

UN Environmental Program Background Guide

Georgia Tech Model United Nations

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Topic 1

Alternative Fuels and the Growing Global Independence From Petroleum

Introduction

The supply of petroleum and other fossil fuels such as natural gas has continued to increase in order to keep up with the growing global energy demand in both OPEC (Organization of the Petroleum Exporting Countries) and non-OPEC countries. At the same time, global energy¹ is entering a transition phase away from oil in an effort to decarbonize the world.

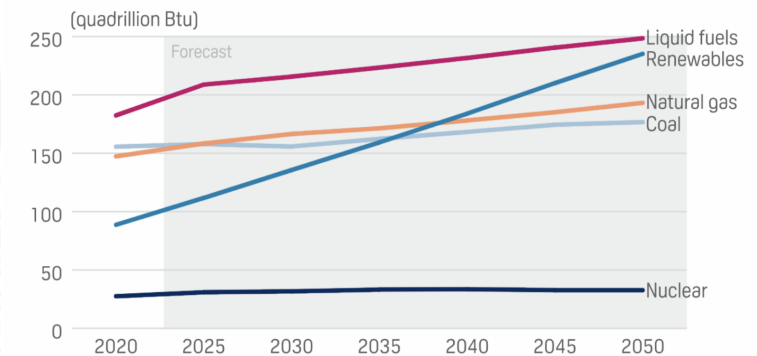
Alternative fuels are becoming increasingly important as the world moves towards a more sustainable future. For decades, petroleum has been the primary source of energy for transportation, industry, and many other sectors. However, as concerns over climate change, air pollution, and the depletion of fossil fuels continue to grow, there is a pressing need to find alternative sources of energy. The development and use of alternative fuels such as biofuels, hydrogen, electricity, and

¹ IEA (2020), Oil 2020, IEA, Paris <https://www.iea.org/reports/oil-2020>, License: CC BY 4.0

and natural gas offer the potential to reduce greenhouse gas emissions, improve air quality, and increase energy security. The global shift towards alternative fuels is driven by a desire to reduce dependence on petroleum and other non-renewable resources, and to develop more sustainable and resilient energy systems. In this context, the use of alternative fuels is a key strategy for achieving a more sustainable and independent global energy system.

Many claim that the energy crisis will be the defining topic of the 21st century however world leaders continue to not make it a priority in global public policy. The transition to renewable energy should be judiciously implemented. Today, about 15% of global energy needs are satisfied by renewables and energy demand is expected to rise by 2050. Natural gas consumption is expected to rise to 31% and renewable energy consumption is expected to rise to 27%. Renewables are also expected to become 90% of added electric generation from 2020 to 2050 in developing regions, where generation growth is seen at almost double the pace in OECD (Organisation for Economic Co-operation and Development) regions². The switch from oil to renewable energy is a complex and challenging process that involves numerous technical, economic, and social factors. Oil and gas will likely continue to be at the top of energy consumption charts but how efficiently we use petroleum and pair it with renewables will be crucial to maintaining a safe and habitable planet.

GLOBAL OIL DEMAND TO GROW THROUGH 2050 DESPITE SURGING RENEWABLES



Source: US Energy Information Administration

History



Egyptian President Anwar Sadat and U.S. Secretary of State Henry Kissinger during a press conference, February 28, 1974. AP Photo

The story of independence from oil in the modern world begins in 1973 with the United States Oil Crisis due to the embargos passed by Arab oil ministers after the Nixon administration announced a \$2.2 billion military aid package to Israel during the Yom Kippur War. After the embargos were lifted in 1974, the world's top economies formed the International Energy Agency and came together at a summit in France in 1975 to discuss the global economy and

² Market Movers Europe: Banking recession, oil, OPEC production, IEA, China demand | FT Commodity Summi... (2023,

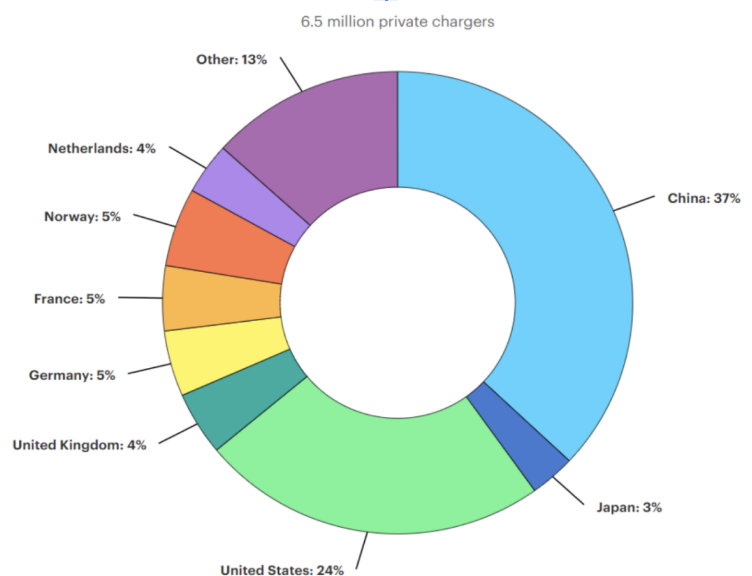
energy dependency. Developed nations around the world began passing legislation to conserve energy and fuel supply. In the following years, research and development efforts focused on a wide range of alternative fuels, including biofuels, hydrogen, electricity, and natural gas. Many of these technologies were initially expensive and faced technical and regulatory challenges, but over time, they began to gain wider acceptance and adoption. As the eighties rolled around, renewable options such as geothermal, solar, and biomass energy gained popularity and were being incentivized for the first time on a large scale. One of the earliest and most widely adopted alternative fuels was ethanol, which is produced from crops such as corn and sugarcane.

In 1993, European and Japanese companies began engineering the first hybrid electric vehicles which revolutionized the market. Later in 1997, many world leaders signed the Kyoto Protocol, an international mechanism for countries to reduce and adapt to rising greenhouse gas levels in order to mitigate climate change. But the United States, the largest greenhouse emitter of the time, refused to ratify the treaty and for the next decade faced international criticism for its slow adoption of emissions-reduction policies. Also in 1997, the Asian economic crisis caused a downturn which combined with an increasingly constrained environment for oil concessions globally, encouraged a string of oil mergers among the world’s largest private oil companies. In the late 1990’s new assertive oil powers in Latin America and Russia began to emerge and restricted access for international oil companies.

The development of electric vehicles (EVs) also began to accelerate in the early 2000s, with the introduction of the Tesla Roadster in 2008 marking a significant milestone in the development of the EV market. In 2016, The Paris Agreement—signed by more than 190 countries, The most ambitious climate accord to date, the agreement requires all parties to set targets to reduce greenhouse gas emissions, with the goal of arresting the rise in the average global temperature.

Current

The current oil market is riddled with global conflict as we pass the first anniversary of the Russian war with Ukraine. U.S. imports of oil from Russia have been blocked by the Biden Administration, and Western sanctions cause energy companies to withdraw from the country. Oil prices, already rising in the wake of the pandemic, surge to their highest level since 2008. The current situation of global indepen-



-dence from oil and the growing use of alternative fuels is complex and varied, with progress being made in some areas and challenges persisting in others.

On the positive side, the use of alternative fuels such as biofuels, natural gas, and electricity has been growing steadily in many parts of the world. For example, Sales of electric cars topped 2.1 million globally in 2019, surpassing 2018 – already a record year – to boost the stock to 7.2 million electric cars. Electric cars, which accounted for 2.6% of global car sales and about 1% of global car stock in 2019, registered a 40% year-on-year increase. In some countries, such as Norway and the Netherlands, EVs make up a significant portion of new vehicle sales. Biofuels, such as ethanol and biodiesel, also continue to be used in transportation in many parts of the world. In the United States, for example, the Renewable Fuel Standard requires a minimum amount of renewable fuels to be blended into transportation fuel, and biofuels currently make up around 10% of the country's gasoline supply. Natural gas is also increasingly being used as a transportation fuel, particularly in the form of compressed natural gas (CNG) and liquefied natural gas (LNG). According to the International Energy Agency, the number of natural gas vehicles (NGVs) in use worldwide reached around 29 million in 2020.

However, despite these positive trends, the world remains heavily reliant on oil for transportation and other energy needs. According to the IEA, oil remains the largest source of primary energy globally, accounting for around 33% of total energy consumption in 2020. The transportation sector remains heavily reliant on oil, with the IEA estimating that over 90% of transport energy comes from oil. Moreover, the Covid-19 pandemic has had a significant impact on energy markets and may have slowed progress towards global independence from oil. The pandemic led to a sharp drop in global oil demand in 2020, but it also caused disruptions to renewable energy supply chains and financing, leading to delays in some projects and investments.

³ IEA (2020), Global EV Outlook 2020, IEA, Paris <https://www.iea.org/reports/global-ev-outlook-2020>, License: CC BY 4.0

Directives

As global ambassadors and leaders, you have an important role to play in oil reliance and the adoption of alternative fuels and technologies. Here are some guiding questions that might help you in creating resolutions and policies related to this issue:

- Are there any current goals or targets set by your nation for reducing the use of fossil fuels, including oil, in various sectors such as transportation, industry, and power generation? How can these goals be transformed on a global scale?
- Given the global nature of the energy system, international cooperation and collaboration will be critical for accelerating the transition to alternative fuels. How and with whom will you work to accelerate your nation's goals?
- What role do you see for market mechanisms, such as carbon pricing and emissions trading, in promoting the adoption of alternative fuels and technologies?
- How do you plan to address the challenges and obstacles to transitioning to alternative fuels, such as the need for infrastructure and financing, and the potential impact on employment and local communities?
- How do you plan to balance the need for economic growth and development with the imperative of reducing greenhouse gas emissions and addressing climate change?
- Remember to keep your nation's history and positions in mind when creating blocs and writing papers.

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Topic 2

The Threat of Biodiversity Loss in Agriculture

Introduction

Envision a world where basic grocery store items and other staple crops such as cotton and medicinal plants no longer exist, and hunger becomes an ever-present risk. While it may seem like an apocalyptic scenario, it could become a reality if we do not take action to address the crisis of biodiversity loss. The global food market is responsible for the majority of biodiversity loss, with agriculture being the main contributor to the endangerment of 86% of the 28,000 species at risk of extinction⁴. In fact, the current rate of species extinction is higher than the average rate observed over the past 10 million years. Producing more food at a lower cost has far-reaching consequences beyond biodiversity loss, particularly in regards to climate change. The global food system is a significant contributor to greenhouse gas emissions, responsible for approximately 30% of all human-

⁴ <https://www.unep.org/news-and-stories/press-release/our-global-food-system-primary-driver-biodiversity-loss>

-produced emissions. As agriculture expands into previously untouched wild habitats and fisheries are harvested more intensively, new pressures are being placed on these environments. Additionally, greenhouse gasses from agricultural activities are contributing to rising temperatures and changing precipitation patterns, which are further exacerbating the stresses faced by various plant and animal species.

This dilemma however, creates more opportunities to improve agricultural production, biodiversity, and environmental resilience. In order to achieve these goals, it is necessary to take into account the broader ecological processes and ecosystem services, as well as the wider social and cultural consequences of farmers' knowledge and actions. This approach involves not only enhancing agricultural production, but also reducing the environmental impact of agriculture. Reversing the decline of biodiversity is crucial for the health and survival of our planet, as it serves as a life support system for humanity. Biodiversity plays a critical role in sustaining the quality of air and soils, distributing fresh water, regulating the climate, providing pollination and pest control, absorbing carbon emissions, and mitigating the impact of natural hazards.

History

The loss of biodiversity in agriculture has been an ongoing issue throughout human history. As agricultural practices have evolved and intensified over time, the natural habitats of many plant and animal species have been destroyed or altered, leading to a significant loss of biodiversity. The rise of modern agriculture in the mid-20th century, also known as the Green Revolution, had a particularly notable impact on biodiversity loss. After the green revolution, the production of cereal crops tripled with only a 30% increase in the land area cultivated⁵. This came true all over the world, with a few exceptions. Intensive monoculture farming, heavy use of synthetic fertilizers and pesticides, and the removal of hedgerows, woodlands, and other natural habitats to create larger fields have all contributed to the decline of biodiversity in agricultural ecosystems. Industrial monoculture planting allows farmers to specialize in a particular crop, as they usually deal with the same challenges and problems that may arise in the process of farming. The commercialization of agriculture and the global food system has led to a focus on high-yield crops and monoculture farming practices, which often prioritize efficiency and productivity over biodiversity conservation.

The displacement of traditional farming methods and indigenous agricultural practices has also contributed to the loss of traditional crop varieties and the decline of local biodiversity. Throughout

⁵ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7611098>.

the history of agriculture, biodiversity has played a significant role in shaping farming systems. Dating back 12,000 years, agriculture has relied on diverse biological resources, despite being seen by some as a threat to biodiversity⁶. Agricultural practices involve managing ecosystems, or agroecosystems, that take advantage of resources found in natural habitats. Many of the staple crops grown and consumed globally can be traced back to a few regions, known as "centers of diversity," primarily located in Asia, Africa, and Latin America. These regions have historically relied on crop diversity, which served as a foundation for the growth of significant civilizations. Plant collecting has also played a crucial role in enhancing agrobiodiversity throughout history. During the colonial era, the pursuit and collection of new plants and foods were key objectives of European explorers, contributing to the expansion of colonialism. Agricultural practices that prioritize diversity have traditionally included small-scale polycultural systems, also known as "home gardens," which can still be found in many regions such as Central America, Southeast Asia, sub-Saharan Africa, and even parts of Europe. Research has shown that shifting cultivation systems, particularly in traditional forms, are rich in agroecological diversity and contain a multitude of plant species. These systems can also be relatively sustainable in areas where there are low economic and demographic pressures for growth. Over the past three decades, advancements in agriculture have led to substantial growth in global production, achieved through both the expansion of cropland and the adoption of new technologies.

Current Situation

In recent years, there has been a growing recognition of the importance of biodiversity in sustainable agriculture, and efforts are being made to incorporate conservation practices into modern farming methods. However, the ongoing loss of biodiversity in agriculture remains a significant challenge that must be addressed to ensure the long-term sustainability of our food systems and the health of our planet. As the global population continues to grow and per capita incomes increase, there will be a higher demand for food. Meeting this demand will require either increasing yields on existing agricultural land or converting more wildlands into cropland. In the past, increasing yields has often meant using more inputs such as fertilizer, irrigation, and new cultivars, which have negative impacts on biodiversity and the environment. However, yields for some crops are reaching their limits, and further increases may not be possible. It can be expected that agriculture will adapt to new environmental conditions in the future, just as it has done in the past.

⁶ http://courseresources.mit.usf.edu/sgs/ph6934/webpages/CC/module_5/read/Linking_agricultural_biodiversity_Linking_agricultural_biodiversity_thrupp.pdf

Agriculture is responsible for 80% of global deforestation



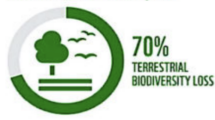
Food systems release 29% of global GHGs



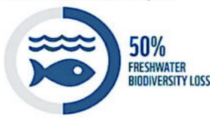
Agriculture accounts for 70% of freshwater use



Drivers linked to food production cause 70% of terrestrial biodiversity loss



Drivers linked to food production cause 50% of freshwater biodiversity loss



52% of agricultural production land is degraded



Farmers are facing growing economic pressures that are not necessarily linked to environmental changes. While agriculture is a significant system, the post-farm industries, such as processing, distribution, and retail, are even more powerful in terms of the economic value they add to a nation's gross domestic product. As the demand for bioenergy and carbon sequestration increases, there may be a greater need to convert land for agricultural purposes, leading to land degradation and food insecurity. To minimize adverse effects and maximize positive outcomes, bioenergy production and carbon sequestration should be integrated into sustainably managed landscapes. This approach could also offer additional benefits, such as improved biodiversity, salinity control, and reduced eutrophication.

Out of the approximately 6,000 plant species that are cultivated for food, only a small number of them, less than 200, contribute significantly to global food production. In fact, just nine plant species account for 66 percent of all crop production. Similarly, the world's livestock industry relies on around 40 animal species, with only a handful of them providing the majority of meat, milk, and eggs. Of the 7,745 breeds of livestock that are reported globally as being local to one country, 26 percent are at risk of extinction. More than 50 percent of fish stocks have reached their sustainable limit and nearly a third of them are overfished. According to data from 91 reporting countries, many wild food species and other species that are essential for ecosystem services such as pollinators, soil organisms, and natural enemies of pests, are disappearing at an alarming rate⁷.

The global food system faces challenges from imbalances among urban and rural areas, countries, and regions. For instance, some developed nations produce more food than they need, while others rely on imports to meet their needs. Mega-cities in the global South depend on the global commodity trade and are witnessing a faster rise in their environmental footprint than

⁷ <https://www.fao.org/news/story/en/item/1180463/icode/>

Directives

As global leaders it is your responsibility to strengthen international cooperation and partnerships to address the global challenges of biodiversity loss in agriculture, including through multilateral agreements and initiatives. Here are some guiding questions that may help you in your committee and research:

- What is the importance of biodiversity for food security and human well-being in regards to your member state and how can you prioritize its conservation and sustainable use in agricultural systems?
- What policies can you propose to the committee that promote sustainable agriculture and protect biodiversity?
- Does your country currently invest in research and development of sustainable agriculture practices that are adapted to local conditions, and/or support the dissemination of knowledge and technology to farmers?
- Does your country provide any financial and technical support to farmers to adopt sustainable agriculture practices that promote biodiversity conservation and reduce the negative impacts of agriculture on the environment?
- How can you address the root causes of biodiversity loss in agriculture in the region your country is from?
- In your working papers: engage with stakeholders, including farmers, indigenous peoples, local communities, and civil society organizations, to ensure that their knowledge and perspectives are considered in decision-making processes related to agriculture and biodiversity.

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