implementation of atomic energy. Besides, in order to well represent your country, it is essential for you to work on researching to what extent shifting the source of energy will be worth it; nonetheless, you can still defend the implementation of it (or not) amongst the global community if it improves the global perspectives towards the SDGs by and large. Take into consideration the economic impact, the role of sources of energy in national politics, and everything you have seen in this guide that you think can be productive to lapidate

your position throughout the committee sessions. Take the liberty to draw it the way you believe it will be more productive; do not limit yourself to what you see on the news or any tendencious or polarized source that can furnish misleading information on global relations. Collaboration is key, and the different positions between your country and another on the topic of the Syrian War (mere example) will not correspond to the actual scenario between you two that happens in the global context of economics, development, etc. Moreover, the country you represent does not give you a stricter sense of variability in any manner; regardless of whether you represent the United States of America or the Republic of Panama, the political scenario is less biased in aspects like this, and your solutions are highly recommended to be brought multilaterally, because only then you will truly bring a global impact related to this topic; only then will such a progress be achieved. Additionally, countries are not put into a donor-receiver relation, and we highly encourage that Working Papers and Draft Resolutions bring no relation to "this country will donate; that country will receive", because solutions must come globally, and international plans of action are extremely suggested for the status quo that you'll be demanded to address. This committee will expose the discussion to an analysis of accessibility, security, and, ultimately, secure conditions of adoption (not a transition of a global shift for adoption) of atomic energy in order for the international community to have an available resource into everyone's hands that can (or not) help align with the present projects for sustainable development that each country aims to follow.

QUESTIONS A RESOLUTION SHOULD ANSWER

- Should the UN advocate for and sponsor an expansion of the nuclear energy industry?
- Should the development of nuclear energy programs be part of the world's climate mitigation plans?
- How should the UN ensure that countries have the proper infrastructure to safely pursue nuclear energy programs?
- What steps should countries take to prevent the spread of nuclear materials to rogue actors?
- How might the international community change its monitoring policies to achieve equity and reliability?
- What resources should be allocated to develop better ways to dispose of nuclear waste?

- How could nations achieve economic reallocation in order to support a shift to nuclear-based energy?

CLOSING REMARKS

Sustainable Development is not as simple as it may look, and it is not accidental that countries struggle to fight against emerging impasses in that sector. Nonetheless, if you think there is a convenient and reasonable way to cause a global impact and help countries approach their desires regarding the Sustainable Development Goals, go ahead and explore your idea; do not underestimate it under any circumstances! I want you to use these topics of global concern to brainstorm as much as possible until you find a strategy to innovate today's status quo and solve (or at least mitigate the effect of) that problem. The first and most essential step to finding out how capable you are of doing unimaginable things is to stop underestimating yourself because you do have the potential to impact your background, and finding an innovative idea for you to come up with during the conference is bare insignificance in comparison with what still waits for you in the near future if you adopt such a life philosophy. So again, as your director, but most importantly, this conference's president, I am here to inform you that you have been approved to attend DegloMUN for a reason! The reason is that you compose the 25% of those who applied in whom I saw a raw capability of causing the impact that today's MUN community needs! However, you will never discover how truly capable you are unless you take this first step. So take it! Take this opportunity as a turning point and really start believing in yourself because you did not come this far only to come this far. You know what you can accomplish, and so do I.

More substantively, congratulations on reaching the end of the Background Guide! Congratulations on finishing this crucial step in your preparation for DegloMUN! As a long-time MUN delegate, it would be derelict if I did not encourage your research to go further; hence you are more than encouraged to access all the links and additional references on our website and at the bibliographic references. Look into the ways your stances and ideas could be applied on a global basis and remember: a successful solution will require creativity and commitment. Enjoy the research process as you learn about the topic and, of course, have fun! If you have any questions or concerns, do not hesitate to reach out and contact me. I am more than happy to help you!

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