Forum: Ex: General Assembly 2nd Committee

Issue: Establishing international frameworks to finance access to sustainable energy for all

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Introduction

When one thinks about the benefits of renewable energy, slowing down global warming may be what first comes to mind. While it is true that renewable energies have many benefits for humans over other forms of energy, stopping global warming is one of the main reasons we are so interested in them. “Eighteen of the 19 warmest years all have occurred since 2001, with the exception of 1998” (Nasa, nd, paragraph 1). Global warming is already affecting our planet for the worse. This includes: hotter days, rising sea level, more frequent and intense extreme weather events, oceans becoming warmer and more acid, loss of biodiversity and ecosystems (WWF, nd, paragraphs 7-13).

A problem when it comes to fossil fuels, like oil, is the fact that their prices fluctuate. “As with any commodity, stock or bond, the laws of supply and demand cause oil prices to change”, “OPEC vowed to keep the price of oil above $100 (...) [but in mid 2014 it] fell from a peak of above $100 a barrel to below $50 a barrel” (Lioudis, 20/4/2018, paragraph 3-4). Having to depend on oil prices, as with any commodity, creates uncertainty, and if the price is too high it can create problems for buyers and if it is too low it can create problems for exporters.

Despite generating economic/energetic dependance and rising the global temperature; fossil fuels also pollute the environment. In China there are cities where the official air quality level has been registered as “hazardous” due to the amount of toxic smog in the air. The main causes are the over reliance in coal burning as a power source, and the high car-ownership levels (BBC NEWS, 8/1/2017, 1:29).

Currently, approximately 1 in 8 people in the world lack access to electricity (World Bank, 2016), which “handcuffs poor families to poverty – especially women and girls, who have to gather fuel and carry out the household chores. The success of every one of the 17

sustainable development goals (...) depends on a swell of renewable, sustainable and affordable energy" (Duarte, 2/10/2015, paragraph 8). Sustainable energy is abundant, it can be generated on the spot (with the right equipment) and does not need to be imported, making it cheap. What is expensive about sustainable energy is creating the equipment, since once it is created it can generate energy without a fixed cost (obviously excluding repairs and expansions to the infrastructure).

Definition of key terms

Renewable energy

Energy obtained from a source that can be naturally replenished with time, however if that time dwarfs a human life they can be considered non-renewable. For example, technically fossil fuels can be generated again on earth, however, it will take millions of years for them to be created while they get used up in a much shorter amount of time. There are some even more extreme examples, like metals which generate in supernovas (such as Uranium) are not going to appear on earth ever again.

The resources do not have a fixed quantity, and there can always be more produced. It includes solar power, wind power, hydropower, geothermal power, biofuels and tidal power, among others.

Sustainable development

Sustainable development is a way to use natural resources in a way that satisfies current human needs, but in such a way that generations in the future can also fulfil their needs.

For example, by polluting freshwater we are making it harder for future generations to obtain drinking water. Or, by over-using fossil fuels, which creates more extreme weather events, we are making future generations' lives harder.

Sustainable energy

Sustainable means that we will be able to use the source for a foreseeable future. It can be that we use the energy at a lesser rate than it is produced, hence there is always more. Or that we use the source so slowly and moderately that we can keep obtaining energy from it for centuries if we don't overuse it.

Some definitions add that sustainable energy is also "green", as in the impact on the environment is negligible, so that excludes fossil fuels from sustainable energy if the CO_2 is released to the atmosphere.

Background information

The Secretary General's High Level Group on Sustainable Energy for All

This is an international organization also known as SE4ALL, launched by the then secretary general Ban Ki-moon, created with the purpose of mobilizing universal energy access, improving energy efficiency and increasing the use of renewable energy. Said organization is supported by the Department of Economic and Social Affairs due to the fact that the mechanisms and frameworks developed in order to achieve the goal require a series of investments. Within the report written by the secretary general regarding said aspect it was also stated that a new business model would emerge where governments, investors and civil society came together in order to solve public problems and work towards achieving sustainable energy (Yumkella, UN Industrial Development Organisation, Holliday, & Bank of America, 2012)[1]. The series of experts in charge of these roles have already been designated and are conformed by: International Renewable Energy Agency (IRENA) Director General Adnan Amin, UN Industrial Development Organization (UNIDO) Director-General Kandeh K. Yumkella, United Nations Environment Programme (UNEP) Executive Director Achim Steiner and United Nations Development Programme (UNDP) Administrator Helen Clark.(IISD & Leopold, 2011) [2]

Bloomberg New Energy Finance (BNEF)

This is a industry research firm founded on 2004 with the purpose of providing independent analysis and insight regarding projects involving energy. An insight concerning the issue that was released by the firm stated that finance regarding Renewable Energy (RE) rose from USD 45 billion in 2004 to 270 billion in 2014, which covered the research and development

[1] Yumkella, K., UN Industrial Development Organisation, Holliday, C., & Bank of America. (2012, January). The Secretary-General's High-level Group on Sustainable Energy for All. Retrieved from https://www.seforall.org/sites/default/files/SE_for_All_-_Framework_for_Action_FINAL.pdf

[2] IISD, & Leopold, A. (2011, September 29). UN Secretary-General Names High-Level Group on Sustainable Energy for All | News | SDG Knowledge Hub | IISD. Retrieved from http://sdg.iisd.org/news/un-secretary-general-names-high-level-group-on-sustainable-energy-for-all/

of new technologies(Mazzucato & Semieniuk, 2017)[3]. It was also stated that on 2017 333.5 billion dollars were invested in clean energy globally.

The establishment of the International Energy Agency

The IEA is an intergovernmental organization that lies under the framework of the Organisation for Economic Cooperation and Development. It was created on 1974 due to the 1973 oil crisis, caused by the Middle East War. The main focus of the organization is on energy security, economic development, environmental awareness and engagement worldwide(James Chen, 2018).[4]

Sustainable Energy Finance Program

This is a mechanism of action created by the International Finance Corporation (IFC), with the support from Australia, Finland, the Kingdom of the Netherlands, New Zealand, and Switzerland. It works alongside financial institutions in Indonesia in order to enable businesses and finance RE related projects. It also builds a series of possible projects for SEF financing and supports the vital market relationships in order to allow financial institutions to create their own series of SEF deals. The program can also help all of the partners determine which energy projects are possible within their businesses financially speaking. This in itself would contribute to the saving of electricity costs, production, efficiency, increase of profitability and the reduction of greenhouse gas emissions. It also realizes market education activities with the purpose of improving the capacity of financial institutions, governmental agencies amongst many others regarding sustainable energy projects.[5]Some other program activities include but are not limited to the analysis of competitive and regulatory barriers, establishment of partnerships amongst financial institutions and key market players, development of new financial products, assisting of financial institutions in presenting SEF opportunities to clients by providing user-friendly tools to assess potential projects and help explain the economic benefits from sustainable energy

[3] Mazzucato, M., & Semieniuk, G. (2017, June 08). Financing renewable energy: Who is financing what and why it matters. Retrieved from https://www.sciencedirect.com/science/article/pii/S0040162517306820

[4] Chen, J. (2018, May 22). IEA - The global energy authority. Retrieved from https://www.iea.org/

[5] Yogi, N., & Rusnak, M. (n.d.). Sustainable Energy Finance Program. Retrieved from https://www.ifc.org/wps/wcm/connect/b8a63d004b159a3fa9bbe908d0338960/Fact Sheet SEF Indonesia_english.pdf?MOD=AJPERES

to clients, assessment of financial institutions, management of risks of various types of SEF transactions and monitoring of environmental impacts resulting from financed transactions.(Sheperd, Bull, & IFC, 2010)[6]

Sustainable Energy Finance Initiative

The United Nations Environment Programme (UNEP) began said initiative as a way to create the policy and economic framework in which sustainable energy can meet the Sustainable Energy goals. It contributes to helping mainstream financiers consider sustainable energy investments by providing said financiers with the necessary tools, support and networks. The main idea behind this being to drive financial innovation that improves the environmental performance of the energy mix. In other words the abstract idea of the mechanism is to use this platform along with an amount of capitals with the purpose of engaging them to do as a group what they may have not wanted to do individually, and to catalyse public private alliances which share the costs and lower the barriers to sustainable energy investment.(UNEP, 2002)[7]

Financing RE projects in developing countries

A wide variety of developing countries have set themselves on a path towards renewable energy but in most occasions still lack the financial means to fully reach results. Nonetheless as a result of the agreement and international commitment in regards to not only reducing global emission but also creating economic opportunities and increasing energy access of individuals policymakers in developing countries have implemented a particular financing instrument (Tax incentives, Loans and more). Throughout this process they also analysed which method would prove to be more efficient for the country or meantime project. Despite this although the financial and investment circumstances have indeed improved it is still a major and crucial aspect that developing countries find themselves against when implementing renewable energy.(Donastorg, Renukappa, & Suresh, 2017)[8]

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[6] Sheperd, D., Bull, G., & IFC. (2010). IFC advisory services in Latin America and the Caribbean access to finance. Retrieved from https://www.ifc.org/wps/wcm/connect/035d14804756f9909fcabf37b5ac3532/A2F_Product_Card_SEF_SEP2010_EN.pdf?MOD=AJPERES

[7] UNEP. (2002). The UNEP Sustainable Energy Finance Initiative. Retrieved from https://www.unepfi.org/fileadmin/documents/sefi_brochure_2003.pdf

[8] Donastorg, A., Renukappa, S., & Suresh, S. (2017). Financing Renewable Energy Projects in Developing Countries: A Critical Review. Retrieved from https://iopscience.iop.org/article/10.1088/1755-1315/83/1/012012/pdf

The Economic Governance and Energy Support Program

The program was approved on December 15 of 2015, it's main objectives being that of supporting the implementation of the development agenda created by the government. The agenda's goal was to build a strong base regarding inclusive and self-reliant economic growth. Delving more into the details as to what the program would do, said program would promote inclusive and resilient growth through: fiscal consolidation; improved governance, public finance management, revenue collection efficiency and private sector engagement in the energy sector; and business environment.(African Development Bank, 2018)[9] One of the many countries that implemented said program or invested in it was Egypt where the African Development Bank (AfDB) Board approved a US$500 million loan.(Allan & IISD, 2017)[10]

Major Countries and Organizations Involved

China

China and the US are in a league of their own when it comes to CO2 emissions. China produces a share of 28% of the total greenhouse gas emissions and the US produces 15% of the total. However, the next country, India, despite having the second largest population in the world, only produces 6% of the total.

It is clear that when it comes to reducing CO2 emissions, China has a very important role to play. Since it produced over a quarter of the global greenhouse gas produced in 2015 (UCS, 11/10/2018).

However, China seems to be aware of this problem and is the country which invests the most in renewable energy (China spent 127 billion dollars while the US spent 41 billion),

[9] African Development Bank. (2018, January). Economic Governance and Energy Support Program III (EGESP III). Retrieved from https://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/EGYPT_-_Economic_Governance_and_Energy_Support_Program_III__EGESP_III_.pdf

[10] Allan, J., & IISD. (2017, February 7). Sustainable Energy Finance Update: Transportation and Housing Projects Receive Support | News | SDG Knowledge Hub | IISD. Retrieved from https://sdg.iisd.org/news/sustainable-energy-finance-update-transportation-and-housing-projects-receive-support/

"For every $1 the US spent on clean energy in 2017, China spent $3" (Smith, R. 11/4/2018, title). China's cooperation in this issue is essential.

USA

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It is clear that when it comes to reducing CO2 emissions the USA's cooperation is an absolute necessity, since it produces 15% of the global greenhouse gas produced in 2015 (UCS, 11/10/2018). While it is true that China produces almost twice that amount, China has over 4 times the population of the United States, which means the USA produces 2 times as much CO2 emissions per capita.

However, the US doesn't seem to be as invested in climate issues as China. While both are the top countries when it comes to investment in renewable energy (China spent 127 billion dollars while the US spent 41 billion), "For every $1 the US spent on clean energy in 2017, China spent $3" (Smith, R. 11/4/2018, title). It is vital that both countries are willing to cooperate.

On a different note, the United States has done some controversial actions in recent times, like pulling out of the Paris Agreement. It is vital that they decide that Global Warming and renewable energy are issues worth taking a part in since they are the second largest greenhouse gas emitters in the planet.

Timeline of events

Date	Description of the event
1995	The Berlin Mandate encourages Member States to take further actions against climate change
2000	Goal 7 of the millenium development goals was to "Ensure environmental sustainability"

2008	The Tesla Roadster reaches the market, creating a new wave of electric cars by many companies including Mitsubishi, Nissan, and General Motors.
December 12th 2015	Paris Agreement is created, with the purpose of using international cooperation to combat climate change.
September 2016	Kamuthi Solar Power Station finishes building process in India. Being the biggest solar farm in the world with the ability to supply energy for 750 000 people (Evans, 15/8/2018, paragraph 5).
2016	Hottest year on record globally
2017	Over 50% of the Cars sold in Norway are electric

Relevant UN Treaties and Events

- 2000, United Nations Millennium Development Goals:
    - Goal 7 was "Ensure environmental sustainability", which was composed of:
        - "Integrate the principles of sustainable development into country policies and programs; reverse loss of environmental resources"
        - "Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss"
        - "Halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation"
        - "By 2020, to have achieved a significant improvement in the lives of at least 100 million slum-dwellers"
- 26 September of 2011, Secretary-General's High-Level Group on Sustainable Energy for All:
    - "The UN Secretary-General has appointed business, government and civil society leaders from around the world to serve on the newly created UN Secretary-General's High-Level Group on Sustainable Energy for All (...) [which] has been asked to help spur the doubling of the rate of progress on energy efficiency and share of renewable energy globally; double energy efficiency; and enable universal access to modern energy services" (Leopold, 39/9/2011, paragraph 1-2)
- 25 September 2015, A/RES/70/1:

- Unlike the millenium goals, there is not a goal dedicated solely to sustainability, however, it is spread among multiple goals:
  - Goal 6: "Ensure availability and sustainable management of water and sanitation for all"
  - Goal 7: "Ensure access to affordable, reliable, sustainable and modern energy for all"
  - Goal 11: "Make cities and human settlements inclusive, safe, resilient, and sustainable"
  - Goal 12: "Ensure sustainable consumption and production patterns"
  - Goal 13: "Take urgent action to combat climate change and its impacts by regulating emissions and promoting developments in renewable energy"
  - Goal 14: "Conserve and sustainably use the oceans, seas and marine resources for sustainable development"
  - Goal 15: "Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss"

Previous attempts at solving the issue

Paris Agreement

On the 12th of December of 2015, at COP 21 Paris, an agreement was reached by multiple member states with the aim of combating climate change together. More specifically, this would be done "by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius (...) increase the ability of countries to deal with the impacts of climate change [through international aid]" (UNFCCC, nd, paragraph 2). One of the most important aspects of this agreement in particular is how a majority of Member States have agreed to sign it, 125 parties had signed it on early 2017.

The purpose of this agreement is to make Member States set goals for themselves (for the CO2 emission reduction), and to check the progress done every 5 years relative to the goal set.

Tesla and electric cars

In 2010 14% of all greenhouse gas emissions came from the transportation sector. (EPA, 13/4/2017), it is clear that the prevalence petrol fueled vehicles is an obstacle to solve when it comes to dealing with air pollution and climate change. While riding a bike to work

and using the bus are commonly mentioned ways in which we can all contribute in the fight against global warming, at the end of the day, cars are not going anywhere, just like cell phones they have become a need in the lives of millions nowadays. Hence, rather than fighting the existence of cars, it would be more productive to make the Cars environmentally friendly.

Research shows that "Replacing a fossil fuel-powered car with an electric model can halve greenhouse gas emissions over the course of the vehicle's lifetime" (Gabbatiss, 7/9/2018). One may wonder how does an EV (Electric Vehicle) generate carbon emissions, there are 2 reasons for this. Firstly, if the vehicle gets energy from electricity, but the electricity is generated using non-renewable fuels, then the vehicle is not producing CO2, but the energy plant is. Secondly, creating the lithium battery for the cars can be non-environmentally friendly. While fracking and traditional methods of oil extraction are far worse for the environment, lithium mining is not a perfectly green solution either. "Like any mining process, it is invasive, it scars the landscape, it destroys the water table and it pollutes the earth and the local wells" (Katwala, 5/8/2018, paragraph 14). However, in the case of Lithium it is not bad since most of the lithium in the world is located in south America in the Atacama Desert in Chile and the Salar de Uyuni in Bolivia, which are not exactly ecosystems flourishing with life.

While electric and hybrid cars have a positive impact on the environment, it is important to remember that they are not flawless and still would benefit from improvements.

Possible Solutions

Acknowledging a problem

Now, to solve a problem the first step is to agree that there is a problem. Despite clear evidence showing the climate change is real, man-made, and a threat; and despite the fact that Sustainable energy has benefits unrelated to climate change; it is important that all Member States agree that Climate Change is an issue to solve.

Additionally, international cooperation, such as the Paris Agreement, are vital to stop Climate Change. It is important that all states are aware of the problem and set concrete goals to achieve.

Invest and research in sustainable technology

While building renewable energy infrastructure is important, it is also vital to improve that sustainable energy technology like it has been improved upon since its creation.

The efficiency of Solar power has risen since their invention, in 1955 2% efficiency solar cells were sold by Hoffman Electronics. In the 60's the efficiency rose to 14%. In 1985 researchers at University of New South Wales created a solar cell with over 20% efficiency. While currently the highest efficiencies achieved in labs are of over 40%, consumer solar panel efficiency ranges from 10% to 23%, since it will take some years for the newest technology to be available to the mainstream (Amos, nd, paragraph 2).

However, while the efficiency has only doubled, the way the price of solar panels has changed is much more impactful. In 1980, the cost of a solar panel per watt was of over 20 dollars. In 2015 it was of 0.61 dollars which is a decrease of 97%. In late 2017 it reached 0.37 cents (Shahan, 11/2/2018).

The rise in efficiency and lowering of costs correlate with the increase in solar energy production, ony 2 MW of solar energy were being produced in 1975, while almost 65 000 MW were being produced in 2015 (Shahan, 11/2/2018).

The same can be said with wind power. While in 2001 there were less than 25 000 MW produced globally, by 2011 almost 240 000 MW were being produced through eolic energy sources (Energypedia, 21/7/2018), and by 2017 almost 540 000 MW are being produced (Weston, 14/2/2018). Which correlates to how the cost of of the MWh has fallen from over 55 cents in 1980 to about 5 cents in 2012 (Heritage Sustainable Energy, nd).

Reduce fossil fuel spending in areas like transportation

There are some areas which will be harder to renew, a big example is transportation. In 2010 14% of all greenhouse gas emissions came from the transportation sector. (EPA, 13/4/2017).

When it comes to cars, they could be made more fuel efficient, could adopt hybrid technology, or even become full-on electric. In Oslo, Norway, Electric Cars are more convenient than regular cars due to government policy. Over 50% of the cars sold in Norway

in 2017 were electric or hybrid; and this is due to benefits like not having to pay tolls, free parking, and Subsidies, which makes the vehicles more affordable (Reid, 30/1/2018, paragraph 1).

However, it is also important to take advantage of public transport. "The Private Vehicle is the largest contributor to a household's Carbon Footprint" (APTA, 2/2008, page 2), "By eliminating one car and taking public transportation instead of driving, a savings of up to 30% of carbon dioxide emissions can be realized" (APTA, 2/2008, page 2). Additionally, if more people use public transportation, there will be less traffic, which means faster travel times and more fossil fuel efficiency for people using their own cars.

Furthermore, the government could take this a step further and start implementing electric busses, trains and other public transport mechanism. Currently China has "99 percent of the electric buses in the world" (Geuss, 27/4/2018, paragraph 3), which save a total of about "279,000 barrels of oil per day" (Geuss).

Promote the implementation of sustainable energy

This could be done on many levels. On a global level, the World Bank could provide monetary aid to LEDCs to be invested in sustainable energy. This would heavily favour the LEDCs' economy since it would reduce their economic dependency in oil. For example, in 2017 Thailand spend 20 billion dollars in crude oil imports, India spent 60 billion dollars and Indonesia spen 8 billion dollar; spending this money to improve the nation rather than in energy could benefit these nations (Workman, 26/12/2018).

However, that is only in a global scale. It would also be extremely helpful if every citizen started using sustainable energy at their own home by, for example, buying solar panels. If all home receive at least part of their energy from the sun then the state will need to produce less electricity and thus less oil will be used for producing it. In 2014 66% of the United States electricity was produced from fossil fuels (US EIA, 12/2018). The problem with replacing fossil fuel cars with hybrids and electric cars is that it doesn't achieve much if the electricity being produced to fuel them is derived from coal and oil.

Ways to promote the reach of these technologies include tax cuts, monetary incentives, as well as promoting through publicity and events. Making them more appealing

for middle class customers. As it has been stated, the cost of these technology has been decreasing these last few decades, it is possible in the near future most people in MEDCs can afford them.

Taking advantage of inhospitable areas

In 1986 the Chernobyl Nuclear reactor suffered a meltdown, which killed tens of thousands of people. The area surrounding the reactor cannot be inhabited by humans for the next 24000 years. However in 2018 a new solar-electric plant was opened in the site which is capable of supplying energy for 2000 households."Ultimately, as much as 100 MW of solar power could be constructed" (Fleishman, 6/10/2018, paragraph 6), which would equate to 100 times the original current production (2000 households).

In the Atacama Desert a 210 MW solar field was built, which can supply electricity to 410 000 houses. "The photovoltaic market is rapidly growing in Chile. Two years ago, the installed capacity didn't reach 4 MW, and 70 MW were still under construction. Currently, there are 170 MW installed and 170 under construction" (Bressa, nd, paragraphs 4,6).

With the rural exodus that has been taking place since the 18th century, every year human beings occupy densely populated areas, leaving a significant fraction of the world, like deserts and oceans, to be good places to obtain energy without disturbing nearby residents or stopping a city's expansion.

Bibliography

- African Development Bank. (2018, January). Economic Governance and Energy Support Program III (EGESP III). Retrieved from https://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/EGYPT_-_Economic_Governance_and_Energy_Support_Program_III__EGESP_III_.pdf
- Allan, J., & IISD. (2017, February 7). Sustainable Energy Finance Update: Transportation and Housing Projects Receive Support | News | SDG Knowledge Hub | IISD. Retrieved from

https://sdg.iisd.org/news/sustainable-energy-finance-update-transportation-and-housing-projects-receive-support/

- Amos. nd. *Efficiency Of Solar PV, Then, Now And Future*. Retrieved from https://sites.lafayette.edu/egrs352-sp14-pv/technology/history-of-pv-technology/
- APTA. (2/2008). *Public Transportation Reduces Greenhouse Gases and Conserves Energy*. Retrieved from https://www.apta.com/resources/reportsandpublications/Documents/greenhouse_brochure.pdf
- BBC NEWS. (8/1/2017). *China's toxic smog - BBC News*. Retrieved from https://www.youtube.com/watch?v=2nFZaSbkf0U
- Bressa. nd. *Chile is home to Latin America's largest solar power plant*. Retrieved from https://www.lifegate.com/people/lifestyle/chile-atacama-1-solar-power-plant
- Chen, J. (2018, May 22). IEA - The global energy authority. Retrieved from https://www.iea.org/
- Donastorg, A., Renukappa, S., & Suresh, S. (2017). Financing Renewable Energy Projects in Developing Countries: A Critical Review. Retrieved from https://iopscience.iop.org/article/10.1088/1755-1315/83/1/012012/pdf
- Duarte. (2/10/2015). *Lack of electricity locks people in poverty – low-carbon energy is the key*. Retrieved from https://www.theguardian.com/global-development/2015/oct/02/lack-of-electricity-locks-people-in-poverty-low-carbon-energy-is-the-key
- Energypedia. (21/7/2018). *Wind Energy - Introduction*. Retrieved from https://energypedia.info/wiki/Wind_Energy_-_Introduction#Wind_Capacities. Figure 1.
- EPA. (13/4/20170). *Global Greenhouse Gas EMissions Data*. Retrieved from https://www.epa.gov/ghgemissions/global-greenhouse-gas-emissions-data. Figure 2.
- Evans. (15/8/2018). *The world's biggest solar power plants*. Retrieved from https://www.power-technology.com/features/the-worlds-biggest-solar-power-plants/
- Fleishman. (6/20/2018). *Chernobyl Solar Farm Opens Feet From Site of Infamous Nuclear Disaster*. Retrieved from http://fortune.com/2018/10/05/chernobyl-nuclear-disaster-solar-farm/
- Gabbatis. (7/9/2018). Electric vehicles already able to cut greenhouse gas emissions by half. Retrieved from

https://www.independent.co.uk/environment/electric-cars-vehicles-greenhouse-gas-emissions-climate-change-co2-a8528006.html

- Geuss. (27/4/2018). *Electric buses are avoiding hundreds of thousands of barrels of oil per day*. Retrieved from https://arstechnica.com/cars/2018/04/electric-buses-are-avoiding-hundreds-of-thousands-of-barrels-of-oil-per-day/
- Heritage Sustainable Energy. nd. Harnessing the power of wind and sun. Retrieved from http://heritagewindenergy.com/our-impact/. Figure 3.
- IISD, & Leopold, A. (2011, September 29). UN Secretary-General Names High-Level Group on Sustainable Energy for All | News | SDG Knowledge Hub | IISD. Retrieved from http://sdg.iisd.org/news/un-secretary-general-names-high-level-group-on-sustainable-energy-for-all/
- Katwala. (5/8/2018). *The spiralling environmental cost of our lithium battery addiction*. Retrieved from https://www.wired.co.uk/article/lithium-batteries-environment-impact
- Leopold. (29/9/2011). *UN Secretary-General Names High-Level Group on Sustainable Energy for All*. Retrieved from http://sdg.iisd.org/news/un-secretary-general-names-high-level-group-on-sustainable-energy-for-all/
- Lioudis. (20/4/2018). *What causes oil prices to fluctuate?*. Retrieved from https://www.investopedia.com/ask/answers/012715/what-causes-oil-prices-fluctuate.asp
- Mazzucato, M., & Semieniuk, G. (2017, June 08). Financing renewable energy: Who is financing what and why it matters. Retrieved from https://www.sciencedirect.com/science/article/pii/S0040162517306820
- Nasa. nd. *Global Temperature*. Retrieved from https://climate.nasa.gov/vital-signs/global-temperature/
- Reid. (30/1/2018). The country where a luxury Tesla has become the budget option. Retrieved from https://www.cnbc.com/2018/01/30/norway-where-the-electric-tesla-has-become-the-budget-option.html
- Shahan. (11/2/2018). *Solar Panel Prices Continue Falling Quicker Than Expected (#CleanTechnica Exclusive)*. Retrieved from

https://cleantechnica.com/2018/02/11/solar-panel-prices-continue-falling-quicker-expected-cleantechnica-exclusive/. Figure 4.

- Sheperd, D., Bull, G., & IFC. (2010). IFC advisory services in Latin America and the Caribbean access to finance. Retrieved from https://www.ifc.org/wps/wcm/connect/035d14804756f9909fcabf37b5ac3532/A2F_Product_Card_SEF_SEP2010_EN.pdf?MOD=AJPERES
- Smith, R. (11/4/2018). *For every $1 the US spent on clean energy in 2017, China spent $3*. Retrieved from https://www.weforum.org/agenda/2018/04/for-every-1-the-us-spent-on-clean-energy-in-2017-china-spent-3/
- UCS. (11/10/2018). *Each Country's Share of CO2 Emissions*. Retrieved from https://www.ucsusa.org/global-warming/science-and-impacts/science/each-countrys-share-of-co2.html#.XDpMGNJKiM8. Figure 2.
- US EIA. (12/2018). Electricity Net Generation: Total (All Sectors). Retrieved from https://www.eia.gov/totalenergy/data/monthly/pdf/sec7_5.pdf
- UNEP. (2002). The UNEP Sustainable Energy Finance Initiative. Retrieved from https://www.unepfi.org/fileadmin/documents/sefi_brochure_2003.pdf
- UNFCCC. (nd). *What is the Paris Agreement?*. Retrieved from https://unfccc.int/process-and-meetings/the-paris-agreement/what-is-the-paris-agreement
- Weston. (14/2/2018). Global capacity grows by 52.6GW in 2017. Retrieved from https://www.windpowermonthly.com/article/1457147/global-capacity-grows-526gw-2017. Figure 3.
- Wiseman, V., & IISD. (2016, January 5). December 2015 Sustainable Energy Finance Update | News | SDG Knowledge Hub | IISD. Retrieved from https://sdg.iisd.org/news/december-2015-sustainable-energy-finance-update/
- Workman. (26/12/2018). *Crude Oil Imports by Country*. Retrieved from http://www.worldstopexports.com/crude-oil-imports-by-country/. Figure 1
- World Bank. (2016). *Access to electricity (% of population)*. Retrieved from https://data.worldbank.org/indicator/EG.ELC.ACCS.ZS. Figure 1.
- WWF. nd. *Impacts of global warming*. Retrieved from https://www.wwf.org.au/what-we-do/climate/impacts-of-global-warming#gs.8rEPumyr

- Yogi, N., & Rusnak, M. (n.d.). Sustainable Energy Finance Program. Retrieved from https://www.ifc.org/wps/wcm/connect/b8a63d004b159a3fa9bbe908d0338960/Fact Sheet SEF Indonesia_english.pdf?MOD=AJPERES
- Yumkella, K., UN Industrial Development Organisation, Holliday, C., & Bank of America. (2012, January). The Secretary-General's High-level Group on Sustainable Energy for All. Retrieved from https://www.seforall.org/sites/default/files/SE_for_All_-_Framework_for_Action_FINAL.pdf