United Nations Environment Programme

BACKGROUND GUIDE
Dear Delegates,

My name is Katherine Zheng, and I have the pleasure of serving as your director for the United Nations Environment Programme (UNEP) at VMUN 2018. I am currently a grade 11 student attending Crofton House School, and I began attending Model United Nations conferences in grade 8. I am excited to meet you all and see what surprises the weekend will bring.

I can safely say that being a part of Model United Nations has been one of the best decisions of my life; through this engaging activity, I have been able to understand more about various global issues and learn how to public speak. Perhaps even more importantly, I have made lifelong friends from all over the world and formed bonds with people whom I otherwise would never have met. I hope you all have as amazing experiences in MUN as I did!

The two topics I have chosen for debate are Mining in the Arctic and Hydraulic Fracturing. Although these two topics may seem similar in nature, there are distinct differences between the two. Both deal with serious issues that are important to people all across the globe. Is it crucial that all delegates contribute their perspectives to the topics at hand and contribute to a well-rounded debate. I am excited to see the collaboration and diplomacy of every delegate, and I hope to that as a committee, you will be able to create successful solutions to both of the topics.

I wish you luck in your research for the conference, and I am excited to see what our weekend together has in store for us. If you have any questions, feel free to email me at unep@vmun.com. I look forward to meeting you at the conference!

Sincerely,

Katherine Zheng
UNEP Director

Ken Hong
Secretary-General

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Position Paper Policy

What is a Position Paper?
A position paper is a brief overview of a country's stance on the topics being discussed by a particular committee. Though there is no specific format the position paper must follow, it should include a description of your positions your country holds on the issues on the agenda, relevant actions that your country has taken, and potential solutions that your country would support.

At Vancouver Model United Nations, delegates should write a position paper for each of the committee's topics. Each position paper should not exceed one page, and should all be combined into a single document per delegate.

Formatting
Position papers should:
— Include the name of the delegate, his/her country, and the committee
— Be in a standard font (e.g. Times New Roman) with a 12-point font size and 1-inch document margins
— Not include illustrations, diagrams, decorations, national symbols, watermarks, or page borders
— Include citations and a bibliography, in any format, giving due credit to the sources used in research (not included in the 1-page limit)

Due Dates and Submission Procedure
Position papers for this committee are highly recommended. To be eligible for an award, you must submit a position paper. The submission deadline is January 7th, 2018.

Once your position paper is complete, please save the file as your last name, your first name and send it as an attachment in an email, to your committee's email address, with the subject heading as your last name, your first name — Position Paper. Please do not add any other attachments to the email or write anything else in the body.

Both your position papers should be combined into a single PDF or Word document file; position papers submitted in another format will not be accepted.

The email address for this committee is unep@vmun.com.
Mining in the Arctic

Overview

The Arctic Circle undoubtedly contains some of Earth’s most valuable resources, ranging from oil to diamonds. In fact, these reserves are very similar in value to that of the Russian oil reserves – approximately 90 billion barrels are yet to be discovered. Although currently there are not many countries extracting raw materials from these areas, this will definitely change in the future; as the cryosphere melts and uncovers these valuable resources, countries will be increasingly inclined to mine from the Arctic. In fact, Russia and the Shell Oil Company have already started projects in the North to withdraw oil. However, there are many environmental risks associated with the extraction of natural resources from the Arctic.

Oil exploration and mining operations and other in Greenland have already resulted in large amounts of lead pollution, and toxic traces of oil have become trapped underneath the ice for long periods of time. This means that the oil affects local wildlife for longer periods of time, and there is a lasting negative impact on the environment. Furthermore, if an accident such as an oil or chemical spill should occur, the remoteness of the Arctic does not allow for prompt relief of the issue. Finally, the conducting of seismic surveys and drilling of mines have resulted in the risk for hearing loss in sea animals in the area.

As the UNEP, it is your job to protect the environment, and mining for oil in the Arctic is a paramount problem that you must work together to solve. Because countries and companies are already targeting this area, it is at increasing risk in the near future, which means that you must resolve this situation in the most efficient way possible.

Timeline

August 16, 1896 — American gold prospector George Carmack discovers gold in the Klondike Region of the Yukon Territory in Canada. The discovery quickly sparks the Klondike Gold Rush, during which approximately 100,000 prospectors try to mine for gold.

1898 — The Swedish Kiruna mine is opened. Today, this mine is the largest and most modern iron ore mine in the world.

1920 — The first Arctic oil deposits are discovered in the Northwest Territories of Canada.

May 16, 1930 — Gilbert A. LaBine discovers uranium oxide at Great Bear Lake in the Northwest Territories, Canada. At this time, radium is at a high demand, especially for cancer treatments; it was sold at around $500,000 per gram in today’s currency. Later on, the ore and radium found here would be used for bombs in World War II.

1 http://www.businessinsider.com/how-gigantic-arctics-undiscovered-oil-reserves-might-be-2016-4
5 http://mininghalloffame.ca/inductees/j-l/gilbert_a__labine
March 12, 1968 — Prudhoe Bay Oil Field in Alaska is uncovered. It is now the largest oil field in North America.⁶

August 1983 — The Kolva River oil spill occurs in the Soviet Union. It is the 5th largest oil spill of all time, at around 84 million gallons.⁷

November 16, 1994 — The International Seabed Authority is established under the 1982 United Nations Convention on the Law of the Sea and the 1994 Agreement.⁸ The Authority is an international organization that controls mineral mining outside of national boundaries.

December 1996 — Diavik Diamond Mine is established in the Northwest Territories.

August 2010 — The United Nations Development Programme (UNDP) supports the implementation of oil laws in São Tomé and Principe, which include an oil fund and anti-corruption regulations.

September 2012 — This month held the record of lowest amount of Arctic ice ever in September.

May 2014 — The Fifth Assembly of the Global Environment Facility (GEF) takes place. Through this assembly, the UNDP and GEF implement a global programme to help reduce environmental effects of gold mining.

December 19, 2014 — The UN General Assembly adopts Resolution 69/212, which attempts to help Lebanon in recovering from their large oil spill; the resolution also agrees to host the Eastern Mediterranean Oil Restoration Trust Fund to dispose safely of the waste.

August 2015 — The Foxfire diamond is discovered by Diavik in Canada’s Northwest Territories. It is an 187.63-carat diamond, which is the “largest known gem quality diamond ever discovered in North America.”⁹

September 28, 2015 — Shell Oil Company declares that it will stop drilling in the Arctic for oil because of the detriments it has to the surrounding environment. This is a notable victory for protesters who have been fighting for the environment.

October 4, 2016 — Caelus Energy Alaska announces that a discovery at Alaska’s Smith Bay could “provide 200,000 barrels per day of light, highly mobile oil.”¹⁰

Historical Analysis

In 1920, Imperial Oil first found crude oil deposits at Norman Wells in northern Canada. In 1968, Prudhoe Bay Oil Field in Alaska, the largest in North America, was also discovered. Over the course of almost five decades, the Arctic developed into one of the most valuable oil mining areas on earth. Unfortunately, it was not long before the first major oil spill occurred. A deliberate spill was caused by vandals in February of 1977. However, a much more dangerous spill took place only six years later – the 6th largest oil spill of all time occurred in the Soviet Union, spilling around 84 million gallons into the territory around the Kolva River.¹¹

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⁷ https://www.theguardian.com/environment/2016/aug/05/the-town-that-reveals-how-russia-spills-two-deepwater-horizons-of-oil-each-year
⁸ https://www.isa.org.jm/
⁹ https://foxfirediamond.com/history-home/#history
¹⁰ http://caelusenergy.com/caelus-confirms-large-scale-discovery-on-the-north-slope-of-alaska/
Oil, however, was not the only valuable resource found in the Arctic. In fact, the area was home to one of the largest gold rushes in history. In 1896, a lucky gold prospector catapulted what would be one of the biggest global issues today: mining in the Arctic. George Carmack, an American prospector, first discovered gold on August 16, 1896 in the Yukon territory of Canada. When word got out to the public in 1897, people from all over the world came to the Klondike region in Yukon; the Klondike gold rush had started. By 1899, which marked the approximate end of the gold rush, over 100,000 people had travelled to Yukon in hopes of discovering gold.\(^{12}\)

Other minerals, such as diamonds and radium, also have a history in the Arctic. Gilbert A. LaBine first discovered uranium oxide at Great Bear Lake in the Northwest Territories in Canada. At the time, there was a high demand for radium, which was extracted uranium oxide; as a result, it was sold at around $500,000 per gram in today’s currency. Diamonds, on the other hand, were first discovered in Canada in the 1990s. Soon, the Diavik Diamond Mine and the Ekati Diamond Mine opened, which invoked the diamond business in the Arctic. The most notable diamond found in the Arctic was the Foxfire diamond – a 187.63-carat diamond, the largest diamond ever discovered in North America.\(^{13}\)

**Current Situation**

![Graph showing Arctic sea ice shrinkage](https://www.theguardian.com/environment/2016/nov/22/extraordinarily-hot-arctic-temperatures-alarm-scientists)

This shows the extent of Arctic ice shrinkage, exhibiting how low the amount of ice was in September 2012\(^{14}\)

Global warming is an obvious process that continues to threaten our world. In the Arctic specifically, the temperatures are rising at extraordinary rates. “It’s been about 20ºC warmer than normal over most of the Arctic Ocean, along with cold anomalies of about the same magnitude over north-central Asia. This is unprecedented for November,” said research professor Jennifer Francis of Rutgers University in 2016.\(^{15}\) As a result, the rising


\(^{13}\) [https://foxfirediamond.com/history-home/#history](https://foxfirediamond.com/history-home/#history)

\(^{14}\) [https://www.theguardian.com/environment/2016/nov/22/extraordinarily-hot-arctic-temperatures-alarm-scientists](https://www.theguardian.com/environment/2016/nov/22/extraordinarily-hot-arctic-temperatures-alarm-scientists)

\(^{15}\) [https://www.theguardian.com/environment/2016/nov/22/extraordinarily-hot-arctic-temperatures-alarm-scientists](https://www.theguardian.com/environment/2016/nov/22/extraordinarily-hot-arctic-temperatures-alarm-scientists)
temperatures are melting the sea ice; the total amount of sea ice has declined 30% over the last 25 years. According to the US National Snow and Ice Data Center (NSIDC), approximately 2 kilometers less ice has formed in September 2016 than the monthly recorded average of years dating back to 1953. This average is even lower than that of 2012, the lowest sea ice on record. Even in Greenland, scientists have used satellite imaging to find that the sheet ice is gradually darkening— a clear indication of a loss of volume. Because the melting ice uncovers oil and other raw materials, many countries have started to move in to extract these materials.

The Arctic alone holds approximately 13% of the world’s undiscovered oil reserves and 30% of the world’s undiscovered gas reserves, which is extremely enticing for many countries as well as oil and mineral companies. In fact, many countries are already starting extraction projects in the North; every year, the number of vessel voyages from various countries increases. For example, Russia and the Shell Oil Company have already started projects in the North to withdraw oil, and Norway has also recently anchored an oil platform in the Barents Sea. In particular, Russia is keen on expanding to the North because, in comparison to the US’s shale oil deposits (the largest in the world), its old oil fields are slowing down in production.

Likewise, diamonds and similar minerals have recently become very important resources to mine for in the Arctic. Since the 1980s, Canada has grown to be the third-largest producer of diamonds in the world. Canada has established the Diavik Mine and the Ekati Mine, two of the largest diamond mines in the Arctic, and Russia has used the Mir Mine in Siberia in order to extract diamonds as well. Overall, as the Arctic holds extremely large

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18 http://geology.com/articles/canada-diamond-mines/
19 http://www.reuters.com/article/us-canada-diamonds-idUSKCN0SL0CR20151027
promise for diamonds, gold, and many other raw materials, many countries have started to steadily increase their production rates in the region.

Unfortunately, profit does not come without a cost. There are many risks that come from the extraction of natural resources from the Arctic, and these issues are far from resolved.

One problem to consider is the harm caused to animals from drilling operations. Many studies have shown that the drilling in the Arctic, especially for minerals, is extremely detrimental to animals because the noise that comes from ocean mining can result in deafness, confusion, other injuries, or in the most severe cases, death.

Cultural risks are also a prevalent problem when it comes to mining. Because new infrastructure will take over large areas in the Arctic, Indigenous communities are at risk of losing the animals that they have hunted and used for hundreds of years. The operations and profitability of local fisheries will likely be damaged since many animals will suffer from noise or spills caused by the mining. In Greenland, traditional sealers and whalers are no longer able to take their equipment out on the ice to catch animals because the ice has become thinner. Indigenous people are also not receiving any economic benefit in response to their loss of land and animals; many are losing jobs due to the influx of foreign workers in mines, and the increase of mining has only exacerbated these cultural issues.

Another problem is that governments and mining companies often take shortcuts when creating mining technology because newer and greener technology is expensive. Environmentally friendly programmes and policies often require a much greater financial commitment. This means that companies have to replace current equipment with more expensive technology that operates in different ways. Because they must invest a lot more money into these greener technologies, while also potentially creating fewer jobs, many governments and companies are not keen on switching over. The question that delegates have to reflect on is whether governments should prioritize the environment or their economy.

Lastly, one of the major problems is the risk of oil and chemical spills. Spill cleanup already presents many difficulties in developed areas; however, in the Arctic, it is virtually impossible. First of all, spills are more likely to occur because of the severe weather conditions and the difficulty of maintaining pipelines or other equipment in remote regions. In cases of mineral mining, dangerous chemicals such as arsenic, lead, mercury, petroleum byproducts, acids, and cyanide could be spread into the water. Furthermore, because there is little to no infrastructure around mining sites, it takes a very long time to just reach the area – perhaps even days or weeks. When proper personnel arrive to clean up the mess, it is still extremely difficult for a number of reasons. The short productive season, low temperatures, and limited sunlight all intensify the process of cleaning up the oil and chemical spills from mining. Another harm is that animals are likely to be caught in the oil and either harmed or killed.

Case Study: Usinsk

A badly corroded pipeline around the Russian town of Usinsk had been leaking for months on end, but the ongoing spill had been controlled by a dike around the site. However, extreme weather conditions caused this barrier to collapse, resulting in millions of gallons of oil spilling across the Siberian tundra and into the Kolva River, which flows into the Barents Sea. As a result, approximately 84 million gallons of oil were spilled in total, damaging around 23 species of flora and fauna and polluting around 186 square kilometers of grass and marshlands. Even more devastating is the fact that the cleanup operation was extremely unruly, with working

crews unaware of the overall plan. Ultimately, the Kolva River oil spill proved to be one of the largest oil spills in history.

**Case Study: Ekati Diamond Mine**
In 2008, a tailings spill (processed ore, a byproduct of diamond mining) occurred at an Ekati Diamond Mine site in Canada’s Northwest Territories. Approximately 4.5 million litres of kimberlite tailing spilled onto the tundra and lakes where huge ecosystems of fish and birds were affected; approximately 37,000 square metres were contaminated. Although this was not a spill, the effects of similar spills in the future could very likely be much worse. If this specific diamond mining company had been found to have breached its operating licences, it could have faced fines of $100,000 or suspensions. In order to stop the further spreading of the tailings, company crews quickly worked to build a snow fence in order to contain the spill.

**Past UN/ International Involvement**
As of right now, the UN has not focussed a lot on mining in the Arctic, as it is a relatively new area compared to other mining facilities. However, the UN has certainly passed many broad resolutions and programmes to account for mining and accidents in general.

**Awareness and Preparedness for Emergencies at a Local Level programme (APELL)**
Following some major and alarming incidents, APELL was developed by the UNEP in 1998 in partnership with corporations, communities, and governments worldwide in order to help people prevent and respond to accidents. APELL outlines ten steps that can be used toward solving any incidents. For example, some of the steps include identifying those who will act in emergency response protocol immediately and establishing procedures for periodic testing of environmental plans. Overall, the APELL programme has brought many benefits, including reducing the likelihood of accidents, eliminating their impacts, building better diplomatic ties and relationships, and generating trust and support between local communities as well as federal governments. Although APELL is not always completely specific to the mining industry, its ten steps can be used as inspiration for a similar programme catered to the Arctic mining processes.

**Global Opportunities for Long-term Development (GOLD) Programme**
The Global Environmental Facility (GEF), implemented by four agencies, including the UNEP, is a collaboration between 183 governments and civil society to address global environmental challenges. In an October 2016 meeting, the GEF Council implemented a global programme in order to address the environmental effects of artisanal gold mining. This meeting brought key players in the AGSM including governmental figures, non-governmental organizations (NGOs), different agencies, and representatives of the private sector.

More specifically, the GOLD programme funded at least $45 000 000 USD for artisanal miners in eight countries – Peru, Colombia, Guyana, Philippines, Indonesia, Mongolia, Kenya, and Burkina Faso – to address the dangers of the mercury that gold miners use in the process of extracting gold. As the programme brings together the miners, refiners, and recognized brands of the mining procedure, miners are given low-interest loans; these loans greatly increase the efficiency of the operations and allow for the mercury-free gold. Similar programmes could

23 [https://www.thegef.org/events/gold-addressing-mercury-pollution-artisanal-gold-mining](https://www.thegef.org/events/gold-addressing-mercury-pollution-artisanal-gold-mining)
24 [https://www.youtube.com/watch?time_continue=162&v=yUENmDEFBhY](https://www.youtube.com/watch?time_continue=162&v=yUENmDEFBhY)
be implemented in the Arctic mining sector in order to create a safer work environment for workers, as well as a planet free of dangerous chemicals.

Possible Solutions

Indeed, there are many factors to consider when trying to solve the problem of mining in the Arctic. Below are pros and cons to some potential solutions. However, remember that these are not the only solutions; delegates are encouraged to find other solutions to the topic at hand. Ultimately, it is essential to carefully weigh all of the viewpoints.

One possible solution is to implement regulations. These regulations may include giving licenses to certain countries and companies. One criteria for these licenses could be that countries have to provide a fully fleshed out environmental plan for their projects. These plans might encompass environmental goals and how they will reach them, and their procedures in cases of spills or other environmental accidents. Delegates should consider the other qualifications of these environmental plans, such as the allocation of resources, before giving these companies or countries licenses to enter. However, also make note of how strict these regulations will be. For example, if the regulations are very loose, nations will lose out on an extremely large amount of environmental protection factors, as companies will have more freedom in exploiting the environment. On the other hand, if regulations are very harsh, countries might not have as many economic benefits, such as less employment, and fewer resources being exported/imported. More specifically, even though more jobs could be created in the renewable energy sector, many workers already in the mining industry will lose out on jobs due to different educational requirements and other factors.

Furthermore, restricting mining to certain areas and creating international boundaries may help protect Indigenous cultures. Confining mining to specific locations could also help contain possible ice pollution and oil spills. For example, right now, the Bristol Bay in Alaska, which produces more than 40% of the seafood caught in the United States, has been ruled to be completely off-limits to oil and gas developments. Other places that many people believe should not be mined in are the Lofoten and Vesteralen islands of coastal Norway and the West Kamchatka Shelf in Russia due to the importance of culture protection and animal habitat preservation.

Another solution could be to create a mandate in order for countries and corporations to move toward renewable energy. As a result, these entities are forced to use green technology and resources that are going to put less strain on the environment than older technology. However, a potential controversy with this solution is that altering environmental policy may result in some economic repercussions. Firstly, because green technology, such as wind and solar power, is more expensive than current equipment standards, the rise in price presents a problem. If the environmental policy is made harsher, governments have to invest more money into these technologies, which, in turn, decreases the number of jobs in the industry. Ultimately, delegates have to consider their bloc positions and understand if their foreign policies allow them to concentrate on the economy or the environment.

Example of Effective Legislation: Green Mining Initiative (GMI)

Implemented in 2009, the GMI aims to improve the Canadian mining sector’s environmental performance and open green technology opportunities. Overall, the policy focusses on four main sections: footprint reduction, innovation in waste management, ecosystem risk management, and mine closure and rehabilitation. Its targets also encourage economic growth while maintaining waste management and holistic protection of the

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26 http://web2.unep.fr/globaloutlook/ShowPolicy.aspx?PolicyId=157&LngId=1&Pg=0
environment. Some challenges the GMI faces include stable funding and adequate staffing, but in exchange for these requirements, the GMI has improved not only regulatory processes in mining, but also green technology, as well as higher research and innovation systems. Furthermore, the Initiative has reduced the mining footprint in Canada and improved mine waste management. Even though the GMI is specific towards Canadian mining, delegates can create a similar mandate or initiative that applies to the international community to regulate waste management and focus on green technologies in the Arctic.

Bloc Positions

Arctic Resources-Exporting Developed Nations (Canada, USA, Russia, Norway, etc.)
As global warming thaws the Arctic, these prominent mining nations are the leading countries extracting natural resources from the Northern hemisphere. Canada, for instance, is currently mining diamonds, gold, and iron in the Northwest Territories, Yukon, and Nunavut. Russia has also been digging for diamonds and resources other than crude oil. For the USA, many experts say that “keeping the energy pilot light lit is a good way for the country to maintain its footprint and assert its sovereignty in the Arctic.”27 Norway is already taking steps toward expanding towards the Arctic. For example, in 2015, the country built an oil platform in the Barents Sea.28 This new platform is even farther north than Russia’s Gazprom platform, which had been the past northernmost platform, indicating how quickly many nations are expanding. Because these countries rely heavily on mining, turning to renewable energy might not be in their best interests. These countries must weigh the importance of the environment versus the economy. Keep in mind that these countries are not likely to be extremely focussed on either the economy or the environment, but they will still have to find a way to protect both their environments and their economies.

Nordic Countries (Norway, Denmark, Iceland, etc.)
The Nordic countries will most likely be more focussed on their environment than their economy, as many of them are global environmental leaders. Therefore, these countries are expected to push for reform and better environmental policies, even at the certain cost of the economy.

EU and Allies
The EU contains some countries that could be looking toward the Arctic for mining. However, the EU is generally concerned with the environment, and it established minimum requirements for the conduct of environmental impact (EIA – Environmental Impact Assessment) in 2011. Overall, the EU is in favour of environmentally friendly policies, although some select countries, such as Poland and Hungary, could be more economically focussed.

Developing Nations with Poor Environmental Records (India, China, etc.)
Although some more powerful developing nations, such as India and China, are in favour of moving towards the Arctic resources, these countries may not have land that borders the Arctic. They claim that no country has sovereignty over the Arctic, so they must play a part in Arctic exploration and mining. By using economic growth

27 http://foreignpolicy.com/2017/03/24/oil-companies-cool-on-arctic-drilling-trump-wants-it-anyway-energy-alaska-environment/
and overall development as excuses, these countries often abuse the environment in favour of profit. As a result, these countries will be less willing to give into harsher environmental policies; on the other hand, if offered an incentive, they could be more open to compromise.

Discussion Questions

1. Does your foreign policy place more burden on the economy or the environment?
2. What have been previous incentives that made countries more willing to conform to harsher environmental policies?
3. If regulations should be put in place, how harsh should they be?
4. What are some problems with restricting mining to specific areas?
5. How do we incentivize countries to use greener technologies?
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Hydraulic Fracturing

Overview

Fossil fuels, the world’s main source of energy, make up approximately 81% of global energy production. However, the increasing demand for this energy source forces governments and companies to take unmistakably dangerous measures.

Hydraulic fracturing, or fracking, is the process of drilling the earth and then injecting fluid into it. As the high-pressure water mixture (water, sand, and chemicals) is directed at rock, the pressure releases the natural gases inside, forcing the gases out of the ground from around 5,000-8,000 feet deep. What comes out of the ground is mostly shale gas, or more specifically, unconventional gas (UG). Fracking has become a more common way of mining because of its efficiency. However, what delegates must realize are the multiple issues which come with this process – for example, water contamination, water waste, and small earth tremors. Because many developing countries have underdeveloped infrastructure, they lack proper fracking waste management services and often cannot afford renewable energy. Through cooperation, we must re-evaluate the environmental impact of fracking.

The UNEP has already tried to ameliorate the situation with past mandates and alerts, including releasing an alert for fracking in November 2012, which outlined some of the major impacts of fracking. Unfortunately, fracking is still a prominent issue that has not seen enough action to deal with its negative ramifications. Therefore, it is still crucial for the UNEP to address this issue.

Timeline

April 26, 1865 — Edward Roberts receives his first patent to create the “Exploding Torpedo,” or the first extraction method that was a predecessor of fracking. Within a week, this event increases oil production by 1200%.

1947 — The birth of modern-day fracking; Floyd Farris conducted a study on the relationship between oil and gas production output, leading to the first hydraulic fracturing experiment. This occurred at the Hugoton gas field in Kansas, USA.

March 17, 1949 — Two successful commercial fracking experiments are conducted in Oklahoma and Texas. This led to the commercialization of fracking.

June 1998 — An engineer from the Mitchell Energy and Development company was successful in using large amounts of water, chemicals, and pressure to break up rock around some wells. This success caused the increase in fracking of the past two decades.

June 30, 2011 — France becomes the first country to ban hydraulic fracturing – this ban is fully implemented by October 2013.

30 http://eecenvironmental.com/services/258-a-brief-history-of-hydraulic-fracturing
November 25, 2012 — UNEP releases a Global Environment Alert, warning of the several environmental risks that the hydraulic fracturing technique presents. The Alert also highlights public health risks and poses technical considerations for fracking.

January 22, 2014 — The EU adopts a recommendation for minimum principles for using high-volume hydraulic fracturing.

June 2014 — Public Health England publishes a review of the potential health impacts that come from hydraulic fracturing, as people are at risk from exposure to chemicals and water contamination.33

March 30, 2016 — An investigation based on a comprehensive analysis of tests and data by Stanford scientists shows that the water contamination in Pavillion, Wyoming is linked to fracking.

December 2016 — The Environmental Protection Agency issues the "Hydraulic Fracturing for Oil and Gas: Impacts from the Hydraulic Fracturing Water Cycle on Drinking Water Resources in the United States (Final Report)." This report talks about scientific evidence that shows how fracking has been linked to water contamination in areas around the fracking sites.34

**Historical Analysis**

The idea of hydraulic fracturing was born in 1862 when an American soldier saw the power of firing artillery directly into canal. On April 26th, the soldier, Edward Roberts, received a patent to create the “Explo ding Torpedo;” the first extraction method that resembled fracking. Roberts’s primitive model increased oil production by 1200% within the first week of being introduced.35

Although the first discoveries of fracking occurred in the 1860s, the beginning of commercial fracking was in the 1930s. During this time, drillers used acid to break into the ground, which made wells more productive. In 1947, Floyd Farris, who worked for Stanolind Oil and Gas, started studying the amount of pressure emitted from gas and oil wells. Because of this study, the first experiment of hydraulic fracturing followed at Hugoton Gas Field in Kansas, Texas. This experiment marked the beginning of commercial fracking.

On March 17, 1949, the Halliburton company conducted two more experiments for commercial fracking – one in Texas and the other in Oklahoma. These two experiments were more successful than the one conducted in 1947. As a result, Halliburton became the first company to use hydraulic fracturing at a commercial level. Because of this success, other companies quickly started to take note and use this technique. The Pan American Petroleum company was one of the first to begin hydraulic fracturing in the 1960s.36

In 1974, the United States Congress passed the Safe Drinking Water Act to protect underground drinking water. Furthermore, the Environmental Protection Agency (EPA) started to require special permits for injecting fluids into the ground and banned the injection of many hazardous chemicals.37 However, because hydraulic fracturing was used specifically to extract natural gas, these bans did not apply to the process. Therefore, despite these regulations, hydraulic fracturing continued to flourish and harm the environment. The Department of Energy

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34 https://cfpub.epa.gov/ncea/hfstudy/recordisplay.cfm?deid=332990
37 http://eecenvironmental.com/services/258-a-brief-history-of-hydraulic-fracturing
then sponsored the drilling of a 2000-feet well to develop new methods of extracting natural gas around a decade later, in 1986.

The modern form of fracking was developed in Barnett Shale in Texas by a man named George Mitchell. During the late 1980s and early 1990s, his company, Mitchell Well, drilled in several wells to try to prove that fracking could produce reliable and economical gas. In 1997, one of his wells finally proved that fracking could be financially sustainable over a long period of time. As a result, hydraulic fracturing quickly was adopted by many companies in the USA and other across the world.

**Current Situation**

Over the past decade, the oil and gas industry has combined hydraulic fracturing and horizontal drilling in order to mine and explore for natural gas in otherwise unreachable areas underground.

As of now, in the US alone, there have been approximately 82,000 wells drilled or permitted in 17 states.\(^38\) Even now, companies are looking to expand to other states to gather even more gas. Unconventional gas found through hydraulic fracturing is expected to take up over twice as much space in gas extraction in the US by 2040. In comparison, other natural gas production will continue to take up much smaller amounts of space.

The fracking industry is rapidly growing not only in the US but in other countries as well. For example, Algeria appears to have the third-largest shale gas reserves in the world;\(^40\) consequently, an Algerian company, Sonatrach, has made deals with large corporations, such as Shell, to sell gas in the European markets. As well, China has

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\(^{39}\) [http://behindthefrack.weebly.com/fracking-graphs.html](http://behindthefrack.weebly.com/fracking-graphs.html)

already started to look into its untapped areas because it contains the world’s third-largest shale oil reserves.\textsuperscript{41} Several other countries are also beginning to implement hydraulic fracturing.

What does fracking mean for these countries? Of course, there are benefits. Since hydraulic fracturing allows companies to dig thousands of feet into the ground, there is much more access to oil and gas than there was previously due to the limitations of older and more traditional extraction methods. The abundance of UG allows it to be much cheaper and much more accessible for citizens across the world.

Another benefit is economic: the increase in oil and gas results in more trade between countries. According to American Enterprise Institute, “In 2011, the USA produced 8,500,983 million cubic feet of natural gas from UG wells. Taking an average price of $4.24 per thousand cubic feet, that’s a value of about $36 billion, due to shale gas alone.”\textsuperscript{42} Because of the increase in production of natural gas, imports of natural gas to countries that utilize fracking have gone down significantly. Therefore, these countries no longer have to rely on foreign countries for natural gas and can start exporting their own gas, growing their economies both ways. Another benefit is an increase in employment. Because of the expanding business, companies have provided jobs to thousands of workers in order to sustain production levels and delivery activities. With these promising jobs, unemployment rates in these countries have gone down. Furthermore, these jobs also inject much needed capital into struggling economies.

The environment also benefits from fracking. Fracking helps reduce air pollution because the more natural gas is found, the more rates of burning coal and oil will decline. As a result, the large amounts of carbon dioxide and chemicals into the air from coal and oil will decrease as well. Because burning natural gas does not release as many chemicals or as much carbon dioxide into the air, this can help reduce the amount of greenhouse gases we produce, thus slowing down global warming.

Although these benefits may sound promising, hydraulic fracturing has still presented several dangers that must be taken into consideration. First of all, fracking often contaminates the water around it because of the approximately 600 chemicals, such as methanol and lead, that are put in the ground during the process.\textsuperscript{43} This contaminated water often contains carcinogens, which are capable of causing cancer. In the US alone, fracking wells produced approximately 280 billion gallons of wastewater in 2012.\textsuperscript{44} This water is then used by unsuspecting local residents as drinking water, which often makes them sick. The dangerous wastewater that results from fracking is an important health concern raised by many anti-fracking demonstrators. Water can also become so saturated with natural gas that it can be set on fire, thus causing damage to the environment and to public health.

**Case Study: Pavillion, Wyoming**

This case started the original investigation into the correlation between fracking and water contamination. In 2008, residents of Pavillion complained of a foul taste and odour in their drinking water.\textsuperscript{45} In response to these complaints, the US EPA started to investigate whether or not the dirty water was linked to hydraulic fracturing in the area. However, even though the initial testing hinted at a connection, the EPA turned the investigation over to officials in Wyoming without ever issuing a final report in 2013. In 2016, a former EPA scientist, Dominic

\textsuperscript{41}http://www.investopedia.com/articles/investing/091614/countries-highest-fracking-potential.asp
\textsuperscript{42}http://www.conserve-energy-future.com/benefits-and-dangers-of-fracking.php
\textsuperscript{43}http://www.conserve-energy-future.com/benefits-and-dangers-of-fracking.php
\textsuperscript{44}http://www.environmentamerica.org/sites/environment/files/reports/EA_FrackingNumbers_scrn.pdf
\textsuperscript{45}http://news.stanford.edu/2016/03/29/pavillion-fracking-water-032916/
DiGiulio, published a full report that scientifically proves fracking is directly linked to water contamination. Since then, fracking has received a considerable amount of backlash.

Water waste is another problem associated with fracking. The New York State Department estimates that 2.4 to 7.8 million gallons of water are used in each fracking job. Some wells have even been shown to use up to 9.6 million gallons. Because hydraulic fracturing makes use of freshwater sources and fracking is often done in arid areas, the process puts a heavy strain on water sources and will affect the water supply in the future. In addition, a substantial amount of the water then comes out as wastewater. This huge amount of water waste presents a major concern for many people across the globe.

Transportation of wastewater is also dangerous. Not only does it cost substantial amounts of money to transport the wastewater over long distances in order to drill it in the ground to dispose of it at specific areas like surface ponds, but the injection of water itself is also extremely dangerous because it can cause earthquakes. Transporting the water also presents the possibility of leaking the dangerous wastewater; furthermore, it is common for the water to be improperly disposed often being dumped into municipal wastewater systems or storage pits.

Although in the short term hydraulic fracturing can present some environmental benefits, it still furthers the problem of global warming pollution in the long run. If reliance on natural gas continues instead of finding greener, renewable sources of energy, injection of chemicals and toxins into the air increases. Fracking releases methane, which is far more dangerous than the carbon dioxide released by coal and oil, and these pollutants intensify the greenhouse effect, furthering anthropogenic climate change.

Noise and light pollution is yet another problem associated with fracking. Fracking processes go on day and night, which means that light pollution occurs at all times. According to Seth Shonkoff, a visiting scholar in the Department of Environmental Science, Policy, and Management; an affiliate at Lawrence Berkeley National Laboratory; and executive director of PSE Healthy Energy, "Oil and gas operations produce a complex symphony of noise types, including intermittent and continuous sounds and varying intensities." The noise affects residents around the fracking sites, and the levels are high enough to harm the civilians. Moreover, noise pollution has been proven to be linked to illnesses such as diabetes, depression, birth complications, and cognitive impairment. These noise levels could also cause extreme stress and disturb sleep, all of which causes harm to the locals living in fracking areas.

A further environmental concern presented by fracking is the possibility of earthquakes, either the actual fracking process or from the disposal of water after the extraction. As the water and chemicals are injected into the ground, they often cause seismic activity. In northeastern British Columbia in Canada, more than 670 earthquakes occurred between October 2014 and December 2015. The largest one was recorded to be of 4.6 magnitude. Although these earthquakes may not be large enough to destroy wide areas of land, they are still a pressing concern because they are dangerous for the surrounding residents and workers.

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46 http://www.gaslandthemovie.com/whats-fracking/faq/water-used
47 http://www.climatecentral.org/news/fracking-water-use-skyrockets-19177
Past UN/International Involvement

Fracking has been the cause of heated debate in several countries around the world. Many countries have already taken action to combat the environmental impacts of fracking, and the UN has also discussed it in less depth.

Most fracking takes place in or around the United States. The EPA released several reports and investigations about fracking in the past, and it has also fined companies for violating the regulations. For example, in 2011, the EPA fined EXCO Resources USD 160,000 for injecting fracking wastewater into the wells for five months. Furthermore, on March 20, 2015, the Obama administration put in place the country’s first federal regulations on fracking. These rules allowed government workers to inspect the safety of fracking sites and required companies to disclose all of the chemicals used in each job. The regulations encompass many aspects of fracking, and ultimately, they serve as a good base on which to build fracking regulations.

In November 2012, the UNEP issued a Global Environment Alert on fracking, which highlighted several environmental and public health risks presented by hydraulic fracturing. The report also included potential policies to lessen the effects of hydraulic fracturing. The UN has continued to issue reports on fracking investigation, the most recent of which mentioned the possibility of contaminated water sources in Texas, USA due to fracking.

The EU released a Commission Recommendation on January 22, 2014 on “minimum principles for the exploration and production of hydrocarbons (such as shale gas) using high-volume hydraulic fracturing.” The Recommendation provides several clarifying points for both authorities and civilians of the EU, as well as multiple minimum requirements for all EU member states to control the harms of UG extraction.

Concerns about fracking have also led a number of countries to outright ban hydraulic fracturing. France became the first to do so in 2011, followed by Bulgaria in 2012, and Germany and Ireland in 2016. The past involvement of these countries and organizations serve as a concrete base for future actions. However, the scope of future solutions must be broadened to encompass all aspects of hydraulic fracturing.

Possible Solutions

Delegates are reminded that the solutions presented in this backgrounder are not the only solutions that should be considered by the UNEP. You are encouraged to think outside the box and come up with unique solutions as well. Furthermore, delegates should keep in mind their respective foreign policies while making decisions on which stance to take.

One potential solution is to put more money into creating better, more efficient technology. For example, water treatment after fracking is clearly a problem due to the dangerous chemicals in the wastewater and the possibility of creating minor earthquakes as a result of injecting it into the ground. The UNEP could advocate for research into the creation of technologies which make it easier to dispose wastewater at the site instead of transporting it over long distances. By implementing a way for companies to reuse water efficiently, we would be limiting the number of devastating spills and earthquakes that occur. On the other hand, it is up for debate how feasible this solution would be, considering that some developing countries might not be able to afford such technologies.

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The UNEP could also mandate for a solution in which different types of fracking are utilized instead of the current, conventional form. There are already other techniques invented, such as liquefied petroleum gas (LPG) fracking, foam-based fracturing, and channel fracturing technology. Although at first these options may seem completely viable, there are reasons as to why the world has not adopted these waste-saving strategies. Unfortunately, these techniques include limitations not imposed on hydraulic fracturing. For example, LPG fracking is limited to specific formations, and there have been multiple questions raised about the safety and cost of this process. Additionally, although foam-based fracking is extremely efficient in terms of water, it does not work as well as hydraulic fracturing when implemented in formations that require high pressure and high volumes of water. Furthermore, although channel fracturing has been adopted in some places, its benefits have not been completely proven. It is important for delegates to consider whether these potential water-saving techniques are possible solutions.

Setting regulations also serves as a potential solution. For example, the UNEP could decide to recommend a complete ban on fracking, as some countries, like France and Germany, have already done. However, delegates are reminded to think of the repercussions of this ban, especially the economic ones. Shale gas mining has brought substantial profits to countries that practice fracking. On the other hand, the UNEP could consider putting provisions on where and how much fracking can take place. As well, the committee could support setting limits on the amount of carbon emissions. Delegates could also look into only allowing companies to practice hydraulic fracturing if they submit to allowing UN workers to check their sites or mandate that all companies must come up with an approved green plan. However, remember to keep in mind the implications of severe regulations. Overly harsh regulations could completely render the fracking industry obsolete.

**Bloc Positions**

**USA**

The USA plays a major role in the discussion of fracking because it is the primary practitioner of the process. In recent years, the Obama administration set new regulations in several areas of hydraulic fracturing, and some states have established regulations themselves. Three states have actually banned fracking outright, New York, Vermont, and Maryland. However, states such as Pennsylvania are major producers of fracking and will likely not want to set up regulations or bans. It is up to the delegates to determine how much their foreign policies allow for the regulation and implementing of other fracking methods in accordance with the USA.

**Canada and Australia**

Fracking is also a widely used method of extracting gas in Canada and Australia, especially in provinces such as Alberta and British Columbia, and parts of Western Australia. Canada will likely want to focus more on the prominent earthquake problem that occurs around fracking sites, and it will also likely be more open to setting regulations to ensure the safety of both the public and the environment. In fact, fracking triggers 90% of all earthquakes in both British Columbia and Alberta. In Australia, although hydraulic fracturing has been used in differently in the past (using it for conventional gas instead of shale gas), a handful of wells have been fracked for unconventional (shale) gas in the past decade. However, seeing the harms of fracking, environmentalists have actively objected to fracking for quite some time. Victoria, a state in southeastern Australia, has banned

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fracking to protect the agriculture. Both Canada and Australia will look to create a balance between their economies and the environment, both of which are very important.

**China**

China has recently taken to hydraulic fracturing as a way of decreasing dependency on foreign gas. The country extracted 3.8 billion cubic feet of shale gas in March, which would translate to 1,476 billion cubic feet annually.  
56 However, although its shale gas reserves are plentiful and large, they are expensive to extract from. As a result, the country is still far from being energy-independent. Regulations on shale gas also still face hurdles as other policies over aspects such as trade affect China’s ability to monitor shale gas extraction accurately. Because China is so dependent on foreign gas, it will likely support better technology in terms of hydraulic fracturing itself rather than harsher regulations.

**Global Environmental Leaders (Norway, Sweden, Denmark, etc.)**

These countries do not often engage in the practice of hydraulic fracturing, but as global environmental leaders, they will want to push for a world in which the environment is sustained. Therefore, these countries are expected to advocate for reform to preserve the wellbeing of the environment.

**Arab States**

The Arab states are opposed to fracking because their major buyers, including China and the USA, look toward becoming energy independent. Because this means that they will be forced to make gas prices significantly lower and face an oil shock, the Arab states will want to find a way to stop fracking to maintain oil prices. However, this could also be a chance for Arabic countries to diversify their economies to be less reliant on the oil industry. Overall, though, these countries will be opposed to fracking and try to make it as limited as possible.

**EU, the UK, and Allies**

Fracking in the EU has been fairly regulated for the past number of years, but Brexit has made it much easier for the UK to frack because none of the regulations are imposed on it anymore. However, given the concerns raised in both the EU and the UK about the harms to the public and to the environment, these countries are more focussed on preserving the environment than growing the economy.

**Discussion Questions**

1. Are the economic benefits from fracking worth the associated environmental risks?
2. How do we impose regulations without completely obliterating a country’s chance to hydraulic fracturing? Or, should fracking be banned completely?
3. What are other ways for countries to be more energy independent without ruining the environment?
4. What role can the UNEP take in making a resolution about greener alternatives? Are these a viable option in this case at all?
5. How can economic growth and environmental preservation both remain balanced and strong?

56 http://dailycaller.com/2017/04/18/fracking-sweeps-into-china/
**Additional Resources**

**EU Minimum Requirements:**


**UNEP 2012 Warning Against Fracking:**

https://na.unep.net/geas/getUNEPPageWithArticleIDScript.php?article_id=93
Bibliography


What chemicals are used in fracking?. http://www.what-is-fracking.com/what-chemicals-are-used-in-fracking/