Special Conference 2

Reducing dependency on energy supplies from politically unstable regions

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Introduction

Energy is the backbone of any system of any scale in motion. As a result, ensuring that a nation has reliable energy sources is vital to facilitate services ranging from domestic transportation to central heating. Pairing this with a rapidly expanding global population, our dependency on energy has notably increased over time. However, the production and supply of energy are not equally distributed worldwide. Nations that lag behind must subsequently rely on energy imports elsewhere to establish energy security. If these exporting regions were to face political instability, as has become increasingly more apparent, recipient countries could face their own instabilities, leading to a struggling economy.

Definition of Key Terms

Barrel

A unit of volume commonly used for fluids, powders and dry goods. In the context of oil, an oil barrel is defined as 42 US gallons or roughly 159 litres.

Embargo

According to Investopedia, an embargo is a trade restriction, typically adopted by a government, a group of countries or an international organisation as an economic sanction. Countries that rely heavily on imports can suffer greatly when denied such resources.

Energy

Energy is a quantitative property that has the capacity for doing ‘work’: displacing an object via an external force. There are many different forms of energy, such as thermal, nuclear and kinetic

energy, yet “all forms of energy are associated with motion”. Thus, distributing and reliably receiving energy supplies are fundamental to a nation’s development.

Energy dependency

According to Eurostat, it is the extent to which an economy relies upon imports in order to meet its energy needs.

Energy dependency rate

The proportion of energy that an economy must import. It is defined via Eurostat as the net energy imports divided by the gross inland energy consumption plus fuel supplied to international maritime bunkers, expressed as a percentage.

Energy security

Defined via the International Energy Agency (IEA) as (a country/region having) “reliable, affordable access to all fuels and energy sources”.

Fossil fuel

Any hydrocarbon-containing material formed from the decomposed remains of dead plants and animals alive during the ‘carboniferous period’, roughly 359.2 to 299 million years ago. In order of prevalence (global consumption), the 3 main types of fossil fuels extracted from the earth’s crust are crude oil, coal and natural gas.

Joule

A derived unit of energy (or ‘work’); 1 joule is equal to the amount of work done by a force of 1 newton displacing a mass through a distance of 1 metre in the direction of the force applied. In certain statistics, the unit used to represent energy is the kilowatt-hour (kWh), equal to 1 kilowatt of power sustained for 1 hour as well as 3.6 megajoules.

Natural Gas Liquid (NGL)

The resultant, low-density liquid formed by the condensation of natural gas from underground reserves. Similar to any other hydrocarbon, NGLs are commonly used in cooking and blended into fuels for transport.

Petroleum

Another name for crude oil; it is a liquid mixture of (mainly) hydrocarbons, which can either be unprocessed or refined. Products using petroleum are very diverse, ranging from cosmetic products to industrial fuels.

Pipeline

A long tube, ranging from 1 cm to over a metre in diameter, used to convey oil, gas and other fossil fuels over long distances.

Primary energy

An energy form that is “harvested directly from natural resources” and thus has not been transformed via a “human engineered conversion process”; it is energy in its raw form at the beginning of the energy supply chain.

General Overview

In 2019, 606 exajoules (EJ) of energy were supplied globally; the prefix ‘exa-’ denotes ‘quintillion’. Almost all of this came from China, the United States, Russia and Saudi Arabia alone. Due to their locations, available resources and funding, these countries continuously dominate the energy market and subsequently have a lot of control over how energy is distributed today. However, several systems are in place to encourage the equal distribution of energy supplies worldwide.

Pipelines

For the transportation of energy, both domestically and internationally, there are two major types of pipelines: liquids, or petroleum, pipelines and natural gas pipelines. They were first built in the 1860s and, as of January 2022, at least 2220 operational oil, NGL and gas pipelines overlay the earth’s surface, spanning a combined length of roughly 1.24 million km.

The primary source of interest is the transmission pipeline: a sub-category of pipelines used to transport energy products over long distances, including across international borders. An important thing to note is their permanency. Pipelines are deeply embedded into a nation’s

infrastructure, which entails a long-term commitment from the buyer (and the producer). Although they grant a direct and plentiful source of energy, pipelines tie one nation to another, potentially exacerbating the issue of energy dependency.

The Russo-Ukrainian War

Starting from the annexation of Crimea on February 20, 2014, the recent escalation of the conflict between Russia (and pro-Russian separatist forces) and Ukraine has caused a ripple effect throughout the energy sector. The 2022 Russian invasion of Ukraine highlighted the European Union's dependence on Russia for energy as well as troubling consequences. Germany, one of Russia's biggest customers, currently pays Russia roughly 200 million euros a day. With Russia serving just over half of Germany's oil imports, their dependence on a nation at war meant that Germany was funding Russia's military while simultaneously advocating against the exact same war.

On a wider scale, because the EU accounts for roughly 40% of Russia's total natural gas exports, imposing sanctions and embargoes on oil and gas has been challenging. However, the European Commission has planned to curb Russian imports and rely on energy in multiple areas elsewhere by over two-thirds by the end of 2022, with many member states already following suit. For example, on February 22, 2022, Germany's chancellor, Olaf Scholz, suspended the certification of another major gas pipeline between Germany and Russia, Nord Stream 2, which would have granted Russia an even greater geopolitical advantage over the EU.

The 1973 oil crisis

On October 19, 1973, the members of the Organisation of Arab Petroleum Exporting Countries (OPEC) approved and proclaimed an embargo on oil exports to the US, amongst other nations. What followed was a devastating blow to the American energy sector and the global economy, shaping the way we dealt with such vital commodities indefinitely.

During the initial stages of the Yom Kippur War, fought between Israel and a coalition of Arab states, the United States commenced 'Operation Nickel Grass', delivering supplies and personnel to support the struggling Israelis. Viewed as an opposition, OPEC asserted their influence and control over the oil market, "successfully" nearly quadrupling the price of an oil barrel from $3 per barrel to almost $12 per barrel globally in less than a year. Leading up to this embargo, a very large majority of

American oil imports came from the Middle East. For this specific reason, a shortage in supply originating from the dependency on foreign supplies led to nationwide panic, including "hoarding, rationing and long queues at gas stations". Furthermore, the oil shock introduced the first stagflation – an economic recession and high unemployment rates paired with rising prices (inflation) – which was theorised as impossible before the 1970s.

Major Parties Involved

Russia

Russia is the largest country by area, covering 11.0% of the world's total landmass. With its geographical dominance comes an abundance of fossil fuel reserves. As the largest oil exporter to global markets and the third biggest energy producer (1516 mega tonnes, Mtoe, in 2021), Russia continues to dominate the energy market and, following smaller boycotts, has already redirected its oil from those nations to other areas of the global market. If the EU were to heavily reduce their energy dependence on Russia, as has been arranged with a new 210 billion euro ("RePowerEU") plan to completely end its reliance on Russian fossil fuels by 2027, Russia may struggle to find new customers in time. However, Russia themselves have been pulling out of supplying the EU, reducing their output bit by bit; a reduction in gas deliveries through the Nord Stream 1 pipeline has already been in effect since mid-June.

European Union

Following the effects of the Russo-Ukrainian War, the European Union's main goals concerning this issue have been to diversify its energy mix and reduce its dependency on energy supplies, specifically from Russia. With regards to the aforementioned 2027 plan, cutting ties with Russia would require the EU to locate alternative suppliers; Qatar plays a key role in this and has already signed a deal with Germany in exporting liquified natural gas (LNG) by 2024. Furthermore, Nigeria, Africa's biggest oil producer, has also accelerated the construction of its pipelines to Europe given the EU's aim to reduce its reliance on Russian energy.

International Energy Agency (IEA)

Following the 1973 oil crisis, the IEA was established to ensure energy security throughout the world. The 17 founding member states sought to initiate a "collective action mechanism to respond effectively to potential disruptions in oil supply". As of 2022, these emergency response systems have been activated five times since their creation, aided by their strong influence on the energy market and the global economy today. With its thorough analysis and data on the global energy sector, the intergovernmental organisation (IGO) continues to provide policy recommendations and solutions towards a "secure and sustainable energy future for all".

Organisation of Petroleum Exporting Countries (OPEC)

Currently consisting of 13 member states, all of which are major oil-exporting nations, OPEC is an intergovernmental organisation that, in 2021, exported 47.68% of the world's total crude oil exports alone. Founded in 1960, OPEC aims to coordinate its member states' petroleum policies to gain technical and economical advantages. Due to their large presence in the energy market, OPEC also aims to manage and adjust the supply of their oil to influence (and stabilise) the price of oil in global markets. Whilst holding 80.4% of the world's crude oil reserves, OPEC is one of few organisations or nations dominating the energy sector.

Timeline of Key Events

Date	Description of event
September 14th, 1960	OPEC is founded in Baghdad by Iran, Iraq, Kuwait, Saudi Arabia and Venezuela
October 6th-25th, 1973	Yom Kippur War
October 12th, 1973	US president Richard Nixon authorises Operation Nickel Grass
October 19th, 1973	OPEC approves the oil embargo on the US
November 18th, 1974	Creation of the IEA
December 1994	Energy Charter Treaty is signed in Lisbon
June 2011	Construction of Nord Stream 1's first line is completed
April 2012	Construction of Nord Stream 1's second (parallel) line is completed
February 20th, 2014	Start of the (ongoing) Russo-Ukrainian War
February 22nd, 2022	Certification of the Nord Stream 2 pipeline is suspended
February 24th, 2022	Start of the Russian invasion of Ukraine
May 18th, 2022	European Commission unveils the RePowerEU plan

May 20th, 2022 Germany and Qatar sign energy partnership agreement

UN involvement, Relevant Resolutions, Treaties and Events

- Agreement on an International Energy Program (IEP), November 1974
- Energy Charter Treaty (ECT), April 1998

Previous Attempts to solve the Issue

Although there have been numerous energy crises over the years, little has been done to minimise the risk of similar events occurring in the near future. Clear evidence of this includes Germany's recent gas conundrum at the height of the Russian invasion of Ukraine concerning the Nord Stream 1 pipeline. However, for example, the creation of the IEA was a step in the right direction, established as a direct consequence of the 1973 oil crisis. For example, the many policies on topics such as energy efficiency and renewable energy that are in force today count towards the bigger picture of reducing our energy demand, making energy more accessible and diversifying our energy mix. These are all areas that can reduce a nation's dependence on foreign energy supplies as a whole. In general, the overall awareness about energy security itself has contributed to more considerate schemes within the energy sector.

Possible Solutions

Energy dependence on foreign supplies stems from growing energy demand. Taking measures to reduce our energy consumption in the first place can alleviate the pressure on importing a large proportion of a nation's supply from potentially politically unstable market leaders, such as Russia. Therefore, we should improve our existing products to be more energy efficient as well as set clear policies for future projects. Besides governmental policies, creating programmes to raise awareness surrounding the conscious use of household appliances and other everyday tasks is an inexpensive and likely beneficial task to consider.

With efficient energy comes renewable energy. Diversifying a member state's energy mix has been and will be crucial to ensuring energy security, regardless of this specific issue on energy imports. Investing in renewable energy projects helps prepare a nation for the growing scarcity of fossil fuels. In addition, it takes advantage of the fact that renewable resources are more abundant and equally spread out, providing more domestic energy sources. These projects may be costly and should be given more consideration with regard to budgets and long-term effects.

Other than managing our electricity usage, extending the electrical grids and branching out to neighbouring countries that can provide renewable energy is a suitable alternative that benefits a nation twofold: it diversifies the energy mix and reduces dependency on a small number of large oil and gas exporting countries. Moreover, through well-grounded agreements between participating countries, the use of battery packs/energy storage to combat emergency shortages in the future can give nations both a buffer to look for other alternatives and a reliable backup energy source during crises.

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Appendix or Appendices

Appendix I

Global Energy Monitor (GEM): https://globalenergymonitor.org/

Annual Statistical Bulletin – OPEC: https://asb.opec.org/index.html

Appendix II

Energy Charter Treaty and related documents:

https://www.energycharter.org/process/energy-charter-treaty-1994/energy-charter-treaty/