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The Tragedy of Commons: Fossil Fuels
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# The Tragedy of Commons: Fossil Fuels

## *Importance of the Topic:*

### *a. The Tragedy of Commons*

The Tragedy of Commons has been a fundamental problem since the beginning of time,dating as far back as humans began evolving. The Tragedy of Commons can be defined as "the depletion of a shared resource by individuals acting independently and rationally, according to one's self-interest, despite knowing that an abuse of the common resource is contrary to those individuals' long-term, best interests" (Griffiths & Kickul, 2015). It is human nature to put yourself above all others, but unfortunately in doing so there are far too many consequences. When it comes to the oil industry the tragedy of commons is very prevalent. Every country that is naturally abundant in oil is taken advantage of in some sort of way. These limited resources are stretched thin and governments and companies care more about profit than the environmental impact if their careless actions and the tragedy of commons occurs.

### *b. Understanding the Importance of Fossil Fuels in the Economy*

Understanding the importance of fossil fuels in our economy is an essential part of understanding how to manage this precious resource. Our economy is driven by fossil fuels simply because without fossil fuels, no power, no gas. Fossil fuels provide a cheap and powerful energy source for society, according to the Energy Information Administration "Fossil fuels—petroleum, natural gas, and coal—have accounted for at least 80% of energy consumption in the United States for well over a century" (Mobilia, 2018). With fossil fuels making up almost all of the energy source providers for the United States, fossil fuels are important for power. Society as a whole relies on this type of energy in order to live everyday life, work, learn, travel. It is apparent that crude oil runs the world.

### *c. Exploring How Limited of a Resource Fossil Fuels Are*

However, fossil fuels are not a renewable source of energy and have many negatives like air pollution, water contamination, and is a non-renewable energy source. According to The science of The Total Environment "Fossil fuels represent the primary energy supply utilized worldwide. Despite this, fossil fuels are both limited resources and have severe environmental impacts that result in climate change and several health issue" (Abdelkareem et.al, 1995). The health issues linked to air pollution from the combustion of fossil fuels include and are not limited to asthma, cardiovascular issues,and premature death. According to a study done by Harvard the combustion that fossil fuels lets off "...creates climate change and releases pollutants that lead to early death, heart attacks, respiratory disorders, stroke, exacerbation of asthma, and absenteeism at school and work. It may even be related to autism spectrum disorder and Alzheimer's disease." The burning of fossil fuels is detrimental to not only society's health, but to the planets.

## *Concepts:*

### *d. The Tragedy of Commons has influenced business*

The Tragedy of Commons has influenced the way people do business for hundreds of years, especially in the oil industry. An example of this would be within the oil industry, when companies continue to over-fracking in a certain area , knowing that in doing so, it creates problems for that area. These issues include air pollution which leads to health complications, oil spills, water contamination, and earthquakes. The oil industry has exploited many areas that are

abundant in oil and the consequences are high. Sometimes there is more oil than what is being demanded causing a lower price on gas. Sometimes there is not even oil to be made into gas, making gas more expensive, this illustrates the concept of supply and demand.

*e. Fossil Fuels, a Valuable Source*

Fossil fuels have become such a valuable source for industries across the globe, causing war and tension amongst countries for years. The concept of one country dominating the oil industry while another country suffers is another example that exemplifies the concept of The Tragedy of Commons. For example, oil is the cause of many wars such as World War I, Chaco War, World War II, Biafran War, Iran–Iraq War, Gulf War, and other wars. Wars that lead to the deaths of millions. The Oil Industry and the production of oil causes conflict between countries and governments has been an issue since the conquering of land. An illustration of The Tragedy of Commons is how governments fight over an area for oil ,jeopardizing the lives of many, impacts the economy and the home country of where the war is hosted.

Leaving no oil or money to be made for another country illustrates the idea of The Tragedy of Commons. For example, the country Saudia Arabia used to dominate the oil industry until last year when the United States dominated the oil industry. According to the EIA "The United States became the world's top crude oil producer in 2018 and maintained the lead position in 2019 and 2020 " (U.S. Energy Information Administration, n.d.). With the United States of America now dominating the oil industry, the States are less reliant on other countries for crude oil, as they once were, which helps America avoid conflict with other oil bearing countries.

*f. Hydraulic Fracturing*

Hydraulic fracking and hydraulic fracturing are used interchangeably. Hydraulic fracturing is defined by the United States Geological Survey (USGS) as:

> Hydraulic fracturing, informally referred to as "fracking," is an oil and gas well development process that typically involves injecting water, sand, and chemicals under high pressure into a bedrock formation via the well. This process is intended to create new fractures in the rock as well as increase the size, extent, and connectivity of existing fractures. Hydraulic fracturing is a well-stimulation technique used commonly in low-permeability rocks like tight sandstone, shale, and some coal beds to increase oil and/or gas flow to a well from petroleum-bearing rock formations. (United States Geological Survey, n.d.)

The process of Hydraulic Fracturing takes anywhere from three to five days and creates access to oil wells that can produce enough oils to be in use for years. Hydraulic Fracturing has enabled countries' economies to grow because of the sale of oil extracted/discovered by these methods in countries with an abundant amount of oil.

*g. Oil Spills*

Oil spills and their damage to the environment is the number one reason crude oil should become obsolete.There are more consequences of using fossil fuels than there are positives. Oil spills demonstrate the concept of The Tragedy of Commons because most oil spills happen due to careless mistakes done by the oil companies. The actions that cause oil spills are due to people's negligence, greed, equipment not maintained and breaks, over packing of ships, and terrorist attacks. Most of which are preventable. These instances that occur not only impact the ocean and its marine life but people and countries globally. Oil spills are not only preventable but cause irreversible damage, kill millions of living organisms, and are expensive and take years to clean up.The concept that one oil company wants to make as much money as they can and pack

their ship full of oil and get it to a given location as soon as possible is irreducible and sometimes causes unforgivable damage.One of the most well known oil spills was the Exxon Valdez oil spill that happened in 1989 . This oil spill was so severe it is still talked about 30 years later. This oil spill was due to negligence. The ship that was bearing about 54 million gallons of crude oil hit a coral reef that tore a hole in the side of the ship causing the oil to leak out into the ocean. It is estimated that about 10.8 million gallons of oil spilt out into the Prince William Sound. This spill was caused by the ship taking an alternate route to avoid an iceberg, which there was an unaccounted for coral reef that ripped a huge whole in the ship's hull. Normally ships like this have equipment like radar to detect what is in the water but this ship did not have proper working equipment for over a year and still went out on voyages. According to Marine Insight "authorities found that Exxon, like many other shipping companies, was not following measures that had agreed upon, including the installation of iceberg monitoring equipment" (Mambra, 2020). This shows that not just Exxon is guilty of the concept of The Tragedy of Common, but many other oil companies are as guilty. These oil companies have their own agendas, where they ignore what is best for society, just focus on their own personal gain, by doing what is easiest and best for them, with little to no thoughts in regards to what is best for the environment, the crew, the overall company, etc. These oil companies' negligence has many consequences as illustrated above.

*h. EPA and Their Role Within the Industry*

It is the Environmental Protection Agency whose job it is to regulate the environment, monitoring businesses and firms, to keep the environment healthy. This agency is in the United States and is an independent executive agency for the Federal government. They are incharge of holding companies accountable for their actions environmentally. The Environmental Protection Agency enforces laws that help limit pollution, protect people, and protect the environment. When the Tragedy of Commons occurs within the oil industry it is the Environmental Protection Agency that takes civic action in solving these cases. According to the EPA "Environmental civil liability is strict; it arises simply through the existence of the environmental violation. It does not take into consideration what the responsible party knew about the law or regulation they violated" (EPA,2021). The types of enforcement results in settlements, civil penalties, injunctive releases, supplemental environmental projects and mitigation. Along with civil enforcement such as criminal penalties and incarceration due to the violation of the laws set in place to protect the environment from human damage. The EPA plays a vital role in ensuring that companies are following the government's strict laws to protect the planet and without laws and organizations like the EPA, companies would be able to do whatever they want and the Earth and its environment would suffer immensely.

***Analysis:***

*a. Fossil Fuels, a Fundamental Entity*

Fossil fuels are a fundamental entity that is imperative for society to function and demonstrate the true meaning of what the Tragedy of Commons is. Another example of the Tragedy of the commons and oil industry is the rapid rate at which the world consumes crude oil. Each country consumes massive amounts of crude oil per year, which will be problematic in the future. The issue with crude oil is that it takes thousands of years to develop, making crude oil a nonrenewable resource. There is the problem with the tragedy common when it comes to the consumption of oil for the whole world. The world keeps burning oil at a rapid rate and the non renewable resource of oil cannot keep up. According to the EIA "the global supply of crude oil,

other liquid hydrocarbons, and biofuels is expected to be adequate to meet the world's demand for liquid fuels through 2050" (EIA, 2020). It is estimated that if the world continues to consume oil at this rate, that the planet will run out of oil by 2050, thus the need for an additional energy source such as clean energy. Renewable energy will be the best course of action to replace crude oil, so that the world will have a source of energy by 2050. The only issue is finding the cheapest clean energy, the reason why the world relies on crude oil, knowing its caveats is crude oil being the cheapest, most powerful source to provide energy.

*b. Benefits of Fossils Fuel*

The benefits of fossil fuels include being an economy predictor, cheap, fast energy, and a dependable source of energy. Fossil fuels are one of the cheapest energy sources along with being the most reliable source of energy due to the areas of earth that are abundant in oil. The reason why fossil fuels are the most popular source of energy is the accessibility and the exclusive knowledge on fossil fuels. According to University of Arkansas Sustainability Blog, Linden Cheek states that there are three reasons why the world sticks to primarily fossil fuels. The first reason being is the efficiency of fossil fuels, a little amount creates lots of energy. The second reason being the convenience factor of fossil fuels. It is abundant and already readily available to be produced and made into energy. Fossil fuels are a powerful source and are cheap. Lastly, the reason why we continue to use fossil fuels is the extensive knowledge we have on fossil fuels. This vast knowledge on fossil fuels stems from using fossils fuels as an energy source for the last 200 years (Cheek, 2021). Bottom line fossil fuels are continuously used throughout the world based on 3 factors: convenience,efficiency and logistics.

*c. Drawbacks of Fossil Fuels*

Fossil Fuels have many negatives including negatives associated with over extraction of oil, causing natural disasters due to oil spills, accelerates climate change, causes friction between countries leading to wars and treaties. First, the issue with over fracking is that it causes natural disasters like Earthquakes. The consequences of over fracking are pernicious to a country's land causing Earthquakes, water and air pollution. There has been a link between fracking and earthquakes not just in the United States but all around the world. Second, the issue with fossil fuels and The Tragedy of Commons.

The way that the world relies on fossil fuels in another way that The Tragedy of Commons is expressed with the consumption of Fossil Fuels all around the world, knowingly consuming at a rate that we will run out in the distant future and how much it pollutes the Earth and is causing climate change and global warming. Most of the world still chooses to use fossil fuels daily.

***Questions that will be addressed:***

*a. What other options are there?*

There are additional resources for energy that is also safe, renewable and powerful. However, alternatives to fossil fuels are not as cheap or as efficient for power. The other alternatives to crude oil include nuclear energy, solar energy, wind energy, geothermal energy, coal mine methane, hydrogen fuel cells, and natural gas.With the fast rate of consumption of fossil fuels by the world, it is imperative that we find another powerful energy source before we run out of crude oil.

*b. Why does the price vary?*

The price of crude oil varies due to several factors that control the industry's price. According to the EIA:

> While current oil consumption is primarily related to current economic activity, changes in the outlook for future economic conditions can also have an immediate impact on oil prices. For example, an improvement in the economic outlook would tend to increase the chance that oil markets will tighten in the future, resulting in higher expected future oil prices. This change in expectations would be reflected in higher oil futures prices. This rise in futures prices increases the incentive to hold inventories, which in turn decreases available current supply and tends to raise current prices. (EIA, 2021)

The rate at how fast the world consumes oil and how much is abundant determines the price of fossil fuels, allowing for prices to alter

*c. Do fossil fuels and the economy have an inverse relationship?*

Fossil fuel and the GDP are related and do not have an inverse relationship. This relationship is a direct relationship, because when the consumption rate of fossil fuels goes up, the GDP goes up. One is not reliant on another according to David I. Stern "Empirical research on whether energy causes growth or vice versa is inconclusive, but meta-analysis finds that the role of energy prices is central to understanding the relationship" (Stern, 2018). It is difficult to determine their exact relationship due to there not being a clear cut answer, this is based on numerous factors such as weather, the country economic conditions, the amount of oil being demanded, the amount of oil being refined etc.

*d. Are countries' economies tied to oil consumption?*

The rapid economic growth in countries is largely attributed to the rising oil consumption. The expected levels of economic growth are heavily influenced by the global oil demand and oil prices, along with the current rate. The reason being is greatly influenced by the use of commercial and personal transportation activities. These factors take up a large percentage of crude oil and are directly tied to economic conditions. Throughout the manufacturing processes they consume massive amounts of oil, using it for fuel for production or using it as feedstock. However in some non-OECD countries, oil remains an important fuel for power generation. All these uses above fluctuate the price of oil Because of these uses, oil prices tend to rise when economic activity and in turn oil demand is growing strongly. Many non-OECD countries are also experiencing rapid growth in population, which is an additional factor supporting strong oil consumption growth. (EIA 2021). Fossil fuels can make or break a country's economy, and with the rate at which oil is projected to be consumed at, countries economies that were nce low, have the opportunity to build a better economy.

*e. Has this Republicans vs. Democrat leaders?*

Politics play a big role within the oil industry, from regulation to refining oil, the government plays a key role in the oil industry. Depending on the politician in office within America, they determine the level of determination about America and their pollution habits. For example, former President Trump withdrew from the Paris agreement in 2017. Trump withdrew from the Paris agreement due to several reasons inducing its unfairness, and not in the best interest economically for the United States. According to an article on Brookings.edu:

> The administration has argued that the Paris Agreement is “unfair” because large polluting countries such as India and China are not required to do anything until 2030. The voters don’t buy this argument. Two-thirds of them—79 percent of Democrats, 56 percent of Independents, and 51 percent of Republicans—say that the United States should reduce its greenhouse gas emissions regardless of what other countries do.” (Galston, 2021)

This demonstrates the split of opinions within the U.S. on climate change, and illustrates how hard making decisions are for politicians. Since President Biden has been in office he rejoined the Paris agreement and has more of a focus on climate change compared to Trump. According to the White House Fact Sheet "As part of re-entering the Paris Agreement, he also launched a whole-of-government process, organized through his National Climate Task Force, to establish this new 2030 emissions target – known as the "nationally determined contribution" or "NDC," a formal submission to the United Nations Framework Convention on Climate Change (UNFCCC) " (White House Fact Sheet, 2021). The difference in opinions on climate change varies depending on the democratic party or the republican party. These vast differences of opinions are another example of The Tragedy of Commons in regards to each part will do what is best for them, not the common public, or the world.

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