O'Neill Undergraduate Honors Thesis

Sustainable Development Under the UNFCCC

Negotiations on the Right to Develop

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I. Introduction

The Historical Rise of Anthropogenic Climate Change

As the modern industrial world has grown from infancy only a century ago, many have reaped the benefits of continued rapid industrialization without so much as a thought to the cost of their actions and those left behind in this modern era. In its wake, industrialization has brought certain countries elevated living, with privileged problems. The problem of, what to do when the very actions that bring you prosperity, threaten your own existence. As the century progressed ever forward, industrialized nations - nations with mature economies, measured by a country's GDP- increased the ways in which they produced energy for their exponentially growing populations (BDC 1). Excess carbon dioxide (CO2) and other greenhouse gas (GHG) emissions began to form an extra insulative layer in the Earth's atmosphere, as production of GHGs outpaced Earth's natural ability to store carbon. This phenomenon became known to the scientific community as anthropogenic climate change, where human activities are the cause of rising global temperatures (NASA 1). As the climate rises a few degrees celsius, multiple natural systems stand to be altered. Rising ocean temperatures causing ocean acidification and sea level rise, breaks in the polar jet stream, and extreme drought can often be attributed to or made worse by climate change (NASA 1). These alterations stand to affect human populations and daily activities on unprecedented scales. Many developed nations have looked for sustainable solutions to maintain their levels of industrialization, in an attempt to impede and mitigate such environmental impacts.

Sustainable Development

Sustainable development serves as a broad term used to describe efforts to create such sustainable solutions. Specifically, sustainable development is defined by the *Brundtland Report* as, "...development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (IISD 1). This often includes governmental plans to increase sustainable energy, such as the implementation of wind turbines and solar panel farms, or projects that increase the efficiency of new or existing urban infrastructure, or even reduction targets for GHG emissions. While individual governments can tailor the ways in which they sustainably develop within their country, anthropogenic climate change often causes effects seen globally, giving way to the need for international governance across oftentimes incompatible borders.

Sustainable development encounters many complexities that can hinder multi-country implementation. Many different social and political factors must be kept in mind to fully understand the ways in which such solutions can be implemented on an international scale. Oftentimes, certain solutions for environmental problems will not be relevant or applicable to a similar problem when placed in a different country. A country's government structures, cultures, economic status, historical events, and other factors can all play key roles in determining the success, speed, and applicability of potential solutions in one country. So taking a solution which has been implemented in one country, and placing it unchanged in another is seldom to be successful or work similarly to the previous situation. Building off socioeconomic differences, the natural environment can be vastly different as well, changing in terrain, climate, and weather patterns to neighboring countries, and even more so to those thousands of miles away. Even if all

governments worldwide came to a consensus that each country must sustainably develop in an equal way, the challenges of international climate governance would still be exacerbated by the aforementioned differences between countries. But of course there is little comprehensive global agreement, as the deeper issue lies in the lack of consensus, where governments vehemently disagree on who first is responsible for climate change, and who then must bear the responsibility of developing sustainably.

The Right to Develop

When developed nations [see Appendix A for a comprehensive list of countries] began industrializing and creating new ways to produce energy, seldom were there studies previously conducted on how the emission of the GHG pollutants not only affected everyday human activities but the long term health of our environment. As research has progressed in determining the toxicity of GHGs, and of course how they impact climate change, there is little left unresolved in terms of how these anthropogenic activities will continue to impact our environment (NASA 1). The problem then becomes, now that the world knows what happens when these dirty forms of energy are used, can countries consciously let developing nations with large populations produce dirty energy at the same capacity that developed nations once did? Many developing countries were oppressed under colonial rule by these same developed nations, making the ethical argument that developed nations have little right to interfere in the way they now choose to develop. The right of developing nations to develop as westernized nations once did, would give them the opportunity to construct the water, sewer, electric, and internet infrastructure that has pervaded them in this modern era. There is no logical argument to deny

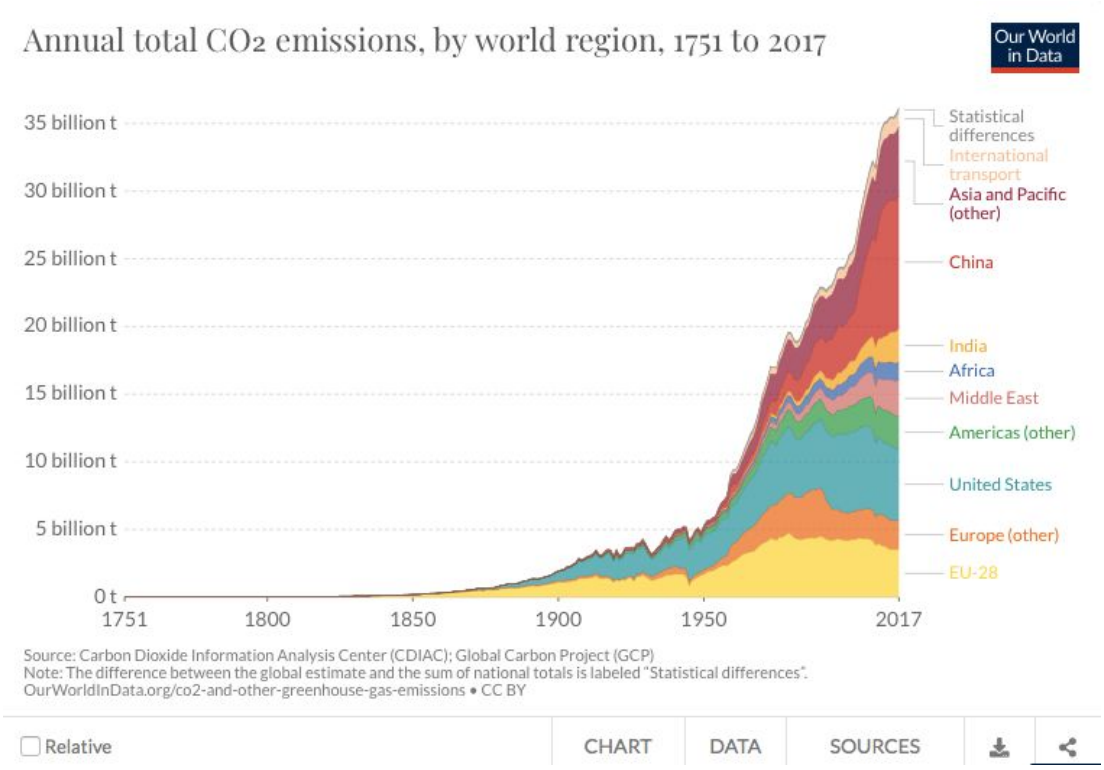
these developing nations this right, and yet an exponential increase in energy production by these countries would only accelerate and exacerbate the already detrimental effects the world is seeing from climate change.

Sustainable development stands as a solution to prevent this acceleration from happening, where instead of using large percentages of coal and oil for energy production, developing nations would begin their industrialized growth with larger percentages of their energy coming from renewable resources. This would prevent a large overhaul being necessary later on, which many developed nations are experiencing, where billions of dollars would need to be spent on transitioning the established fossil fuel infrastructure to renewable sources. But challenges arise as developing nations then question how the sustainable infrastructure will be paid for as they were not the developers of the sustainable technology, are not the ones with large robust economies with the capacity to pay for, and are not the nations historically responsible for the GHG emissions causing the problems they are tasked with addressing.

The following three figures help to better illustrate the role historical emissions play in the debate over who is responsible for climate change and why developing nations do not feel it is their responsibility to pay for sustainable development initiatives within their country (Ritchie 1). Figure 1 shows the total amount of CO2 emissions since 1751 and how the amount of CO2 emitted by particular countries and regions has also changed (Ritchie 1). This figure is particularly important as it demonstrates how for the majority of the industrialization period, three particular regions (the United States, EU-28, and Europe [other]) are responsible for nearly all of the CO2 emissions (Ritchie 1). Figure 2 and Figure 3 serve as comparisons, establishing

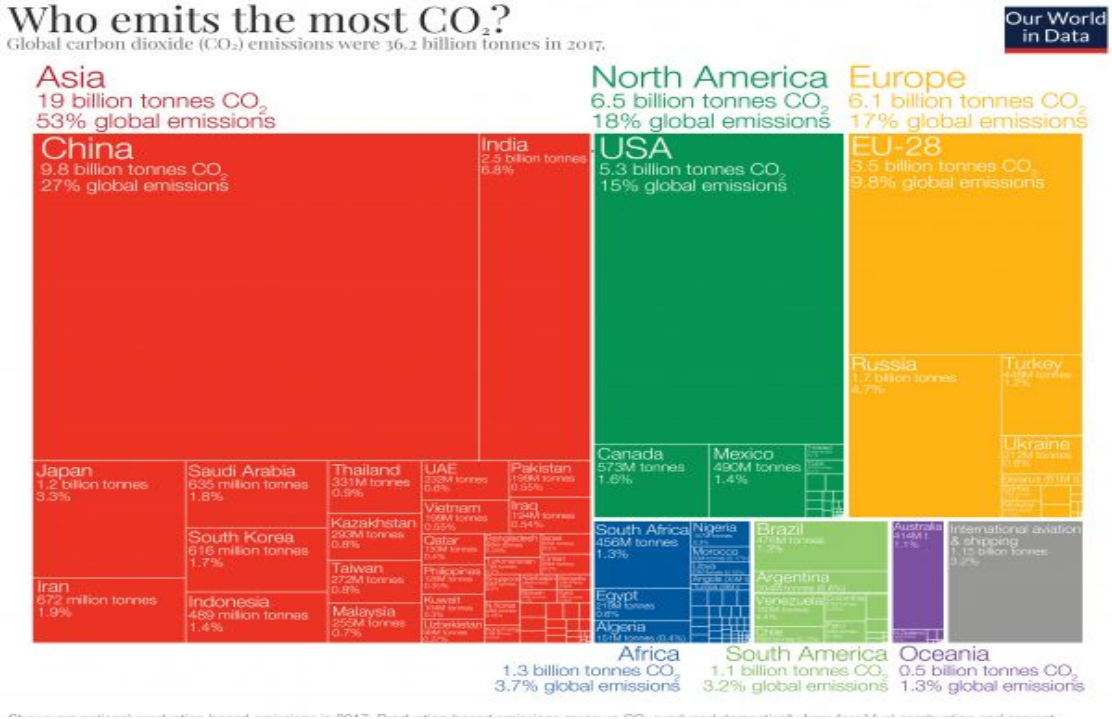
the differences between the current annual tonnes of CO2 emitted and the tonnes of CO2 that have been emitted since

Figure 1



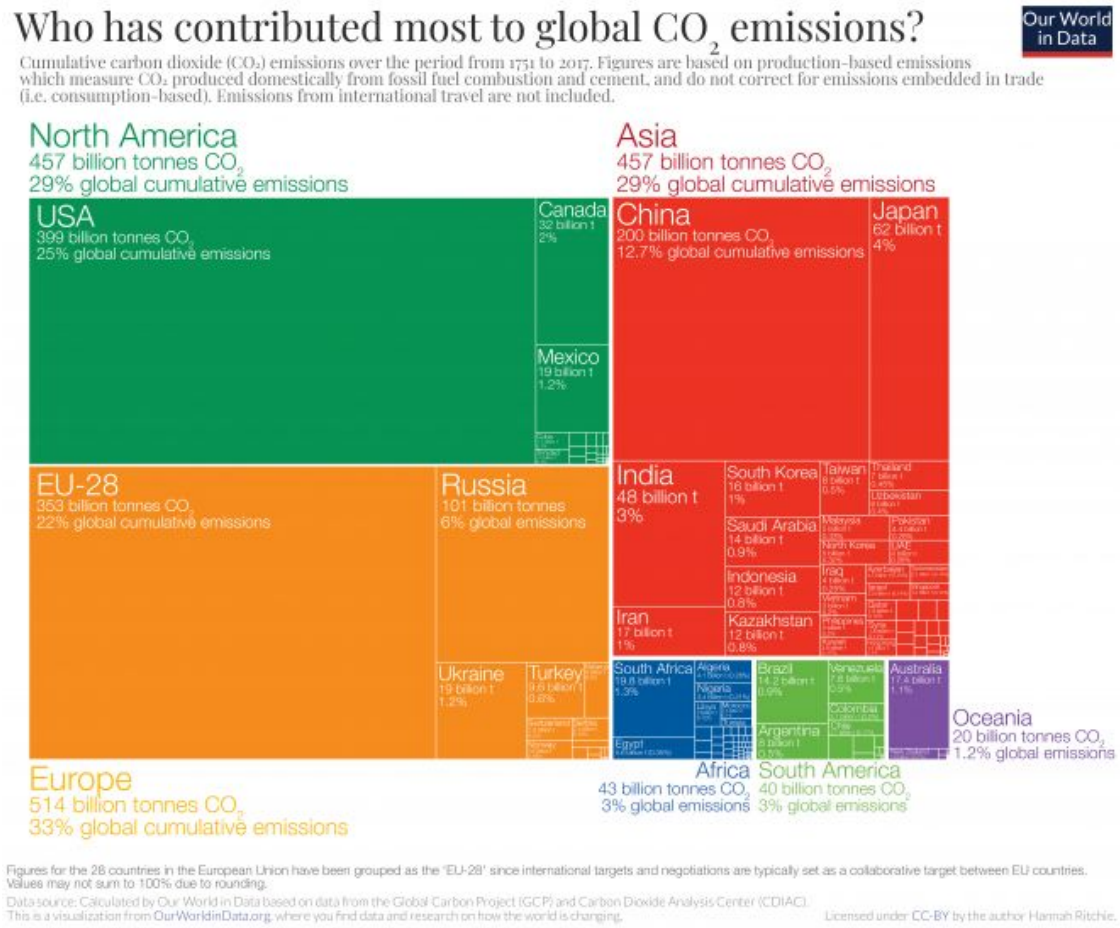
Ritchie, Hannah, and Max Roser. "CO_2 and Greenhouse Gas Emissions." Our World in Data, Our World in Data, 11 May 2017, ourworldindata.org/co2-and-other-greenhouse-gas-emissions.

Figure 2



Ritchie, Hannah, and Max Roser. "CO_2 and Greenhouse Gas Emissions." Our World in Data, Our World in Data, 11 May 2017, ourworldindata.org/co2-and-other-greenhouse-gas-emissions.

Figure 3



Ritchie, Hannah, and Max Roser. "CO_2 and Greenhouse Gas Emissions." Our World in Data, Our World in Data, 11 May 2017, ourworldindata.org/co2-and-other-greenhouse-gas-emissions.

industrialization began (Ritchie 1). Figure 2 shows China as the largest current CO2 producer, emitting 9.8 billion tonnes of CO2, which makes up 27% of global emissions (Ritchie 1). This is compared to the United States who emits 5.3 billion tonnes of CO2 annually, making up 15% of

global annual CO2 emissions (Ritchie 1). Without Figure 3, it would be hard to comprehend who truly has contributed the most to global CO2 emissions over time. Figure 3 shows that since industrialization began, the United States has emitted 399 billion tonnes of CO2, making up 25% of global cumulative emissions (Ritchie 1). This is compared to China who has emitted 200 billion tonnes of CO2 and only makes up 12.7% of global cumulative emissions (Ritchie 1). While not noted on the graphs, population size must also be taken into account as well. The United States and other developed countries have smaller populations, making their per capita emissions much higher even if they are producing less CO2 emissions. Furthermore, due to the lag in effects felt by current emissions, the issues the world currently faces from climate change are caused by past emissions. Meaning, by looking at who is historically responsible for CO2 emissions and therefore those largely responsible for anthropogenic climate change, it becomes understandable why developing nations do not feel the cost of developing sustainably is currently their burden to bear.

To better understand this specific situation with sustainable development, my research will use international negotiations under the United Nations Framework Convention on Climate Change to establish how these international debates can produce viable policies to allow developing nations to sustainably develop. Furthermore, my research will specifically look at India and ultimately demonstrate the complex nature of climate negotiations, highlighting how the inner workings of a specific government can alter the progress of negotiations and determine the success of sustainable development globally.

II. The United Nations Framework Convention of Climate Change

UNFCCC History

The United Nations Framework Convention on Climate Change (UNFCCC) is one of the global solutions that helps to solve the problem of global consensus and understanding on climate change (Klein 17). It is regarded as the highest governing body on international climate governance and currently consists of parties from 197 nations and nation-states around the world. As the era of the modern environmental movement began to research the effects of human GHG emissions, countries began to understand more and more the detrimental effects of large amounts of these emissions. This led large global organisations such as the United Nations, to found panels and governmental groups to head specific aspects of climate change research and development (Klein 17). To understand the science behind climate change, the Intergovernmental Panel on Climate Change (IPCC) was formed, with volunteer scientists from around the world to serve on the panel. It serves as the scientific base, producing annual reports on the current status of the Earth's climate. The IPCC is separate and does not make any policy decisions or negotiations on climate change. After the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO) had created the IPCC, 166 parties officially adopted the UNFCCC guidelines, establishing a concerted effort towards understanding and dealing with global climate change (Klein 17). This organization then bridged the gap in global negotiations and policy making on climate change. The UNFCCC currently has 197 parties, which are made up of nations and nation-states across the world.

Conference of Parties

In order to have successful negotiations under the UNFCCC, annual or semi-annual, Conference of Parties (COP) were held to establish a working framework "with the goal to stabilize greenhouse gas emissions 'at a level that would prevent dangerous anthropogenic interference with the climate system'." Since the beginning of the COPs, there have been three notable COPs that have altered global climate policy or marked historical negotiations under the UNFCCC. The first is COP3 in 1997, known more famously as the Kyoto Protocol. The Kyoto Protocol was the first major international conference to establish a comprehensive international framework for countries to set emission reduction targets for developed nations (Klein 18). While the Kyoto Protocol was a remarkable show of consensus on climate change, it proved to be fairly useless in terms of an international agreement. This is because the United States Senate refused to ratify the protocol. Without one of the largest and most powerful parties to the conference, the framework was quite weak with little power and functionality globally.

The second noteworthy COP came in 2009 at COP 15 in Copenhagen. After years of working off the Kyoto Protocol, parties were anxious to establish a functioning framework that had all important parties as signatories to the agreement. While many were hoping this would be the turning point, COP 15 in Copenhagen is regarded as a large failure due to the inability of parties to come to a consensus on a legally binding agreement (Klein 18). This marks one of the lowest points in climate negotiations under the UNFCCC. This conference only added to the need for an agreement, pushing countries to revise and revisit negotiations argued over for years.

The final important COP is COP 21 in Paris. After years of functioning unsuccessfully under the Kyoto Protocol and other minor agreements, the 196 parties to COP21 unanimously agreed (a few articles are still being negotiated) on 29 articles that ambitiously target GHG

emissions world wide, while tackling other issues that were previously left out of other agreements (Klein 18). There are articles on mitigation, adaptation, loss and damage due to climate change, technology transfer, climate finances, and others that work to specifically address the multifaceted nature of international climate change issues.

The Paris Agreement Articles

As the previous paragraph stated, there are different articles to the Paris Agreement, all speaking on different matters related to the effects of climate change. There are a few different articles that then specifically speak on sustainable development and the policies surrounding developing nations' roles on the subject.

Article 4 - Mitigation

Article 4 has a policy framework that is based on the idea of ‘common but differentiated responsibilities (Klein 177). This is a policy idea pushed by many nations to allow for developing countries to still make progress in sustainably developing, but have different individual goals than other countries who are developed. The idea of differentiation gives way to nations being able to determine what they are able to personally contribute as opposed to all countries on one list being required to do everything they are assigned to accomplish. This notion also led to one of the requirements of article 4, which is the reporting requirement for nations to submit their own Nationally Determined Contributions (NDCs) to the UNFCCC (Klein 177). This reporting requirement is one of the only binding aspects of the Paris Agreement, and by doing so allows the UNFCCC to have written accounts of what each country is currently or planning to contribute to global mitigation efforts through sustainable development. This allows developing nations to not only demonstrate their willingness to participate, but it also gives them

a chance to report on the resources they need. In the later sections of their NDC reports, many developing nations list out monetary and technology needs to make known what is necessary for them to progress in their sustainable development initiatives. In terms of nations' right to develop, this article serves as a middle ground solution, where developing nations must still report their sustainability initiatives, but are allowed to decide what is appropriate at their economic level and also make specific public requests for help on certain initiatives.

Article 10 - Technology Transfer and Development

Article 10 deals with Technology Transfer and development, which directly relates to the difficulties developing nations face when trying to sustainably develop. The framework for this article outlines the need to again, take the burden away from developing nations and give them better access to the technologies that will allow them to implement the initiative developed nations are encouraging. This article provides a direct platform for developing nations to negotiate on the particular technological devices that will best serve their economy and sustainable development transition. This article also works in conjunction with the countries Nationally Determined Contributions outlined in article 4. This article takes the NDC initiative from article 4 and lays out the actions necessary to properly facilitate a specific part of a country's NDC (Klein 324). By having an article specifically addressing technology transfer and development, developing nations know what they areble to ask for in their NDCs, as their needs are specifically addressed and covered within the Paris Agreement.

Article 14 - Global Stocktake

Article 14 wraps up the concept of NDCs by establishing the future global goal behind implementing such a policy. The goal of the NDCs is to not only provide a way for nations to

demonstrate their sustainable goals, but for them to be able to keep other nations accountable as well. The first global stocktake would take place in 2023, with nations beginning to report and revise their previously presented NDCs (Klein 318). The global stocktake builds off ideas from COP15 in Copenhagen where nations operate under a pledge-and-review system as opposed to a more top-down approach (Klein 318). By doing so, this gives countries the power to keep themselves and others operating under the same expectations. If two countries are similar in economic capabilities and status, they are both going to be checking the public reporting records under the stocktake in order to make sure they are putting in as much effort as they themselves are. The global stocktake seeks to promote accountability in order to keep countries acting faithfully on their sustainable development pledges. The embarrassment of falling behind similar countries and being publicly known for not properly contributing is the basis for how countries will continue to improve their NDCs. Ultimately, the global stocktake under article 14 serves not just as a one time reminder, but will be a continuous process every few years in order to not just keep nations accountable for their current commitments, but to encourage them to continuously improve their NDCs through each new global stocktake.

III. Indian Sustainable Development

History

India functions as an interesting representation of a developing country and exemplifies many of the issues at the core of sustainable development. India, like many developing nations, experienced a long period of colonial rule which contributed to many of the problems they have had with trying to develop as a nation. India was ruled by the East India Company and Great

Britain, and was not granted independence until 1947 when the British removed themselves from the country (Kaul 1). While Britain established many western ideals and infrastructure, India was still left to figure out how to build and control what would become one of the world's largest democracies. While many of the developed countries at the time had already been developing and industrializing for decades, India was just beginning to understand what it meant to be their own country, let alone develop in an organized and modern way. India's history, while unique, tells a similar story to many other developing nations. The years western countries spent developing, they were learning how to become a complete country with a functioning government, some not achieving this for years or going through more conflights that have further perpetuated the position as a developing nation (Kaul 1). India's history of development can not be understated when analyzing the ways in which they have participated in international negotiations and the factors that have altered their ability to now sustainably develop.

Economic Capacity

India's population statistics play an important role in illustrating India's economic capacity for investing in sustainable development initiatives. India boasts the second largest world population at 1.2 billion people, making up nearly 17.5% of the global population (Gov of India 15). This makes them the largest democratically led country in the world. On top of their large population, they also house one of the largest percentages of the world's poor, with nearly 363 million people (30% of the population) living in poverty (Gov of India 15). They also house 24% of the global population that still does not have access to electricity, and 30% of the global population that still relies on biomass to cook and 92 million people who still do not have access

to clean drinking water. Furthermore India's per capita GDP in USD stands at 1408 (Gov of India 16). India remains far below the world average in many categories, including per capita electricity consumption which stands at 917 kWh, only around ⅓ of the world's average consumption (Gov of India 16). All of these factors, both historical and statistical, create the complex net of obstacles and challenges India faces when participating in international negotiations and, as a developing nation, being able to sustainably develop.

UNFCCC Involvement

The stance India has taken on climate policy has shifted dramatically over the past few decades, shaping their ability to accept and promote sustainable development. For many years India ran under the concept of "equitable burden sharing" (Atteridge 69). This meant that for many years they did not take on any personal projects or burden themselves with the task of reducing their emissions. They were going to develop the way in which they saw fit, and place the burden of reducing emissions squarely on the shoulders of those historically responsible for GHG emissions (Joshi 133). For many years, lack of trust in forgein governments played a large role in India maintaining their previous position. India's long history with foreign government rule and their personal struggles for autonomy were visible in many of their policies, fearful of what others would do if given a role in their country (Atteridge 70). It was not until the late 2000's when India began to change their stance on global climate policy (Atteridge 70). They began to follow China's lead in acknowledging the issue of climate change, and slowly allowing their policies to reflect climate conscious positions (Jayaram 224). Their National Environmental Policy (NEP) 2006 law makes direct statements on the recognition of climate issues, India's

commitment to personal improvement on the subject, and has aspects of the Kyoto Protocol in it (Atteridge 70). Looking then to current documents on climate policy, India's NDC provides drastic ways in which the country plans to reduce their GHG emissions, and further implement clean energy projects (Gov of India 33). For example, India plans to implement a Smart Cities renewable energy program, along with Clean India Mission, all aimed at reaching new renewable energy targets and reducing their emissions (Gov of India 33). While India still maintains that much of the funding and most of the world's GHG emissions are the responsibility of developed countries, they have nevertheless made massive steps towards not only becoming a more developed nation, but becoming more capable to implement sustainable infrastructure. This is then an important factor in deciding the role developed countries play in India. It is advantageous for India to be taking more steps towards their own sustainable development, as it allows for a smoother transition of programs and technologies from developed countries, as opposed to developed countries trying to force such programs on developing nations. The more capable a nation is, the more willing other nations will be to come up with multilateral solutions in the developed country (Atteridge 75). Instead of simply trying to convince India of the necessity of such programs, cooperation amongst nations can instead take place, where ideas from both sides can come into play in solving specific sustainable development problems in India (Richardson 2).

Government Structures

For India, their government structure plays a large role in their ability to shape international and domestic climate policy on sustainable development (Nachiappan 37). India is the largest democracy in the world and is a union of states, making up one larger nation. Due to

this style of government, India has multiple levels to their implementation of climate policies. In India the states control some aspects of climate policy, while the federal Ministry of Environment, Forest and Climate Change, the Prime Minister, and the Supreme Court of India also all have a say is climate policy (Saryal 12). Many states differ greatly in development, type of land, and the problems they face when it comes to climate change (Atteridge 72). For example, the Indian state of Maharashtra not only has Mumbai located in it, but has a lengthy section of land along the Arabian Sea. Maharashtra has to deal with rising seas in one of the largest metropolises in the world, on top of shifting oceanic storm trends along the coast. This is compared to states in the northern areas of India, who deal with the Himalayas and different climate problems in their mountainous region (Chandler 1). Due to this type of government structure, developed nations must navigate through sub-national and national policies and priorities to best determine how and where to implement specific sustainable development projects (Tse, Louis, and Oluwatobi 2). The wide range of land types and climate variations demands careful and specialized projects, helping developed countries narrow in on particular focus areas, while making the overall process of sustainable development more complex (Richarson 4).

India's NDC

India's NDC demonstrates how the Paris Agreement under the UNFCCC works to lay out and specify the ways in which India itself, along with the help from international mechanisms under the agreement, can find a balance in developing sustainably where they do not bear the entire burden. Further, India's NDC shows how tailored sustainable projects and

initiatives must be to particular regions, highlighting the complexity of international negotiations that govern multiple countries with vastly different cultural and geographical differences. Here are a few of the sustainable development initiatives that India included in their NDC (not an exhaustive list) (Gove of India 33):

1. Green Generation for Clean & Energy Secure India: more than 5 times increase in Renewable Capacity from 35 GW (upto March 2015) to 175 GW by 2022.

2. National Solar Mission scaled up five-fold from 20 GW to 100 GW by 2022. Kochi Airportis the World's first airport to fully run on solar power.

3. Solar powered toll plazas envisaged for all toll collection booths across the country.

4. National Smart Grid Mission launched for efficient transmission & distribution network.

5. Green Energy Corridor projects being rolled out to ensure evacuation from renewable energy plants.

6. Nationwide Campaign for Energy Conservation launched with the target to save 10% of current energy consumption by the year 2018-19.

7. Launched Smart Cities Mission to develop new generation cities by building a clean and sustainable environment.

Government of India. "India's Intended Nationally Determined Contributions: Working Towards Climate Justice." *www4.Unfccc.int*, 2016, www4.unfccc.int/sites/ndcstaging/PublishedDocuments/India%20First/INDIA%20INDC%20TO%20UNFCCC.pdf.

After India listed their intended mitigation and adaptation initiatives to promote sustainable development, the government wrote further on the need for successful application of the mechanisms outlined in the articles of the Paris Agreement. In order for India to successfully carry out their proposed initiatives, they would need continued help through article 10, where developed nations would transfer technology through the international mechanism so that India

can have access to technology that will improve their capacity to sustainably develop. Their NDC concluded by further noting their willingness to continue to improve and initiate sustainable development, as long participation by developed nations, though funding and technology, remains consistent as promised.

IV. Conclusion

Through my analysis of the Paris Agreement under the UNFCCC, innovations in the way climate policies govern global populations have presented nations historically ignored with the opportunities to, not only increase their economic growth, but do so in a way that works to benefit the global population as well. These complex negotiations provide enough framework to keep countries consistent in their participation, but allow them enough variation to tailor their climate policies in ways that will benefit their personal capacity to sustainably develop. The Paris Agreement took into careful consideration many of the challenges sustainable development oftentimes faces, by establishing written sections that made sure developing countries knew their grievances with traditionally climate policy would not be further exacerbated by the new framework. By individually analyzing India, the notions of complexity in international negotiations became more apparent. By taking into consideration historical, governmental, and regional factors, it can be understood why global governance can be an ever so delicate balancing act, when all 197 parties to a conference all have backgrounds as unique and relevant as the next. The layered nature of the negotiations and policies should not be a deterrent to their existence, but a reminder of the immense detail that should go into global governance and the

need for countries and leaders to be willing to properly understand the ways each of their countries contribute to the success of global sustainable development.

Appendix A

*List of Developed Economies (Nations) Under the United Nations

United Nations. "Country Classification." *Www.un.org*,

www.un.org/en/development/desa/policy/wesp/wesp_current/2014wesp_country_classification.pdf.

European Union

EU-15

Austria	Belgium
Denmark	Finland
France	Germany
Greece	Ireland
Italy	Luxembourg
Netherlands	Portugal
Spain	Sweden
United Kingdom	

New EU Member States

Bulgaria	Croatia
Cyprus	Czech Republic
Estonia	Hungary
Latvia	Lithuania
Malta	Poland
Romania	Slovakia
Slovenia	

Other Europe

Iceland	Norway
Switzerland	

Other Countries

Australia	Canada
Japan	New Zealand
United States	

Major Developed Economies (G7)

Canada	Japan
France	Germany
Italy	United Kingdom
United States	

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