BAT 404 - Analytics Techniques and Tools

Final Project Proposal Topic:   
A Data Exploration of Carbon Emission to Improve the Implementation of NDC in the Philippines

Group 2:

*Abraham, John Martin*

*Esguerra, Charles Ivan*

*Guerra, Mariel*

*Ilagan, Renz*

*Salazar, John Francis*

Batangas State University

**Introduction**

Climate change is happening right now, and it is widely considered to be the most serious environmental crisis that our generation has ever faced. Climate change has dramatically transformed the Earth over millennia, according to NASA. Global warming has been clearly driven by human activity since the mid-twentieth century, and it is proceeding at a millennia-long rate.Human activities have undoubtedly contributed to the warming of the atmosphere, oceans, and land, as well as extensive and fast changes in the atmosphere, oceans, cryosphere, and biosphere.

Despite the fact that carbon dioxide absorbs less heat per molecule than other greenhouse gases, it is the most prevalent and stays in the atmosphere for the longest time. It lingers in the atmosphere for 300 to 100 years, and people emit more carbon dioxide each year than natural processes can remove. Global warming results from an energy imbalance caused by an increase in atmospheric gas levels. Increased smog and air pollution cause more respiratory issues or illnesses, and carbon emissions have a direct effect on humans. Not to mention the reality that people would be the ones to suffer the most if carbon emissions wiped out particular animal species, reduced agricultural output, and ruined entire ecosystems.

Philippines, despite being one of those countries who contributes less on carbon emission, implements a mitigation plan as response to climate change. According to the Finance Department, President Rodrigo R. Duterte has authorized the Philippines' first Nationally Determined Contribution (NDC), which seeks to cut greenhouse gas (GHG) emissions by 75% by 2030. NDC is part of Paris Agreement to limit global warming. The agreement was joined by 196 including Philippines, and to attain this goal the global temperature needs ot be reduced for atleast 45% by the year 2030 and reach the net-zero emission by the year 2050. Net-zero emission pledges by several countries could help to lessen the emission of greenhouse gases. Though targeting zero emission of greenhouse gas is impossible, it is better to reduce the emission into nearly zero. 49 countries has net-zero pledges it could possibl cover over 12% of global emission. Though the country's capacity to meet the NDC objective still rests on public-private sector cooperation.

This project is conducted to provide a data analysis that could help to improve the mitigation plan in response to climate change that can be implemented in the Philippines and helps to achieve the NDC.

**Problem Statement (ESGUERRA)**

Despite the fact that the NDC's goal looks to be excessively high, the government cannot achieve it on its own. Public and commercial organizations, as well as local governments and, most importantly, each and every citizen of the country, must put up a major effort. To get the desired objectives, people must work together. The primary issue that this project addressed is the low level of participation and involvement of  the local communities and local governments, due to lack of available and sufficient information on the implementation process and measures aimed at achieving it. Monitoring progress becomes much more difficult due to the absence of information. If there is a lack of society participation, it can hinder transparency and accountability efforts by government and related monitoring mechanisms at all levels.

**Significance of the proposed project (SALAZAR)**

This research will specifically benefit the following:  
 *Government* - This research will help them to improve their implementation of mitigation plans for climate change, and make the local communities and individuals participate in the program and achieve the goal.

*Citizens* - This research provides information to the Filipino citizens about the current situation of the globe and the country itself concerning greenhouse gas emission that results in climate change. For them to be aware and well informed on how they could contribute and cooperate to the government to achieve the goal.

*Future Researchers* – The findings of this study may be utilized to help the future researchers in their future studies in relation to climate change and come up with an ideal mitigation plan for climate change that they may propose to their local community.

**Methods (ABRAHAM)**

Local communities cooperation is a crucial aspect of the implementation of NDC. Data exploration will be conducted by the researcher to visualize the data and easily identify the insight of other countries' response to climate change and dig deeper into their mitigation plan to achieve the neutral greenhouse gas emission in their country. Excluded in the datasets that the researchers have, was the details of the mitigation plan of each country. In order to acquire more knowledge about how they manage to have a positive response in carbon and other green  emission, the researchers collected articles that provide adequate information about their mitigation strategies. Their plan will be evaluated and the existing mitigation strategies that the Philippine Government have implemented across the country will be compared in order to determine how to improve it.

**Expected output (ILAGAN)**

According to NOAA experts,2020 is the warmest year on record, tying 2016 for top place with 2019 falling to third. This study aims to give a thorough examination of data that may be used to improve the country's NDC implementation. Good and efficient climate change governance is required for effective collaboration to attain the specified goals. The governance structure must also contain a clear division of tasks to reduce duplication of effort between the government and civil society.

**Reliability of the Source**

*Our World in Data*

Our Worl in Data is an open-source website that offers several datasets about various issues or topics around the globe. This data portal, created by the University of Oxford's Oxford Martin Programme on Global Development, is made freely available to the public. Health, food and nutrition, wealth growth and distribution, violence, human rights, conflict, education, the environment, and other issues are explored through data analytics and visualization. The site disaggregates data in each of these areas to show trends, gives context, and allows for debate on data and source quality. Max Roser, an economist at the University of Oxford, founded Our World in Data. He offers advice to instructors who want to include data visualization into their lectures.

*NASA Goddard Institute for Space Studies (GISS)*

The Goddard Institute for Space Studies (GISS) of the National Aeronautics and Space Administration's Goddard Space Flight Center is a laboratory of the Earth Sciences Division (ESD) (GSFC). The ESD is housed under the GSFC Sciences and Exploration Directorate. GISS's main objective in the twenty-first century is to forecast atmospheric and climatic changes. The study examines massive global databases and applies global models of atmospheric, land surface, and oceanic events. Climate change on Earth and other planets in the past may be used to evaluate our overall understanding of the atmosphere and its history.

The primary program areas of GISS include climatic forcings, climate model development, Earth observations, atmospheric radiation, atmospheric chemistry, climate effects, planetary atmospheres, exoplanets, and astrobiology; paleoclimate; and other disciplines. The Goddard Space Flight Site is critical to global change study since it is NASA's main Earth observation center. GISS collaborates with the GSFC Earth Sciences Division's other offices and laboratories on global change research.

*United Nation Statistic Division*

The United Nations Statistic Division (UNSD) is part of the United Nations Department of Economic and Social Affairs (DESA), and its major goal is to offer trustworthy static data, standards, and actions to help other countries improve their statistical systems. UNSD is also in charge of coordinating other international statistical efforts and aiding the UN Statistical Commissions in their function as the world's ultimate statistical authority.

**Evaluation of the X variables inside the Data sets:**

*CO2 and Greenhouse Gas Emissions*

|  |  |
| --- | --- |
| **X Variables** | **Description** |
| Entity / Country | This are the countries or regions that contributes CO2 |
| Code | The countries code |
| Year | The year CO2 emitted |
| Annual CO2 Emission | Indicates how much CO2 emission of the country |
| Annual CO2 Consumption | Indicates how much CO2 consumption-based of the country |
| GDP PPP | Shows the Gross Domestic Product Based on Purchasing Power Parity of each country |

*GISS Surface Temperature Analysis (GISTEMP v4)*

|  |  |
| --- | --- |
| **X Variable** | **Description** |
| Year | Indicated the annual global temperature anomalies |
| January | Indicates the monthly temperature anomalies |
| February |
| March |
| April |
| May |
| June |
| July |
| August |
| September |
| October |
| November |
| December |
| July  December | Indicates the seasonal temperature anomalies |
| December - November |
| December, January, February |
| March, April, May |
| June, July,August |
| September, October, November |

*Concentration of Carbon dioxide, 1959-2020 (parts per million)*

|  |  |
| --- | --- |
| **X Variables** | **Description** |
| Year | Indicated years of carbon emission |
| Mean | Emission of Greenhouse Gas |

**References Datasets:**

Ritchie, H. and Roser, M. (2020, August).  *CO2 and Greenhouse Gas Emissions.*  Retrieved

April 2022, from Our World in Data: <https://ourworldindata.org/co2-and-other-greenhouse-gas-emissions>

Schmidt, G. (2020, March). *GISS Surface Temperature Analysis (GISTEMP v4).* Retrieved

April   2022,  from National Aeronautics and Space Administration - Goddard Institute for Space Studies:<https://data.giss.nasa.gov/gistemp/>

UNSD. (2022, March 23) United Nations SDG Indicator: Goal 13. Retrieved April 2022, from

United Nation Statistic Division: <https://unstats.un.org/sdgs/report/2021/goal-13/>

**References:**

United Nations Development Program. (2022). *Philippines.* Retrieved April 2022, from Global

NDC Support Program: <https://www.ndcs.undp.org/content/ndc-support-programme/en/home/our-work/geographic/asia-and-pacific/Philippines.html>

Osmanski S. (2020, March 30). *How Do Carbon Emissions Affect the Environment?.*

Retrieved March 2022, from Green Matters: <https://www.greenmatters.com/p/how-do-carbon-emissions-affect-environment>

NOAA Science.Service.Stewardship. (2021, January 14). *2020 was Earth’s 2nd Hottest-Year,*

*Just Behind 2016.* Retrieved April 2022, from NOAA Science.Service.Stewardship: <https://www.noaa.gov/news/2020-was-earth-s-2nd-hottest-year-just-behind-2016>

NASA: Climate Change and Global Warming. (2022, March 23). *Global Temperature*.

Retrieved April 2022, from NASA: Climate Change and Global Warming: <https://climate.nasa.gov/vital-signs/global-temperature/>

Yang, A. (2021, April 16). *Philippines Commits to 75% Reduction in Greenhouse Gas Emission*

*By 2030.* Retrieved April 2022, from Business World: <https://www.bworldonline.com/philippines-commits-to-75-reduction-in-greenhouse-gas-emissions-by-2030/>

Fecht, S. (2021, February 25). How Exactly Does carbon Dioxide Cause Global Warming?.

Retrieved April 2022, from Columbia Climate School: Climate, Earth and Society: <https://news.climate.columbia.edu/2021/02/25/carbon-dioxide-cause-global-warming/>

National Integrated Climate Change Database Information and Exchange System. (2022).

*Climate Change Impacts.* Retrieved April 2022, from NICCDIES: <https://niccdies.climate.gov.ph/climate-change-impacts>

NASA: Climate Change and Global Warming. (2022, March 23).*Climate Change: How Do We*

*Know?.* Retrieved April 2022, from NASA: Climate Change and Global Warming: <https://climate.nasa.gov/evidence/>

UNSD. (2022, March 23) United Nations SDG Indicator: Goal 13. Retrieved April 2022, from

United Nation Statistic Division: <https://unstats.un.org/sdgs/report/2021/goal-13/>

UN Environment Programme. (2021, October 26). *Updated Climate Commitments ahead of COP26 Summit Fall Far Short , But Net-Zero Pledges Provides Hope.* Retrieved April 2022, from UN Environment Programme: <https://www.unep.org/news-and-stories/press-release/updated-climate-commitments-ahead-cop26-summit-fall-far-short-net>