Climate Change is Killing Coffee: How the Paris Climate Agreement Does Not Go Far Enough

Kevin Gebhart
CLIMATE CHANGE IS KILLING COFFEE: HOW THE PARIS CLIMATE AGREEMENT DOES NOT GO FAR ENOUGH

BY Kevin Gebhart

PART I: INTRODUCTION

Coffee is one of the world's most traded and consumed products. It employs thousands of workers and is the premise of a global industry worth billions of dollars. Even though many Americans consume coffee, most of them probably pay no attention to where the product comes from, how it is distributed, or how fragile the commodity is. Another fact that most enthusiastic western coffee drinkers may not know is this: climate change, a product of human pollution, may render coffee extinct by the end of this century. Some in the scientific and agriculture community even go as far as saying that coffee will be gone or in dire straits well before the end of the century.

"The reality we now face implores us to act." For the individuals who refuse to accept this rather staggering statement, it is time to wake up and smell the climate change. At humanities current rate, climatologists predict that the average global temperature will increase from 2.5-5 degrees Celsius by the end of the 21st century. Temperature increase is not the only aspect of change that global warming will bring. Many climatologists, scientists, and meteorologists expect the average rainfall rate to decrease in certain tropical regions of the Earth. This seismic shift in both temperature and rainfall will have a direct effect on agriculture around the world, especially the production of coffee.

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3 See id.
8 Jan E. Szulejko, Global warming projections to 2100 using simple CO2 greenhouse gas modeling and comments on CO2 climate sensitivity factor, 8 ATMOSPHERIC POLLUTION RESEARCH 136 (The increase in global temperature is based off of what the average global temperature was prior to the industrial revolution)(2017).
9 See The Climate Institute, supra note 4.
10 Id.
Coffee is one of the most sensitive forms of agriculture to cultivate. The product is difficult to grow for only certain temperatures and moisture levels create a coffee bean with the flavor and aroma that the world population has grown to love, and some, grown addicted to. Suffice it to say, if current carbon emissions are sustained, by the end of the century, coffee will not be able to grow in the various regions of cultivation due to drastic climate change.

The loss of coffee production will not only have a negative impact on the billions of people around the world who love their cups of coffee, or the local coffee shops who depend on the robust supply of coffee in order to stay in business, the loss or mass scarcity of coffee will have direct and drastic impacts on the countries and farmers responsible for coffee production. Many of the places where the beans are prevalent happen to be areas that are not as financially stable as the United States, Canada, and other European countries.

Major coffee producing countries consist of Kenya, Brazil, Vietnam, Indonesia, and Ethiopia. Because coffee production in these regions are so crucial to their sustainability, it is clear to see that loss of the ability to grow the product will lead to economic strife and entropy on a socio-political level.

For a country like Ethiopia, where coffee represents over forty percent of the nation’s exports, the loss of the product may lead to scarcity of capital, which could further lead to a battle over finite-resources. In that situation, with history as a guide, efforts to alleviate dire poverty and death from a lack of food and resources will likely lead to violence and war. Likely, a blood-stained battle field would occupy the area precious coffee was once cultivated.

With the current climate projections, the international community must bind together with the same fervor of conventions at Yalta or Potsdam in order for future coffee

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12 Id.
13 See The Climate Institute, supra note 4.
21 Office of the Historian Bureau of Public affairs, The Potsdam Conference, 1945, UNITED STATES DEPARTMENT OF STATE, https://history.state.gov/milestones/1937-1945/potsdam-conf (discussing what the Potsdam and Yalta meetings were, how the world was faced with a comprehensive problem [World War Two]).
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production to have even a scintilla of fulfilling the considerable demand created by the expansive market. In order for this to occur, the global initiative on climate change must be approached by countries and the United Nations with the same seriousness as the Israeli-Palestinian conflict, the civil war in Syria, and famine in northern and central Africa. As of 2017, a majority of the world has signed on to the Paris Agreement, which was established in late 2015. Generally, the agreement states that the basic premise of the world's greenhouse gas emissions should be cut in order for the average global temperature increase to stay below two degrees Celsius by the end of the century. The aim of the agreement is positive; despite not completely saving coffee production from confliction and entropy; keeping the temperature below this threshold will likely save some coffee production. However, this notion of keeping carbon emissions down by the way of an international agreement in order to hamper global warming has a downfall: the Paris Agreement only has a few binding provisions and therefore, it is an inadequate attempt at establishing a standard for how countries should combat climate change. As will be discussed later, these provisions do not suffice in controlling what will be the long, lingering effects of climate change. In theory, the Paris Agreement is a step in the right direction, but if current United Nations doctrine holds, the agreement shall be rendered no more than an extensive political pact between certain member states. Not only are many of the Agreement's articles and terms exhortatory, but there is also a large, looming elephant in the room that will likely irreparably tear up this: President Donald Trump has repeatedly promised to his voter-base, and to the international community as a whole, that he will withdraw the United States from the Paris Agreement. President Trump claims that the agreement will kill jobs and is an overall "bad deal" for the United States. Yet, like every other crisis that requires global cooperation, the United States must be a player in order to foster a sufficient remedy. For climate change specifically, the United


28 See Claudia Schiwirples, Citizens Acceptance of Climate Change Adaptation and Mitigation: A survey in China, Germany, and the US, 145 Ecological Eco. 308 (discussing briefly how the Paris Climate Agreement will not address the plethora of long term issues related to climate change) (2018).


30 See @realDonaldTrump, Twitter (Nov. 17, 2014) ("Obama’s China ‘climate’ deal binds America with language of ‘will’ curb emissions [sic] now while China only ‘intends’ to curb in 2030. Bad deal!").

States is one of the world's largest polluters.\textsuperscript{32} Without securing the pivotal promise from the United States government to take the initiative to combat climate change, the problem will only get worse as time goes on.\textsuperscript{33} As of February 2018, the United States has indicated that it will remove its self from the Paris Agreement.\textsuperscript{34} The earliest possible date for removal of the United State from the Agreement will be 2020.\textsuperscript{35}

This Note will advocate for a stronger approach to combating climate change along with creating a favorable business climate, with a focus on the positive externality of saving the coffee industry. The first aspect of this note will illustrate a comprehensive legal interpretation of the Paris Climate Agreement and its predecessors. The second part of this Note will discuss what climate change is and how it impacts the production of coffee. The third part of this note will analyze the shortcomings of the Paris Climate Agreement and explain that without a steadfast approach to combating climate change, the peril will ultimately render the coffee market extinct. The fourth part of this note will propose a solution, and advocate for a stronger international approach in order to mitigate the effects of climate change and the damage that it renders on the coffee industry. I will focus on both an international approach as well as the United States' necessary role in this extreme endeavor. Moreover, I am calling for amended provisions to the Paris Climate Agreement in order to make sure every member nation will play their dedicated part by creating options for the new American administration to negotiate those amendments, and also possible remedies through means of a free market system.

II THE PARIS CLIMATE AGREEMENT: HOW IT WORKS

On July 22, 2016 at the United Nations ("UN") in New York, the Paris Climate Agreement was ratified by 175 of the countries who attended the climate summit in Paris, France in December of 2015.\textsuperscript{36} The agreement has been both praised as a landmark moment in the battle against climate change and criticized as being nothing more than a political ploy.\textsuperscript{37} Regardless of the merits, the Agreement has garnered immense media and political coverage.\textsuperscript{38}

\textsuperscript{33} See Ben Westcott, What does the Paris climate deal look like without the United States?, CNN (Jun. 1, 2017).
\textsuperscript{34} See Shear, supra note 29.
\textsuperscript{36} "Today is an historic day," says Ban, as 175 countries sign Paris climate accord, UN News Centre (Apr. 22, 2016).
\textsuperscript{38} See, e.g., UN News Centre, supra note 36.
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The Paris Climate Agreement is the international community’s most recent response to climate change as per the UN’s Convention on Climate Change established in 1992. In order for the Agreement to become a mechanism of international law, the countries who adopted and ratified the agreement had to constitute at least fifty-five percent of the planet’s carbon emissions. On the second day of the ratification window, 175 countries signed the pledge at the UN to ratify the agreement. With these 175 countries, including the United States and China, the agreement consisted of well over fifty-five percent of the global carbon emissions. Thus, establishing the Paris Climate Agreement officially as international law.

Like most treaties, the Paris Agreement begins by establishing the reasons why such an agreement is warranted. The preface marks climate change and its effects as an urgent concern for the global community. Upon such a dire proclamation, the Agreement proceeds to later note that the parties should “aim” to keep the global temperature increase from pre-industrial levels to under 2.0 degrees Celsius by the end of the 21st century.

As of 2017, the agreement is in effect for all countries that have signed and ratified it, including the United States. Though President Trump has made strong indications of plans to revoke the United States from the agreement, he will not be able to formally remove the United States from the agreement in the near future. The agreement has a built-in secession clause which cannot be exercised by any member nation until three years after the agreement goes in effect. Thus, the United States (or any other member country) can begin its withdrawal process in 2019. Even after the withdrawing nation serves written notice to the UN about leaving the agreement, there is an additional one-year buffer between notice and formal withdrawal. With these procedural steps written into the agreement, the earliest date of complete succession for a member nation would be 2020. In short, the United States is still a member nation of the Paris Climate Agreement, and is obligated to abide by its terms. The future participation of the United States will be determined by the country’s political process via the 2020 presidential elections.

41 See Paris Agreement- Status of Ratification, supra note 26.
42 Id.
43 See UN News Centre, supra note 36.
45 Id.
46 Id.
49 Volcovici, supra note 47.
50 Id.
51 Shear, supra note 29.
A. How We Got to the Paris Agreement: UN Convention on Climate Change and Kyoto Protocol

The international community in the UN had recognized that climate change was ultimately a topic that needed to be addressed in the early 1990’s. Member states of the UN decided to draft a frame with the purpose of combating global warming. This framework is formally called the “United Nations Framework Convention on Climate Change” ("UNFCCC"). The document was drafted by an intergovernmental negotiating committee and open for signature and ratification in May of 1992. The UNFCCC is not legally binding, it merely suggests that the international community should do all that is possible in order to hinder further climate change. The mechanism for achieving this goal was to encourage countries to cut greenhouse gas emissions, such as carbon dioxide and methane.

In 1997, the international community attempted to strengthen the initial framework that the UN set out in 1992. The Kyoto Protocol, which consists of developed nations that have ratified the UNFCCC, is a legally binding treaty which assigns each member country an emission target. The United States did not ratify the Kyoto Protocol and Canada discontinued its participation in 2012. The arguments against this treaty were clear: 1) the treaty did not include developing countries, and 2) the treaty forced countries who ratified to drastically cut carbon emissions, which for countries that depend on oil in order for the economy to work was infeasible. The Paris Agreement was viewed as a more global approach (unlike the Kyoto Protocol, Paris involved developing countries), and more flexible (countries are not “forced” to enforce emission reductions).

The main way in which the Paris Agreement is geared to work is spelled out in Article 3 of the Agreement. This is through “Nationally Determined Contributions” ("NDC"). Essentially, every sovereign nation-member of the agreement must critically examine their national circumstances and determine the amount of pollution they can afford to cut from their economy. This provision is binding, indicated by a “shall” statement, for both UN designated “developed” and “developing” countries.
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The agreement states that all NDC’s must act in accordance with the purpose of the agreement. The agreement states that all NDC’s must act in accordance with the purpose of the agreement. Thus, in practice, all countries should take into account their population, nationwide practices regarding energy production and travel, the types of burdens their contributions would have on their citizenry, and, lastly, the cost of implementing new measures.

The member nations independently have the responsibility of coming up with what their NDC should be. The UN does not provide direct oversight for each individual process of generating NDC, though the UN does suggest that all member nations must make these NDC’s as ambitious as possible. The UN can also suggest to countries how much carbon should be cut in order for the aim of the agreement to be reached. The text of the Paris Agreement does not specify how member nations should regulate carbon emissions in order to meet the threshold goal of keeping the average global temperature from increasing beyond 1.5 degrees Celsius before the end of the century. However, the agreement does mandate all member nations to be completely transparent about what their NDC’s are and how they are attempting to achieve these goals.

Theoretically, through the transparency aspect of the agreement, all parties must meet at designated times and locations established by the conventions and communicate their plans. Since the agreement encourages nations to approach their NDC with great ambition, all parties, after communicating, must maintain or increase their NDC in order to propel the spirit of the agreement. This transparency aspect of the agreement is the only way the agreement allows the international community to monitor the member states. Since the agreement is deemed to not be “punitive in nature,” there are no measures within the agreement to either force countries to fulfill all NDC’s, or punish countries for not acting on a proposed NDC. Besides amplifying harmony between the member nations, creating a check on member nations is the main reason why the agreement forces transparency through open communications of NDC’s. The notion is to put political pressure on the parties that either do not want to fulfill their NDC or parties who purposefully create weak NDC’s in order to continue reliance on fossil fuels.

Noneconomic factors, such as the Human Development Index (HDI), which quantifies a country’s levels of education, literacy and health into a single figure, can also be included in evaluating an economy or country’s degree of development."


Id.

Id.


Id.

Id.

Id.

Id.

Id.

See Bodansky, supra note 27.

See Id.
Nations are encouraged to begin the process of fulfilling their proposed NDC’s upon ratification of the Paris Climate Agreement. However, countries will not be held accountable punitively if they do not begin implementation right of way. The member parties have agreed to meet at a check in convention in 2018. At this convention, each member country will present their NDC and present how they are going fulfilling their obligations. The proposed goal of the UN and the member nations is to have all NDC’s in full operable function by 2020.

A thorough reading of the Paris Agreement renders that only a hand full of clauses within the agreement are binding upon member nations. The clauses that utilizes “shall” as a command, instead of “may” or “should” as suggestions, are aspects in which member nations cannot usurp. The most notable “shall” provision is the promise by developed nations to allocate resources and monetary funding to developing nations in order for these developing nations to satisfy their NDC’s. Developed nations are left to their own discretion about how much money or resources they will commit to developing nations. For instance, the United States has committed (under president Obama) to give three billion dollars to developing nations. This amount will (pending the United States remaining a member of this agreement) be put into a general climate fund controlled by the UN and distributed to developing nations.

The meaning of “developing” and “developed” nation is not expressly spelled out in the Paris agreement. However, the agreement does allude to the framework laid out in the UN’s convention climate change which adheres to the UN’s list of country classification. This list is crafted by multiple sub-organizations within the UN, but is published by the Development Policy and Analysis Division of the Department of Economic and Social Affairs (“DESA”) of the United Nations Secretariat. The data consists of:

1. Information obtained from the Statistics Division and the Population Division of UN/DESA, as well as from the five United Nations regional commissions, the United Nations Conference on Trade and Development, the United Nations World Tourism Organization, the International Monetary Fund, the World Bank, the Organization for Economic Cooperation and Development.
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From all data collected, the UN looks at, among other things, imports, exports, and gross income per capita. After figuring out the statistics for each country, the UN places the countries into either the developed or developing categories. The nations with high amounts of income, exports, and imports are grouped as developed countries, signifying stronger economies. Whereas countries with lower imports, exports, and income are grouped in the developing countries, signifying weaker or poor economies. The classification system further breaks down countries into sub-sections of developed and developing nations. The major developed economies are classified as G7 nations (consisting of The United States, United Kingdom, Italy, Germany, Canada, Japan, and France).

The objective bottom line here is that the Paris Agreement is still in its infancy. There is no way to truly know if the agreement will work, or if it will fizzle upon some of the political entropy caused by the shifting ideological platforms of member nations (i.e., the transition from Obama to Trump in the United States). Thus far, however, many member nations have been forthcoming and ambitious in crafting NDC's. China has indicated that it will “lower carbon dioxide emissions per unit of GDP by sixty percent to sixty-five percent from the 2005 level,” the European Union has pledged to cut carbon emissions by forty percent, Switzerland has pledged a fifty percent reduction in carbon. Many of the developing countries have also indicated ambitious goals in reducing carbon. The only issue with promises of reduction from developing nations is the fact that the promise is conditioned on adequate funding from developed countries. India, for example, would reduce carbon emissions by forty percent if they receive sufficient funds; without these funds, however, India will not contribute to any reduction of carbon emissions.

B. Is the Paris Agreement Currently Binding on the United States as Domestic Law?

Taking a step back from the international scene, the Paris agreement poses some confusion as to what it means for citizens, corporations, states, and municipalities in the United States. International law comes in a few varieties here in the United States. In short, the first variety is a treaty, where the president has signed an agreement with the advice and

94 Id.
95 Id.
96 Id.
97 Id.
98 Id.
99 Id.
100 See Paris Climate Agreement, Dec. 12, 2015, FCCC CP 2015 L.9 Rev.1
102 Id.
103 Id.
104 Id.
105 Id.
106 Id.
consent of the Senate.\textsuperscript{107} Congress may then ratify this agreement by two-thirds vote.\textsuperscript{108} Upon domestic ratification, the treaty now becomes binding law in the United States.\textsuperscript{109} Thus, all state laws in conflict will be deemed preempted under the Supremacy Clause.\textsuperscript{110} The other variety of binding international law in the United States occurs when the president is acting within Article 2 Executive Powers when representing the country in foreign affairs.\textsuperscript{111} The Paris Agreement, for example, has been signed and ratified by the Obama administration, but Congress has never voted to implement the agreement into domestic law.\textsuperscript{112}

Since the President does not have the power through any provision of Article 2 of the Constitution to unilaterally cut carbon emissions to fulfill the United States' NDC, no private entity, state, or person in the United States is required to follow a procedure that would allow the United States to fulfill its NDC obligation of the Paris Agreement.\textsuperscript{113} A substantive change of law in order to mandate the people and entities of the United States to decrease carbon emissions would have to come from legislative action by Congress.\textsuperscript{114} However, it is arguably within the President's power to communicate with foreign nations on behalf of the United States.\textsuperscript{115} Thus, the President may unilaterally bind the United States into sharing its NDC, how much carbon the United States has emitted, how the United States is attempting to mitigate such pollution, information about climate change, and information about technology that could mitigate the effects of climate change with foreign countries.\textsuperscript{116} These actions by the President could be within the executive's power to oversee foreign relations.\textsuperscript{117} However, it is arguably within President Trump's power not to execute communication with the UN concerning the countries NDCs.\textsuperscript{118} What President Obama believed to be pertinent in terms of foreign relations, may (and thus far has not been in some aspects) not be what the new President, Donald Trump, believes to be important enough to execute his Article 2 powers over.\textsuperscript{119}

\textsuperscript{107} See Medellin v. Texas, 552 U.S. 491 (quoting Foster v. Neilson, 27 U.S. 253 “a treaty is equivalent to an act of the legislature, and hence self-executing, when it operates of itself without the aid of any legislative provision.”)(2008).

\textsuperscript{108} U.S. Const. Art. II §2.

\textsuperscript{109} See Medellin, 552 U.S. 491 (quoting Foster v. Neilson, 27 U.S. 253 “a treaty is equivalent to an act of the legislature, and hence self-executing, when it operates of itself without the aid of any legislative provision.”)(2008).

\textsuperscript{110} See Missouri v Holland, 252 U.S 416 (1920).

\textsuperscript{111} See Medellin, 552 U.S. 491 at 525.

\textsuperscript{112} See Eugene Kontorovich, The U.S. can't quit the Paris climate agreement, because it never actually joined, Wash. Post (“... the United States never properly joined the accord: It is a treaty that requires the advice and consent of the Senate. Instead, President Barack Obama choose to “adopt” it with an executive order last September.”) (Jun. 1, 2017).

\textsuperscript{113} See Youngstown Sheet & Tube Co. v. Sawyer, 343 U.S. 579 (1952).

\textsuperscript{114} U.S. Const. Art. I, §1.

\textsuperscript{115} See U.S. Const. Art. II, §2.

\textsuperscript{116} See Dames & Moore v. Regan, 453 U.S. 654 (explaining that the President of the United States has constitutional authority to represent the United States in foreign affairs and communication (1981); American Ins. Assn. v. Garamendi, 539 U.S. 396)(2003).


\textsuperscript{118} See Dames & Moore, 453 U.S. 654 (explaining that the President of the United States has constitutional authority to represent the United States in foreign affairs and communication (1981); American Ins. Assn. v. Garamendi, 539 U.S. 396) (2003).

\textsuperscript{119} See, e.g., Shear, supra note 29.
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In essence, the United States is obligated to create an NDC and communicate its status with the international community via President Obama signing the instrument in his executive capacity, but the United States cannot domestically force its population to adhere to the agreement and cut carbon emissions. In terms of contributing funds to developing nations, the United States is not bound by this provision either since the president does not have the power to allocate where certain revenue will go, this is the job of Congress.120

III THE SCIENCE OF CLIMATE CHANGE AND COFFEE

As noted earlier, coffee is second most traded commodity on the planet.121 In terms of the amount of imports and exports worldwide, coffee beats other commodities like corn, sugar, and natural gas, rendering coffee to fall in second place only behind oil.122 Coffee is consumed by millions and is the core of an industry worth billions of dollars.123 However, the commodity is under siege by climate change, since the area where coffee is grown is especially vulnerable to the changing climate.124 As will be highlighted in the section to come, coffee is grown within the parameters of the equator where the air temperature and rainfall rates yield consistent drinkable coffee batches.125 Any deviation from the requisite air temperature or rainfall will be detrimental to coffee yield.126 Thus, with climate change posed to alter both of these aspects of the regions where coffee is grown, the grounds are set for a substantial problem.127 Before further exploring the detrimental effects climate change will have on coffee, one must thoroughly explain what climate change is and how the coffee industry works.

A. Summary of What Climate Change Is and What Causes Climate Change

The notion of climate change is simply a consequence of an industrialized world since the late 1800s.128 Much of the machinery necessary to propel industrial human activity (such as factories and forms of transportation, among other things) is primarily run from the combustion of fossil fuels.129 Oil and coal are the prime examples of fossil fuels. Oil is ultimately the aggregated buildup of dead plants and animals from thousands of years,

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122 Id.
124 See Bromwich, supra note 2.
125 See The Climate institute, supra note 4.
126 See Bromwich, supra note 2.
127 See The Climate institute, supra note 4.
128 See Szulejko, supra note 8.
129 Caineng Zou, Energy revolution: From a fossil energy era to a new energy era, 3 Nat. Gas Indus. B 1(explaining how fossil fuels are products such as oil, coal, and natural gas, found in the earth).
rendering it plush with carbon.\textsuperscript{130} Coal forms in a similar way, also plush with carbon.\textsuperscript{131} When fossil fuels are burned, large swaths of carbon dioxide ("\text{Co}_2") are released into the atmosphere.\textsuperscript{132} When released into the atmosphere, carbon dioxide molecules cause the atmosphere to thicken, letting the sun’s rays in, but only allowing portions of those rays to exit the planet’s atmosphere and return to space.\textsuperscript{133} Over time, this reoccurring phenomenon (referred to as the greenhouse effect) causes the average air temperature on earth to increase.\textsuperscript{134} After its natural process, it is believed that once carbon dioxide enters the atmosphere, it may remain there for up to 200 years.\textsuperscript{135} Therefore, we have not seen the apex of the warming by any stretch. The nuances of climate change obviously span further than this elementary summary of the phenomena. Methane is another gas that hastens global warming,\textsuperscript{136} melting ice caps in the polar regions causes sunlight to absorb into the ocean rather than bounce off the ice,\textsuperscript{137} along with mass deforestation (especially in the rainforests of the Amazon) causing less trees to consume carbon.\textsuperscript{138} In sum, global warming is a difficult and highly technical process, but the ramifications are real and every citizen, creature, and ecosystem of this planet will or already has felt the effects of climate change.\textsuperscript{139}

Air temperature is not the only meteorological aspect affected by climate change. Rainfall patterns will shift, intensifying in some regions and decreasing in others.\textsuperscript{140} Scientists say that rising air temperatures and higher levels of water evaporation will cause areas which frequent mass amounts of rainfall to experience more rainfall than the current average.\textsuperscript{141} Whereas, areas inland, that are subject to less rainfall, would be more susceptible to drought.\textsuperscript{142} To put this assertion into perspective, areas including, but not limited to the Mediterranean and the east coast of the United States, are expected to experience higher

\textsuperscript{130} See BBC, \textit{How Crude Oil Is Formed}, http://www.bbc.co.uk/bitesize/standard/chemistry/materialsfromoil/how_crude_oil_was_formed/revision/1/ (last visited Nov. 17, 2017).
\textsuperscript{132} See Szulejko, \textit{supra} note 8.
\textsuperscript{134} See Id.
\textsuperscript{136} See Id.
\textsuperscript{139} See Mandia, \textit{supra} note 129.
\textsuperscript{140} See, e.g., Alexis D. Synodinos, \textit{The impact of inter-annual rainfall variability on African savannas changes with mean rainfall}, 437 J. of Theoretical Bio. 92 (Jan. 21, 2018).
\textsuperscript{142} See Id.
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rainfall amounts. Regions consisting of, but not limited to Northern Africa and Central Africa are expected to experience less rainfall than their current averages.

B. Summarization of Coffee Production

The coffee industry is global, but the process of coffee production begins in the countries within the confines of the equator, regions with the perfect amount of heat and moisture to produce coffee plants. This area is referred to as the bean belt and is where coffee cultivation begins. The part of a coffee plant that is transformed into coffee beans or coffee grind are the seeds of a coffee tree. Farmers begin the coffee cultivation process by planting un-used coffee seeds with hopes of producing coffee trees. This takes places during the wet season, so the soil is moist enough for the premature roots to grow in their proper form. Coffee seeds are planted relatively close to each other in proximity in a garden structure called a bed. The bed of coffee plants must be nestled underneath trees or other vegetation, this is because the coffee plant cannot be over-exposed to sunlight. Over-exposure to sunlight and heat from the sunlight in these regions would be detrimental to the plant.

The coffee tree produces a small red fruit called a coffee cherry. These cherries take approximately three to four years to appear. The cherries are usually hand-picked from the trees once every year during the harvest season. Columbia is one of the only major coffee producing countries to have two harvesting seasons. At harvest, the coffee cherries are processed and dried until the inside of the cherry is at approximately eleven percent moisture; this process usually takes several weeks to complete. After the beans are dried and the cherry skin is extracted, the beans are shipped to roasters where they will be sorted and heated up, giving them a dark color, rendering them ready to be grinded up or sold as is to merchants across the world. Thus, these coffee producing countries of the bean belt are the baseline foundation for a robust global coffee industry.

143 See Id.
144 See Id.
145 See The Climate institute, supra note 4, at 3.
146 Id.
148 Id.
149 Id.
150 Id.
151 Id.
152 Id.
153 Id.
154 Id.
155 Id.
156 Id.
157 Id.
158 See Id.
coffee is not just any other commodity, for the farmers of the bean belt coffee is their livelihood.159

C. Coffee Dependency for Farmers and Nations in the Bean Belt: It’s Not Because of the Caffeine

All of the countries within the bean belt rely on coffee for trading purposes.160 Through the trade of coffee, many families in the bean belt are able to sustain their shelter and diets thanks to the increasing demand for coffee by westerners.161 If coffee were to disappear by the hot, dry grips of climate change, every coffee producing country would suffer in one degree or another.162 However, there is one coffee producing country that would be absolutely devastated by the disappearance of the commodity: Ethiopia. Though other coffee producing countries will be effected, this section will focus on the people and farmers of Ethiopia.

As noted before, coffee is Ethiopia’s most prevalent export. Roughly fifteen-million people in Ethiopia depend on the coffee growing industry for employment; providing an income for approximately fifteen percent of Ethiopian households.163 However, the farmers who grow coffee in Ethiopia are beginning to feel the effects of a climate change on their product.164 Studies have shown that the rainfall rate in Ethiopia has declined by roughly twenty percent since the 1970’s.165 This fact alone renders the climate in Ethiopia different than the climate in which the native coffee plants grow. Thus, coffee farming in some areas of Ethiopia has become nearly extinct.166 This extinction is most prevalent in the low lands of Ethiopia, where climate change temperature increase and rainfall rate has been currently more effected by climate change.167 In response to adverse farming conditions in the lowlands, some farmers have picked up and moved to higher altitudes in Ethiopia.168 This practice has acted to mitigation the decline in the coffee industry, however, it is not a long-term fix for the vexing, hastening issue of climate change. This is simply because the conditions will eventually reach the high lands of Ethiopia, causing farmers to continue to move up altitude.169 The end game to this nomadic farming practice for coffee will ultimately render less land for coffee plantations.170

The effect of climate change on Ethiopia is current and real. For instance, many farmers who have the skill set and resources to move to a higher altitude in order to grow

159 See, e.g., The Climate Institute, supra note 4.
161 See The Climate Institute, supra note 4, at 2.
162 See Id.
164 Id.
165 Id.
166 See Id.
167 See Id.
168 Id.
169 See Moat, supra note 17.
170 See Columbus, supra note 163.
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Coffee have already done so, leaving whatever lowland acreage behind. The end game for this class of farmers is simple and comes in four categories: they could either 1) pick up and move, which is not an option for most impoverished farmers; 2) give up on coffee production or farming and starve to death; 3) find other means of employment; or 4) find a new crop to grow. The latter option has been exercised by many Ethiopian farmers. Instead of coffee, these farmers have turned to other crops like khat (a recreational drug used by cultures in the middle east and east Africa), and corn, due to the high tolerance of these crops. The shortcomings of producing khat are the weak market demand compared to coffee; farmers who grow khat will likely not sell their crop. Growing of khat also raises moral issues because of its use as a recreational drug; hence, the market may be further limited against this negative push back against the drug from some Ethiopians. Additionally, the issue with corn is the fact that over production of corn depletes all eco-systems and fertile soil in the area. Long periods of corn farming require mass deforestation in order for the corn to spread, and once the corn has spread, the soil becomes dry and brittle, making future agriculture cultivation difficult.

Coffee is an important commodity in Ethiopia. Logic dictates that if the largest exporting product in the country ceases to exist, or is cut in half by the end of the century, jobs will be lost, families will starve, and people will die. The Ethiopian government is not in the position to take on this type of economic and social strife. Today, Ethiopia has a gross domestic product per capita at approximately $1,700 U.S dollars. With this figure, Ethiopia has the fifteenth lowest GDP per capita in the world, rendering the country among the

171 See Id.
172 See Id.
173 See Id.
174 See Id.
175 See Id.
176 See AXEL KLEIN, Khat in the Neighbourhood—Local Government Responses to Khat Use in a London Community, 43 Substance use and misuse 819(2008)(Discussing the negative notions of Londoners concerning the drug. Since most westerners either do not know what Khat is or find the drug to be reprehensible, the market for Khat in the western world is not as big as that of coffee); The Law Library of Congress, Legal Status of Khat in Selected Jurisdictions, https://www.loc.gov/law/help/legal-status-of-khat/legal-status-khat.pdf (2015)(explaining that khat is outlawed in some parts of the world, this selected material cites Turkey and Jorden as countries that have banned the import and export of khat. Coffee is legal world-wide, so the market is thus larger than that of khat).
178 See Columbus, supra note 163.
179 See Id.
180 See, e.g., Id.
poorest. The subtraction on coffee production will blow a gaping hole in this already low figure, possibly rendering Ethiopia the poorest country in the entire world.

IV MITIGATION

A. Now What?

A fix to climate change and any mitigation of damage to the coffee industry may seem unlikely in times of social and political unrest. To make matters more difficult, the past election in the United States has etched a message to the rest of the world: you are on your own. President Trump has been nothing less than cynical of the Paris Climate Agreement. His platform of “America First” seems to have no room for this alleged “job killing” globalist, Paris Agreement. President Trump has refused to consider the ramifications of climate change, practically taking the scientific communities word on the matter as a joke; even going as far as deeming climate change a conspiracy by the Chinese in order to somehow take over the world or put the United States out of business.

The truth is, climate change is a looming problem and will put an end to not only the billion-dollar coffee industry in just two centuries time, but human civilization will grow susceptible to destruction by natural environmental occurrences if carbon emissions are not significantly decreased. Not only is climate change a problem that has to be fixed, the process of fixing the problem could be a great economic driver and spur newer, cleaner industries. Such industries have already come into existence, for example, Tesla’s battery operated cars, various solar panel companies, and also farmers in Texas who utilize wind turbines for energy. These are just some examples of how society is attempting to create cleaner energy in order to quell the effects of global warming.

Thus, the solution to this issue is not in the types of technology that could fight off climate change, but the policy in which the global community goes about implementing those technologies and man power. The goal here is not to say that the Paris Agreement was not a good start, but to simply advocate for a modification that will convince the President and even the most conservative Republican in the United States Congress to ultimately sign on to a new

182 Id.
183 See Columbus, supra note 163.
185 See Id.
187 See @realDonaldTrump, Twitter (Nov. 17, 2014) (“Obama’s China ‘climate’ deal binds America with language of ‘will’ curb emissions [sic] now while China only ‘intends’ to curb in 2030. Bad deal!”).
190 See Id.
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deal. Now, this assertion seems to be a stretch. One cannot deny that these assertions are a stretch, and with the current political gridlock in the United States, it may be nearly impossible to bring plans for climate change mitigation to fruition. Cooperation with the global community, however, is imperative in order to fix climate change before it becomes even more of an economic issue, or even a national/global security issue.

B. The Art of the Deal?

Potential future damage to the coffee industry and the planet as a whole by way of climate change can be hindered if the global community opened up a forum with President Trump in an effort to amend the Paris Climate Agreement. This, however, has been hard to accomplish since the President took his oath in January of 2017. In Bonn, Germany in November of 2017, officials from the Trump administration met with the rest of the global community in order to discuss climate change and the workings of the Paris Agreement. At said meeting, the Trump delegation advocated for coal as the future of the energy industry. This assertion sparked, among other things, eye rolling and shaking of heads from the other members present. Former New York City mayor, Michael Bloomberg, who was also at the meeting, poked at the Trump administration’s view on coal energy by stating “[p]romoting coal at a climate change summit is like promoting tobacco at a cancer summit.”

To say the least, the option of convincing President Trump to come to the table and negotiate may currently be off the table all together. However, if the UN were to open up to possibly retracting contributions into a climate fund to send to “developing nations,” it is possible that President Trump could embrace the idea of taking a hard look at carbon emissions. This idea would be functional with the President’s ideology because it would end the practice of developing nations taking money from the UN in promise to make changes to how it emits carbon.

President Trump’s view on the United States giving contributions to the UN’s climate fund can be summed up with one premise: maybe these other UN member countries will just take the money and run, while the United States makes its best effort to mitigate climate change. This ideology evokes the free riding issue discussed in the introduction. With the elimination of the contribution to the climate fund by developed nations, along with the maintenance of the NDC, as well as the disclosure of the NDC, the agreement would place the United States in a leader posture by allowing the President to make choices.

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194 Id.
195 Id.
196 Id.
198 See Time Magazine, supra note 178.
199 See Id.
concerning carbon emissions without having the scorn of other countries free-riding, which ultimately would lend trouble for presidential supporters.\textsuperscript{200} Although easy to write in a note, this idea of President Trump coming to the international table in order to strengthen and amend the climate initiative is a fleeting idea due to the rhetoric being touted by both the President\textsuperscript{201} and his cabinet, most notably the director of the United States Environmental Protection Agency.

Pursuant to Articles 9, 10, and 11 of the Paris Agreement, all developed member nations must contribute money into a climate fund to ultimately be distributed to developing member nations.\textsuperscript{202} As the world’s largest economy, the UN will be expecting the United States to pay sums of money that will likely add up to billions over the course of a few years.\textsuperscript{203} It is the President’s position that these contributions put the United States in a far worse position than the United States would be in if the US tax payers were not shelling out millions of dollars to the UN to put into the climate fund.\textsuperscript{204}

If the United Nations has any ambitions of keeping the United States in the Paris Climate Agreement, the United Nations must prepare to deal with negotiations with President Trump. Due to the dire circumstances,\textsuperscript{205} a proposition that the amending of the UN’s developed and developing country list would likely be one of the ideas that could convince the President to come to the table and fix the agreement.\textsuperscript{206} As mentioned previously, another could be dropping the climate funding apparatus all together.\textsuperscript{207} Both propositions may be dangerous, however, since countries like China, who are considered developing, are promising to fulfill their NDC on the contingency of contributions from the climate fund.\textsuperscript{208}

Even if the Trump administration ultimately decides to evade the United States’ NDC promised under the past administration, there is still a likelihood that the free-market based notions of the Republican controlled United States will help mitigate the coffee industry. At the end of 2017, Congress passed, and the President signed the first form of tax reform legislation since 1986.\textsuperscript{209}

\textsuperscript{200} See \textit{Id.} (the hard pressed trump supporter would likely view free-riding by other countries on the dime of the United States to be a contradiction of the “America First” platform that the President has advocated for) (Jun. 2, 2017).

\textsuperscript{201} See @realDonaldTrump, Twitter (Jan. 1, 2014) ("This very expensive [sic] GLOBAL WARMING [bulls--t] has got to stop. Our planet is freezing, record low temps, and our GW scientists are stuck in ice").

\textsuperscript{202} See Paris Climate Agreement, Dec. 12, 2015, FCCC CP 2015 L.9 Rev.1.

\textsuperscript{203} See BBC, supra note 85.

\textsuperscript{204} See Time Magazine, supra note 178.

\textsuperscript{205} See, e.g., Bromwich, supra note 2.

\textsuperscript{206} See Volkovici, supra note 47 ("President Donald Trump announced his decision to withdraw from the Paris deal in June, saying the accord would have cost America trillions of dollars, killed jobs, and hindered the oil, gas, coal and manufacturing industries.") (Aug. 4, 2017).

\textsuperscript{207} See \textit{Id.}

\textsuperscript{208} Center for climate and energy solutions, Submitted Intended Nationally Determined Contributions, supra note 97.

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The tax plan has various provisions, but the general idea is to cut taxes for all income brackets.\textsuperscript{210} The tax cut also includes a large tax break for corporations.\textsuperscript{211} According to the new United States tax code, the highest percentage of annual earnings a corporation can pay is capped out at twenty-one percent (which is a stark decrease from thirty-five percent).\textsuperscript{212} Besides giving most Americans a federal tax break, another main purpose of the tax legislation is to allow companies to expand in volume.\textsuperscript{213} Congress believes that giving American corporations a significant tax break will allow them to expand and ultimately create more jobs and build-up communities with a stable economy.\textsuperscript{214}

The notion of repairing the economic conditions of a certain area, or the allocation of resources by a company to a certain area, should not be restricted to just the United States. Since many coffee companies are based and incorporated in the United States,\textsuperscript{215} this tax cut affects them significantly.\textsuperscript{216} With this extra money, the free-market could ultimately persuade companies like Starbucks, Dunkin' Donuts, and McDonald's to use this extra cash to save a crucial parcel of their menus, coffee.

Even if the United States decides not to stay a member of the Paris Agreement, or if the agreement fails all together, or even if it is simply too late to stop the already damaging effects of climate change, coffee production damage could possibly be mitigated by investment into different agricultural and scientific procedures which could protect the coffee crop.\textsuperscript{217} Arguably, it would be incredibly expensive or impossible to save the current yield for the demand of coffee.\textsuperscript{218} However, tax cuts for these corporations is a step in the right direction. The sooner companies like Starbucks and Dunkin' Donuts can reallocate their tax savings to farmers, coffee plantations of the bean belt, and the scientists who study the agriculture aspect of coffee, the more likely a mitigating solution will come into the works for coffee production. Further, tax breaks and credits for corporations like Starbucks and Dunkin' Donuts should be greatly encouraged by all who are dependent on coffee. To reiterate, further tax breaks will eventually lead these corporations (i.e., Starbucks and

\begin{footnotes}
\item[211] Tax Cuts and Jobs Act, H.R 1, 115\textsuperscript{th} Cong. §13001 (2017).
\item[212] See DRUCKER & RAPPEPORT, supra note 204.
\item[213] See Ryan, supra note 210.
\item[214] See Id.
\item[216] See, e.g., Stock Analysis on the Net, Starbucks Corp., https://www.stock-analysis-on.net/NASDAQ/Company/Starbucks-Corp/Analysis/Income-Taxes (explaining the federal tax rate for Starbucks corp. was over 30% in 2017, the new tax legislation will lower this percentage to approximately 20%, thus significantly reducing the federal tax rate Starbucks must pay).
\item[217] See Edward Miller, Still brewing: Fostering sustainable coffee production, 8 World Development Perspectives 32 (Sept. 2017).
\item[218] See, e.g., The Climate institute, supra note 4, at 2.
\end{footnotes}
Dunkin' Donuts) to reallocate funding in order to mitigate the effect climate change has on coffee production. For example, since coffee makes up much of Starbucks and Dunkin Donuts market scheme, it would be in both companies best interest to invest in sustaining the coffee supply.  

C. States and Corporations Acting Collectively: Forget About the Federal Government

The global climate change initiative is unlikely to be supported further by the Trump administration or its proxy. Thus, the next possible way to enhance the spirit of the Paris Climate Agreement would be for the UN to continue to promote the individual states of the United States to practice what they believe to be their NDC. This type of action would be completely fine and within the states police powers. States like California have already offered regulation in order to combat climate change. An example would be how California has heightened its vehicle emission standers for large tucks. However, there could be a constitutional problem in allowing a state like New York or California to formally sign on to the Paris Climate Agreement. Article 1, Section 10 of the United States Constitution expressly states, “No state shall enter into any treaty, alliance, or confederation...” The Supreme Court and the Circuit Courts have not heard many cases or controversies dealing with states signing treaties with other nations. The founders assigned that right for the federal government. However, the Constitution does not speak about the private sector signing onto an agreement with a foreign nation or the UN. This is an opportunity for companies like Dunkin Donuts and Starbucks to not only help the world by changing business practices and lending a hand to developing countries, so they too can change emission standards, but it is also an opportunity for these countries to save their business platform, the sale of coffee, from disappearing. With both factors at play, it is well within the power of these Fortune 500 companies to make all efforts possible to mitigate climate change as well as save coffee from going into extinction by the grip of climate change, all of which would be protected by the business judgment rule.

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220 See US. Const. Amend. X; Amend IX.
222 US. Const. Art. I § 10 cl. 1.
223 See Principality of Monaco v. Mississippi, 292 U.S. 313 (1934) (“No State can enter “into any Treaty, Alliance, or Confederation” or, without the consent of Congress, “into any Agreement or Compact with a foreign Power.” Const. Art. I, § 10. The National Government, by virtue of its control of our foreign relations is entitled to employ the resources of diplomatic negotiations and to effect such an international settlement as may be found to be appropriate, through treaty, agreement of arbitration, or otherwise.”).
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from the private sector and the state governments amplify, the ideology of the President and his supporters will be left behind by the rest of the country. Hence, whatever the President says concerning the Paris Agreement will be rendered moot as more domestic entities would be making an attempt to mitigate climate change.

D. Giving the United Nations a Stronger Voice on Climate Change: This is Not a Joke

Throughout this note, I have indicated that climate change is threatening the coffee industry and all who have a stake in the coffee industry. I have highlighted that without the production of coffee, some countries like Ethiopia could experience civil unrest and war due to the dire economic conditions that a coffee-less world would bring.226 If coffee were to go into extinction or the production of coffee were to dwindle down to a token amount not suitable to fulfill the current demand, lives could be at stake.227 Even outside the realm of coffee, climate change has sweeping effects that could end human life, some examples consisting of rising sea levels, the melting of ice caps, the exposure of methane to the atmosphere, and extreme weather events.228

In order to prevent these catastrophic ramifications from occurring, the United Nations and the international community must re-think its current posture on climate change. An example of weakness is concentrated in the Paris Climate Agreement. Article 15 of the Agreement is the provision which sets out the enforcement mechanism of the agreement.229 Pursuant to the Article, compliance of member nations will be facilitated through an expert based committee, which will conduct oversight on how the member nations are fulfilling their NDC, and how the NDC interacts with each nations social and economic capabilities.230 According to the language of the Article, the expert-based committee shall “... function in a manner that is transparent, non-adversarial, and non-punitive.”231

The language of article 15 of the Paris Agreement, gives the impression that the agreement is nothing more than a political stunt or a science experiment.232 The truth of the matter is that the parties of the agreement will not fully abide by the spirit of the agreement if the ramifications of a non-punitive and non-adversarial nature are enacted for failing to fulfill an NDC, or not creating an NDC that is up to a certain nation’s capabilities. When lives and global security is on the line, full and serious enforcement must be implemented.233

It is well within the United Nation’s power to take significant measures when a member nation aggravates a global initiative and causes conflict among nations or cripples certain human rights by its behavior.234 A member nation avoiding to fulfill its NDC is no different since the threat of climate change will bring cataclysmic ramifications to the global

226 See Columbus, supra note 163.
227 See Id.
228 See, e.g., Szulejko, supra note 8.
230 Id.
231 Id.
232 Id.
233 UN News Centre, UN Sanctions: what they are, how they work, and who uses them (“The Council or the UN Secretary-General and his representatives will usually employ peaceful means to prevent the escalation, or outbreak of, conflict”), http://www.un.org/apps/news/story.asp?NewsID=53850#.WlqzwKinHIU.
234 Id.
Section 15 of the Paris Climate Agreement must be amended, and reflect a punitive and confrontational stance in the event a member nation breaches the agreement. The security council should have authority to impose sanctions on breaching nations. With the threat of serious confrontation by the UN, member nations should think twice before not fulfilling their NDC or engaging in free-riding practices on the backs of other nations.

As noted earlier, one of the principal aspects for the operation of the Paris Climate Agreement is the notion of transparency among the member states in order to politically encourage all members to fulfill the spirit of the agreement. Article 14 of the agreement establishes what is known as a global stocktake. Simply put, this is where all member nations come together and explain and assess the progress of implementing the agreement. Discussion of advancement in policy and technology is also mandated at the global stocktake by Article 14 of the agreement.

Though the spirit of Article 14 is positive in that it encourages a dialogue between the member nations, there is a caveat: the first global stocktake will not occur until 2023 and each stocktake thereafter will occur every five years. This is problematic because it leaves the global community in the dark about the progress of each member nations implementation of the agreement. In order to achieve complete global communication, cooperation and ultimately agreement concerning how to implement the spirit of the Paris Climate Agreement, there must be frequent global stocktakes. The gravity of climate change on mankind should warrant a global stocktake among Paris Agreement member nations every year. A stronger agreement would reflect an absolute urgency for all countries to proffer information concerning how all NDCs are working, if at all.

V CONCLUSION

To describe the possible mitigation process of the coffee industry as an “up-hill battle” would be a clear understatement. Any process that the political, social, and scientific leaders of the world choose (or continue) in order to mitigate the rapid decrease of coffee production caused by climate change will have to take an immense amount of cooperation, patience, and sacrifice. As noted prior, the Paris Climate Agreement is a step in the right direction. All of the agreements provisions were developed with the goal of creating a global community that shares with each other the common end of keeping the global temperature increase from reaching two degrees Celsius above the pre-industrial average. As analyzed here, keeping the global temperature increase below this threshold will mitigate the damaging effects of the coffee industry and to mankind.

The premise is simple: time is running out. If the world community does not act, coffee will either be extinct, or the production of the crop will be greatly depleted by the end of the century. Current climate doctrine will not be sufficient in keeping the rising temperatures below the proposed threshold of two degrees Celsius. The truth here is

235 See, e.g., The Climate institute, supra note 4, at 2.
237 Id.
238 See Id.
239 Id.
240 Id.
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draconian and cannot be ignored. Every passing day the global community does not come together to rectify the over indulgence of polluting gases into the atmosphere, is another day closer to the end of the world's second largest commodity, coffee.