



COMBATting CLIMATE CHANGE USING SUSTAINABLE DEVELOPMENT GOALS

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Abstract:

Today there is a pressing global issue known as Climate Change. Climate Change, which is also commonly referred to as Global Warming, is human caused planetary warming, due to an excess of Carbon dioxide in the atmosphere. This warming has the potential to become extremely problematic to future, and current generations of people which call Earth home. The urgency of the issue, has prompted many meetings, however this essay will discuss some of the problems and prospects regarding the most recent climate summit, COP 21.

The issues examined specifically are, gender equality, no hunger, clean energy and sustainable cities and communities. After examining these issues, the attention will shift to the interconnectivity of all the issues, and how they can lead to a domino effect of changes. This paper focuses primarily on how the Sustainable Development Goals will effect developing or underdeveloped nations, which are currently dealing with climate related problems.

Key words: Sustainable Development Goals, Developing or underdeveloped nations, Climate Change, Gender equality, no hunger, clean energy, sustainable cities and communities

Introduction:

Human population has been increasing exponentially over recent decades, resulting in degradation to their natural environment and the carbon induced climate change. If the current population, as well as future generations continue worsening carbon footprints, by polluting and consuming as they currently are there will be serious problems. An increasing amount of people are taking advantage of technology, fuel for both energy and transportation, and natural resources; this cuts into the natural systems which should be working to remove pollutants. A further increase in atmospheric carbon could be detrimental for the species of Earth, however the projections seem to show that the affects will hit developing nations hard, before they are truly seen by much of the world.

This problem is exemplified when we look at where the emissions which have led to this problem originated. Up until very recently they were the product of activities done in the United States and developed European nations. However, as the attention and knowledge on climate change increases, so does the pressure to act on a global scale. Many of the most vulnerable areas, do not have funds or infrastructure to truly protect themselves from climate change and did not contribute to carbon in a way which would have induced human caused climate change (Sarvajayakesavalu, 2015).

This leads to the discontent internationally on where the responsibility to the reduction of carbon emissions should lay. It in theory should be a global initiative, however, developed nations such as the United States, became so by destroying their natural resources, and advancing as quick and easily as possible. The primary time advancement like this was done, was during the industrial revolution, and there was very little thought given to water quality, air quality or resource depletion; during this time, global warming, or climate change was not even a thought.

However, now that the consequences from many of these emissions are clear, some of the burden has been shifted from developed nations, to underdeveloped nations, who are dealing with the global effects of climate change, and also losing the ability to develop using the same quick and easy method (Sarvajayakesavalu, 2015).

These nations obviously still have desires to develop and better their situations, despite the pressing climate concern. However, this desire to develop could be detrimental if it further depletes natural resources, which will have a domino effect on the rest of the situations affecting the area. To tackle some of the international disparities about climate change, there have been multiple Climate Summits (Briggs, 2013). These meetings discussing how climate change is going to affect areas, and create goals with the idea that these goals could offset indirectly, the larger problems associated with climate change (Williams, 2015).

At the Climate summit, COP 21 in Paris, on December 15th 2015, seventeen Sustainable Development Goals were laid out as a base plan to combat the effects of Climate Change (Figure 1) (Sarvajayakesavalu, 2015). The four goals we will prioritize in this paper are, gender equality, zero hunger, clean energy, and sustainable cities and communities. We will then relate these four issues, to some of the other goals to display how they are all interrelated. By observing some of the possible outcomes of the Sustainable Development Goals, the effectiveness of these goals will be determined. Is it possible to combat the harsh effects of human caused climate change, by working through solutions, which are not directly related to the reduction of carbon?



Figure 1: an image listing all seventeen sustainable development goals

Gender Equality:

A huge obstacle faced in many developing nations, is the gap between the male and female genders. Gender inequality is extremely problematic in many regions, where women are viewed as property rather than individual people. This lack of compassion towards a group makes them powerless to change their situations, and deepens the environmental degradation of the area.

Women in countries such as Kenya have next to no value in society (Scott 2012). In the past individuals such as Wangari Maathai, have looked at many of the ailments facing her Kenyan hometown and linked them to both the lack of female empowerment, and lack of nature present. She then educated the women of the community on how to raise trees (Gorsevski, 2012). This education added some power to people who previously had none. The increase in vegetation

also prevented some of the environmental problems within the area. The trees prevented erosion, added nutrients back in the soil, which made agriculture possible in the future, and they also created a fuel base for the community when the timber is sustainably farmed (Gorsevski, 2012).

Wangari focused primarily on the women of the community for many of the same reasons as the delegates who made up the Sustainable Development Goals. Inequality in general leads to dissatisfaction and unhappiness; these feelings give individuals the motivation to change their situation, no matter what the cost (Gorsevski, 2012). Meaning, desperate and powerless individuals serve to further degrade their environment, because they do not have many viable alternatives. However, when alternatives are provided and they are not as powerless they will be more likely to pursue the more sustainable options. This is especially important when looking at women, because they are typically more invested in the communal well-being of their communities than the men (Scott, 2012).

In general women are in charge of taking care of the children, the home, and in some cases all agriculture responsibilities. However, they do not have access to any of the finances or other necessities required to fix their situation (Ferrant, 2012&2013). Teaching these women simple technological strategies, new agricultural techniques, or other knowledges often does not help the situation because of how interwoven women's rights issues are into cultural aspects. This makes achieving this goal even more problematic because of the lack of consideration of these cultural aspects (Kenworthy & Malami, 1999).

There have been attempts by Non-Governmental Organizations (NGOs) to intervene on certain issues by empowering women (Kenworthy & Malami, 1999). However, simply giving women who are not allowed to use tools, the knowledge to use them does not guarantee change. There needs to be a change in the underlying structure within many of the areas which are

dealing with gender inequity in order to create genuine structural equality, or even begin the move towards equality (Kenworthy & Malami, 1999).

No Hunger:

Food security is an issue which hits at both a global and international level. Policies and trade agreements today create an environment which allows for convenient and easy import or export of food (Saad, 2013-2015). This makes achieving food security at a local level difficult, while also creating a system which as food costs rise, could be detrimental to individuals without money to import food¹ (Saad, 2013-2015). There is also strain being put on the food web due to the unsustainable development of certain biofuels and cattle.

Ethanol is primarily made with corn, because of this it severely takes away from the global food supply. This corn which is converted into fuel, could be consumed by humans (Pelley, 2002). The land which is used to grow the large amount of corn required to make corn-based ethanol is also land which potentially could be used to grow other types of food (Pelley, 2012). Biofuels have the potential to reduce some carbon emissions, however, they become problematic when they reduce the food chain. Figure 2 shows some of the disadvantages of corn based biofuels.

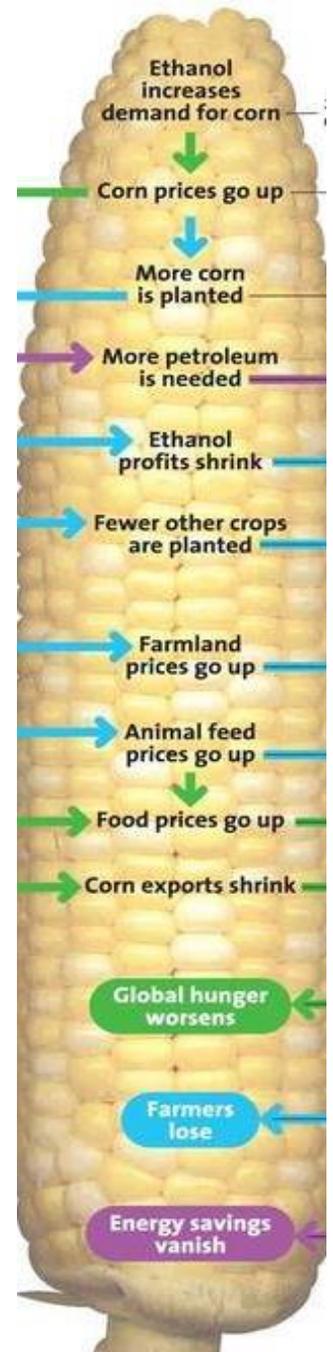


Figure 2: shows some of the disadvantages of corn based biofuels

¹ This can be avoided with proper policies, and exemptions to allow developing nations to benefit from international trade agreements

Raising cattle has its own set of issues, which are very deeply engrained in the fight against climate change. The beef industry is extremely energy intensive, Figure 3 displays some of the ways this is problematic. To start intensive cattle farming creates large amounts of organic waste, which releases methane, and often pollutes local waterways after rainstorms (Lean, 2007). Additionally, cattle

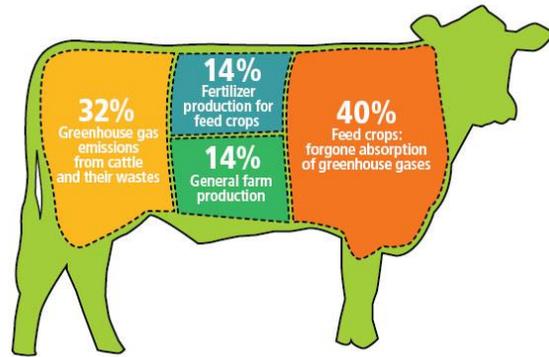


Figure 3: a breakdown by percentage, some of the different adverse effects of cattle raising.

consumes massive amounts of food, which is no longer available for the general population to eat (Lean, 2007). This consumption of food makes this an issue of ethics; is it appropriate for developed nations to be consuming the massive amounts of beef they do?

This industry is hitting the food supply in a critical manner, while also impacting the amount of carbon being emitted into the atmosphere (Lean, 2007). This hits developing or underdeveloped nations with double the power, in part because they are not the ones who are eating majority beef. Policy makers, and the food industry need to look at this issue and implement changes which could favor developing nations (Lean, 2007). If this is not done, there could come a time, where the world's poor are facing famine, so that cattle is fed.

Clean Energy:

Renewable energy is a good way of combatting climate change, because for the most part these energy methods are carbon neutral. However, they are also often expensive to implement and thus often require foreign investment, because of this petroleum is often the most common fuel source in developing nations. When looking at achieving the goal of clean energy it is

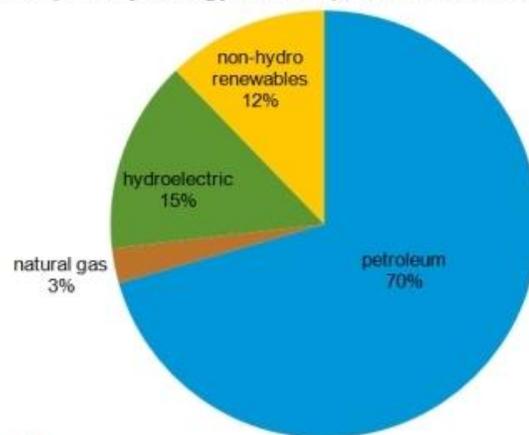
important to remember the financial constraints present in these nations which could prevent a good implementation of the infrastructure needed.

Renewable energy also needs to be catered to the region. For example, solar panels will not be appropriate in an area which is always cloudy. In areas with ample rivers, there would be more of a reliance on hydroelectric

(Clough, 2007). In Ecuador the clean energy with the most prevalence is hydroelectric, which as listed in Figure 4, comes second after Petroleum (Clough, 2007).

Ecuador is a producer of oil, however it is still looking at other renewables to add to their energy grid.

Total primary energy consumption in Ecuador, by type (2010)



Source: U.S. Energy Information Administration
Figure 4: Breaking down energy usage in Ecuador by percentage

An interesting take on the race to clean energy, has been tested in Brazil; they have taken and interest in algal biofuels (Kligerman, and Bouwer, 2015). They discovered that with algae they can create a biofuel which does not impact the food chain, while also assisting in waste water treatment (Kligerman, and Bouwer, 2015). In short, they grow algae in wastewater treatment facilities. The algae serves the tertiary treatment stage of wastewater treatment, and is then harvested and converted to fuel (Kligerman, and Bouwer, 2015). This serves a dual purpose in this country, and although it is not a complete fix to any climate problem, it reduces some of the dependence on petroleum.

Sustainable cities and communities:

Today the majority of cities are built without much thought or planning. This makes them

much more energy intensive, and takes a toll on the residents and the environment. When cities are planned proactively there is a reduction of the effects of climate change. There is also hopefully a higher defense against many of the future problems projected to happen as a result of global warming.

Prioritization of this goal in developing, or underdeveloped nations will be extremely difficult. In these countries, tent or shack towns are often prevalent, which makes it difficult to encourage individuals to live a more sustainable life style when building an actual home. There are some simple ways which could help make cities more sustainable. Towns could attempt at mitigating sprawl, which would protect land and make more opportunities for agriculture. Under developed countries without proper sanitation or waste-disposal systems, could beginning using simple technologies to increase sanitation within their communities (Njoh, 2012-2016). Implementation of a closed waste system would reduce the impacts of diseases such as cholera (Njoh, 2012-2016). Another feasible option to these communities is to install screens into all open windows, this would prevent the entrance of mosquitos carrying malaria or other infectious diseases (Njoh, 2012-2016).

Building an entirely sustainable city is not something that is entirely feasible in developing nations, and is definitely not on the agenda for underdeveloped nations. This makes it something which developed nations should be held responsible for. These regions have the funds available to make their cities much more sustainable. They can implement initiatives or laws which require cities to reduce their emissions, without necessarily mandating how. Some methods of doing this could be encouraging renewable energy, or implementing a carbon tax (Dooley and Runci, 2000). These taxes may not always be popular, however they have been shown to reduce emissions when implemented (Dooley and Runci, 2000)

Integration of these goals into other Sustainable Development Goals:

It is simple to look at each of these goals as completely individual aspects of a larger picture. However, it is when the goals are combined that the possibilities behind them are revealed. These seventeen goals, have potential to create a domino effect, and solve much larger problems when they are joined together rather than examined alone.

When the conditions in which much of the agriculture and cattle are raised in developing nations are examined, the attention immediately goes to issue of food security. However, after some thought other issues become apparent. Many of the areas which are now farmland, have been converted to such by clearcutting of areas, which were previously rainforests (Lee, Eameades, Nys, McDonald, and Janssen, 2014). This often brings about droughts, which leads to desertification and erosion. The soils in these areas are also not very fertile, which makes it difficult to grow crops or vegetation. The combination of lack of rainfall, and nutrient poor soils, creates a perfect storm for poor agricultural production in many developing nations (Lee et al., 2014).

Within this one issue, many other goals have shown themselves. Life on land is being harmed through the process of deforestation. This is also creating a society with reduced health due to an increased exposure to pollutants and contaminants. These are increased because there is a disruption of the natural systems², which previously provided clean water, and air. This lack of clean water creates awareness on not one but two other initiatives, clean water and sanitation, and life below water. This example clearly shows how integrated these Sustainable Development Goals are, however to make this especially clear we will look at an additional example.

² The rainforest is extremely efficient at filtering CO₂ and other pollutants from the air, as well as purifying water.

Many South American nations which are still developing, are extremely reliant on glacial melt from the Andes as their source of fresh water. Figure 5 is a map of regions which are either currently dealing with water shortages, or will be in the future, in this map it shows that the Andes region is expected to have shortages in the future. This is a problem, which will only

Region in Water Scarcity, Latin America



Figure 5: displays some of the areas which will be affected by water shortages due to climate change

worsen because as temperatures rise, less mountain tops will freeze over annually (Lee et al., 2014). This lack of water will affect the agricultural sectors of these areas. However, the water is also needed at a residential scale, which creates a divide between urban and rural residents (Lee et al., 2014). Individuals need to eat, but they also need to have water to drink, clean, and cook with.

In this situation, we also see many goals being covered as we tackle this one issue. There are two extremely prominent initiatives which are seen here, clean water and sanitation, and no hunger. However, the discontent between the urban and rural sectors of the country will also come into play when looking at both, peace, justice and strong institutions and good health and mental well-being. When there is disconnect within individuals of a community, conflict often follows. Unless there are strong institutions in place this conflict can accelerate and seriously harm the rest of the population, both mentally and physically.

Conclusion:

In 2015, delegates from around the world met and discussed some of the possible strategies for combatting climate change. It has become apparent that Earth is going through a human induced warming, and that the effects of this warming have the possibility to be detrimental to human health (Dooley and Runci, 2000). At COP 21, they discussed ways to combat this problem, this essay has shown some ways the Sustainable Development Goals can be implemented to combat Global Warming (Williams, 2015). Furthermore, the result of these goals, could be even more power if they are looked at holistically rather than individually.

The four Sustainable Development Goals, which were primarily focused on in this essay, are not any more or less important than the remaining thirteen. However, by examining gender equality, no hunger, clean energy and sustainable cities and communities, we were able to get a grasp on how well such initiatives could work in the fight against climate change. The results we found were not perfect. Some goals such as sustainable cities and communities, will be extremely difficult to implement in many areas. However, these goals could definitely help offset some of the effects of climate change, especially if they are viewed as a global rather than individual or regional issue.

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