Reframing the Climate Change Debate: Lessons from COVID-19 Pandemic

Jarred Hunsacker, Allie Scheifele, Bailey Servais

COVID-19 is an issue in which the majority of the global public has accepted its importance and seriousness. The extreme deleterious effects to human health are well understood and reflected through policy and societal acceptance of the issue. Without fast action through policy and social agreement, the effects of COVID-19 would have been much more catastrophic over the first couple months. On the other hand, climate change is an issue that has been known for a much longer time period that lacks social agreement and strong policy. Political and cultural differences create strong division on the importance of climate change. In addition, a strong dependence on fossil fuels and lack of understanding about the issue also causes a lack of awareness in our society. Although COVID-19 and climate change are inherently different issues, comparisons can be drawn between the two. We can use the similarities and differences between the two topics in an effort to reframe the climate change debate. Negative effects are already occurring and will only worsen if climate change is not addressed as a serious issue in our world. We can apply what we know about the global response to the pandemic, the global response to climate change, and the comparisons between the two issues in an attempt to reframe the climate change debate to increase awareness.

Issues Surrounding Climate Change Awareness

The topic of climate change has been prevalent in our world over the last few decades and evidence for global warming is staggering. However, many people and certain groups are still dismissive of climate change as an important issue that needs addressing. The lack of awareness is only enhanced by the current global pandemic and the social importance placed on it. Despite the seriousness of COVID-19, climate change is a significant problem that needs

addressing and will only escalate in severity with time. Issues such as political and cultural barriers, a strong dependence on fossil fuels, and a fundamental misunderstanding of climate change all contribute to the lack of awareness present in our society. This lack of awareness has resulted in a decrease of climate based policy and initiatives in the United States (Stoner, 2020). These issues need to be addressed if we are to manage the disastrous effects of global warming. Climate change is an issue that will not disappear; the effects will continue to increase and become more intrusive in our world. Although the global pandemic is a top priority for human health, climate change is another issue that needs to be recognized and taken seriously by the majority of the population in order to bring about change and reduce the harmful effects on our planet.

A major issue surrounding climate change awareness are the political and cultural barriers present in our society. These barriers have the capacity to sway an individual's opinion without acknowledging the evidence and consequences associated with climate change. The tribalistic political views of certain groups is an example of a barrier that can inhibit climate change acceptance. Political affiliation has proven to be a strong determinant of willingness to act or support climate change initiatives (Visschers, 2012). Participants on the right wing were less willing to show indirect climate-friendly behaviors, change their mobility behaviors, and to support any type of climate mitigation policy measures. Strong political ideologies tend to create a negative perception of climate change. Skepticism about climate change is strongly determined by individuals' environmental and political values rather than by education or knowledge about the issue (Whitmarsh, 2011). A significant portion of the population still remaining skeptical of climate change despite overwhelming evidence is a major barrier for governmental action to fight global warming. The political polarization of our population tends to create major divisions

on 'hot' or reactive issues, climate science being one. conservatives will likely report significantly less trust in, and support for, science that identifies environmental and public health impacts of the economy than liberals. It is also expected that conservatives will report a similar or greater level of trust and support in science that provides new inventions or innovations for the economy (Dentzman, 2013). The consequences of climate change are strongly rooted in environmental and public health impacts. These impacts are not directly associated with industrial economic growth. Consequently, conservative groups are more likely to distrust climate change, the evidence, and the consequences. In addition to political barriers, a changing culture in the United States has caused many people to distrust climate change or simply disagree with its significance. From 2003 to 2008, the belief that claims about the issue of climate change are exaggerated has doubled in the population of the United States (Whitmarsh, 2011). It seems that much of our society does not agree with the significance of climate change as a serious issue. One possible solution to these barriers is to redefine climate change in an economic sense and human health and security sense instead of focusing on environmental and "green" initiatives. This could sway different political and cultural groups to consider climate change as a serious issue that needs addressing. Opponents of climate change policy, meaning policy that would reduce greenhouse gas emissions, tend to assume this policy would have insignificant impacts on our world in terms of human health and economic impact (Ungar, 1992). Many groups dismiss climate change because they do not think it will affect them or have any direct consequences. The topic of climate change or environmentalism carries negative connotations for certain political and cultural groups. Reframing climate change in a way that focuses on the economic and health impacts could help to break down these barriers. In addition to reframing climate change, an increase of climate literacy among the general population could help break

down political and cultural barriers and serve to increase climate awareness. Fundamental

misconceptions and misinformation about basic climate science are strongly held by students,

teachers, and public audiences (Buhr, 2008).

Numerous studies published in peer-reviewed scientific journals indicate that 97 percent

or more of current publishing climate scientists agree that climate-warming trends over the past

century are extremely likely due to human activities (Climate Change Evidence, 2020). The

Intergovernmental Panel on Climate Change published their fifth report which states that more

than 99 percent of global warming since 1950 can be contributed to human activities (IPCC,

2014). The IPCC goes on to state "many of the observed changes are unprecedented over

decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice

have diminished, and sea level has risen" (The Intergovernmental Panel on Climate Change,

2015). The effects of climate change have direct impacts on humanity that include drought

decreasing water quantity and crop yield, sea levels rising and displacing populations, and

extreme weather events. Climate change is expected to cause 275,000 additional deaths per year,

from malnutrition, disease, and heat stress (Tang, 2013). Despite general scientific consensus on

this issue, a significant portion of people do not believe in climate change or are not concerned

with its effects. There is a fundamental misunderstanding about climate change and its impact on

our world (Buhr, 2008). There is also a direct link between the misunderstanding and lack of

knowledge of climate change and climate change awareness. A modelling study on this link

found that as the level of knowledge increased, concern and awareness also increased (Yilmaz,

2020). So, better communication of global warming and the effects of it needs to be implemented

in some way for a greater majority of society to grasp this concept. Figure 1 shows six different

viewpoints of America's population related to climate change (Global Warming's Six

America's). The figure illustrates the spectrum of groups based on factors such as skepticism,

Global Warming's Six Americas

| Alarmed | Concerned | Cautious | Disengaged | Doubtful | Dismissive |

April 2020
N = 1,029

26%   28%   20%   7%   11%   7%

Highest Belief in Global Warming
Most Concerned
Most Motivated

Lowest Belief in Global Warming
Least Concerned
Least Motivated

YALE PROGRAM ON
Climate Change
Communication

GEORGE MASON UNIVERSITY
CENTER for CLIMATE CHANGE
COMMUNICATION

Figure 1: Spectrum of belief, concern, and motivation to enact change on the topic of climate change in America.

concerns of global warming, and motivation to act for positive change. The American population

is not in agreement with the importance of climate change. This creates obvious issues regarding

government policy and overall climate friendly action. One major difficulty surrounding the

issue of climate change awareness is to target and sway the views of skeptics and strong

non-believers. One possible solution is to more effectively communicate the consequences of

global warming to a broader audience. Consequences such as extreme weather events, wide scale

decreases of food and water, and population displacement could help increase climate awareness.

Environmental claims are most likely to be honored and accelerate demands in the political arena

when they piggyback on dramatic real-world events (Ungar 1992). Communicating to the public

that climate change has real world impacts that will affect them is crucial to increase awareness. In essence, increasing knowledge of climate change will do a great deal in terms of climate awareness and convincing more people of the importance of this issue.

Another substantial obstacle in the fight for significant climate change action is the world's strong dependence on fossil fuels. Ever since the industrial revolution, our world has been reliant on fossil fuels. They are currently an integral part of everyday life and much of society could not function without the benefits of electricity, cars, planes, and manufacturing. Currently, about 80% of all primary energy in the world is derived from fossil fuels with oil accounting for 32.8%, coal for 27.2% and natural gas for 20.9% (Tang, 2013). Although the benefits are substantial, fossil fuels are the driving force of climate change. Around 89% of global CO2 emissions came from fossil fuels in 2018. The research indicates that greater dependence on fossil fuel production is significantly associated with lower public awareness, perceived risk, and perceived human cause of climate change (Knight, 2018). Just because fossil fuels have been the driving force of economic and industrial growth does not mean that this trend must continue. A divestment out of fossil fuels and more investments into renewable resources (solar energy, hydro-electricity, wind energy, etc.) could reduce our dependence on fossil fuels. Using fewer fossil fuels would reduce the rate of global warming and provide more support of climate change initiatives.

The warming of approximately 0.1-0.2 degrees C per decade for our planet is very likely the primary cause of the increasing loss of snow cover and Arctic sea ice, of more frequent occurrence of very heavy precipitation, of rising sea level, and of shifts in the natural ranges of plants and animals (MacCracken, 2008). Global warming is very much real and is having serious impacts on our world. Considering issues such as ideological barriers, misunderstanding or

skepticism of climate change, and a heavy dependency on fossil fuels, awareness for climate change is lacking in our society; Addressing these issues will increase climate change awareness and lead to greater public acceptance and better policy.

Important comparisons of the responses to COVID-19 and climate change

An important question that we pose here is, why were we able to get such a large response to COVID-19 but can't get near the same reaction for climate change? The immediate, drastic reactions to COVID-19 by many countries came from a place of fear. People are watching the virus spread with their own eyes and kill other humans in such a short period of time. People are afraid of losing their loved ones to the virus. A reaction like such hasn't been seen for climate change because many people aren't seeing the direct effects of it or if they are, they are debating that it is caused by humans. People either deny the science behind climate change or they're willing to let future generations deal with the repercussions of our actions. It's very important to look at cultural and political responses to climate change and compare them to the responses to the COVID-19 pandemic to determine better ways to respond to the climate change crisis.

The slow temporal dimension of climate change and how the projection of damage occurs over a long period of time has led to a global response that is too minimal to have a large enough impact. By comparing the time lags in COVID-19 and climate change, it's clear to see that our response to the virus was still much too slow and that there has been a large number of unnecessary deaths (Manzanedo et al, 2020). Humans struggle to grasp the long incubation period, the prevalence of asymptomatic individuals, as well as the exponential growth of COVID-19. These responses have led to a muted response to COVID-19, that in comparison to the response to climate change, the COVID-19 response has been incredibly fast. Regulations

were put into place within a few months of the pandemic starting when people realized the deadliness of it (Manzanedo et al, 2020). When comparing such responses to the virus to the climate change responses, there's a similarity in the sense that much early needed action wasn't taken and that "ignoring the early scientific call for action ended up being costlier in the long run, even if these measures appear initially punitive" (Manzanedo et al, 2020).

Looking at the irreversible change that has occurred during both the COVID-19 pandemic and climate change is an important approach. When the virus reaches a certain amount of people within the population, the ability to control the spread of the virus becomes that much more challenging and then we see a chain reaction of people getting the virus within the community. This has led to the exponential growth of the number of people who have gotten the virus and has made some effects irreversible (Manzanedo et al, 2020). Humankind has caused large amounts of irreversible damage to our environment. As the temperature continues to rise, parts of our environment will eventually reach critical thresholds where many more irreversible damages will occur (Trisos et al., 2020). It's

Figure 2. The social and economic impact comparison between COVID-19 and climate change.

extremely important to identify the thresholds of climate change as we did for COVID-19 to help avert worst-case scenarios and to reduce the economic and social costs of climate change. How do we take these findings, compare them, and learn from our responses to COVID-19 so as to
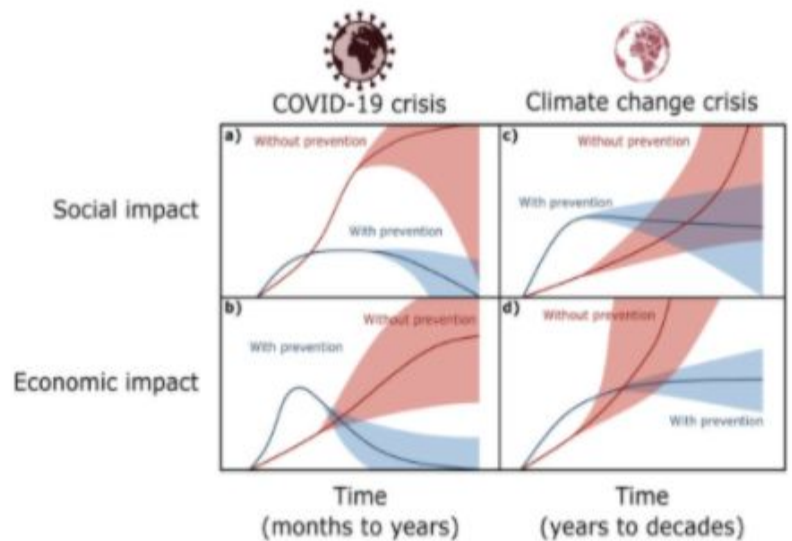
come up with a better solution for approaching climate change? It's important to acknowledge that ignoring early scientific calls for action ends up being costlier in the long-run. Looking at hypothetical social and economic impacts of the COVID-19 and climate crises in the presence and absence of preventative measures is one way to learn from our responses to both crises. Early actions for climate change may entail high social consts due to lifestyle and employment change, and economic transition but prevents large social costs of extreme events, water shortages, and conflicts (Fig. 2- graph c). Economic investment in climate change prevention can also have a high intial impact but helps avoid the worst long-term economic damage (Fig. 2- graph d).

Many forces and groups are acting on climate change in hopes to reduce global warming, but it's important to note that there are still many mixed responses and successes in creating substantive policy implementation. With the pandemic, we have been able to see the fast responses of the government and know that it's possible to have such a response. The quick, extensive response to COVID-19 should push people to fight for the same actions to occur for climate change, but our present lifestyle doesn't allow for such changes (Lidskog et al., 2020). The two crises have had both complex and contradictory responses and having a better understanding of both the climate change and COVID-19 responses, we may better our ability to communicate climate change in a way that gets more of a widespread social response. How a threat is socially perceived can determine which responses are developed. Climate change isn't perceived as an immediate threat by many, while COVID-19 clearly is perceived as an immediate threat and we can tell by the amount of action that has been taken on it (Lidskog et al., 2020).

Climate change and COVID-19 share some important characteristics that can help scientists come up with a more effective policy change for the future. For example, COVID-19 and climate change are of global nature and each requires radical responses on the basis of scientific assessments. So why are we getting effective, radical responses to one but not the other? Confinement measures that were taken against COVID-19 showed a great display of solidarity among entire, select countries. Such countries were all in complete lockdown to protect the elderly and those with health complications (Gemenne et al., 2020). Precautions were taken to protect those who are most at risk and similar precautions should be made for climate change. One issue though with the COVID-19 response is that only select countries were in lockdown, so the virus was still able to spread throughout other countries. What we can learn from this is that, for climate change, we have to have a global display of solidarity because climate change doesn't just stop at borders. We can also learn that not every single country should have to follow the same climate policies, but that climate policies should be derived from a relatively common framework for international cooperation to create an effective way of fighting climate change (Gemenne et al., 2020). We also need to understand that we can't just assume that the measures that have been deployed against the pandemic can be replicated as such to fight climate change (Gemenne et al., 2020). Instead, we should work on focusing more on the immediate and near consequences of climate change so we can grab people's attention better and we should highlight the impacts on human health.

Once the two crises have been thoroughly compared, it's really important to take what has been learned and translate it into solutions- one solution being better communication of climate change. COVID-19 can be viewed as a quick study about ways to more effectively cope with climate change. Parallels between policy-making decisions about climate change and

COVID-19 risks have been created by using behavioral biases such as simplification, availability, and herding (Botzen et at., 2020). Some people view climate change as a natural disaster and a natural disaster that people simplify to being below their threshold level of concern. People typically downplay pandemics until they occur in their surroundings and this is when individuals start focusing on limiting health consequences (Botzen et at., 2020). So by making climate change more "relevant" and "apparent" to people and communicating to them how it truly affects them and the people around them, we may be able to get similar reactions to what we did for COVID-19. When looking at the availability bias of climate change, climate change is typically not salient to people unless they've experienced its effects (effects such as flooding due to rising sea levels), which is similar to COVID-19 (Tversky & Kahneman, 1973). One way to help climate change become salient to those who aren't seeing the physical effects of climate change is by educating them and showing them what it looks like. One way of doing this is by educating the youth on climate change.

Policy Implications for Climate Change Based on COVID-19 Lessons

As we have seen, COVID-19 and climate change are similar, but ultimately profoundly different as issues. Politically and culturally, they have also generated varying responses. For both climate change and COVID-19, thresholds exist in which mitigating the issue becomes far more difficult. With climate change, this threshold is represented by the global temperature increase and greenhouse gas concentrations in the atmosphere. While with COVID-19, it is represented by positive cases per capita and per day (Manzanedo & Manning, 2020). When it comes to the political reactions to these issues, the timescales on which the issues operate have reflected the political reaction time. Climate change takes years to decades to see changes in a measurement, such as temperature. Scientists have known about anthropogenic climate change since the 1970s,

yet we have not seen comprehensive and effective policies in the United States to mitigate its impact (Manzanedo & Manning, 2020). Despite some successes, like the passage of the House Resolution of the Green New Deal, it has taken decades for it to become a mainstream political issue. COVID-19, on the other hand, has garnered a quick political response to handle the immediacy of its effects (Manzanedo & Manning, 2020). Some countries reacted quicker than others, but relative to the political timeline climate change policies experience, all countries reacted quickly to COVID-19. Going forward, we can analyze the swift reaction to COVID-19 and determine what is necessary to efficiently adopt climate mitigation policies on a quicker timeline than what is currently being implemented.

COVID-19 creates, seemingly, far more immediate threats than the impacts of climate change. While there are disparities on who the virus affects and how much, everyone faces the threat and the risk of loss (Pannell & Adamowic, 2020). In addition, the virus can be tested for and treated. Whereas, attributing negative consequences to climate change can be more of a challenge. Because of this unifying characteristic of a pandemic, "there was significant cooperation from the public in striving to achieve goals" to limit its spread, such as social distancing, wearing masks in public, sheltering at home, and working remotely (Pannell & Adamowic, 2020). These policies and mandates were implemented using a command and control approach to help "reduce the negative externalities associated with the spread of the virus" (Pannel & Adamowic, 2020). For the most part, social norms changed, and we adopted new habits to achieve the goals listed above. However, these adaptations were meant to be implemented as quickly as possible, and thus had minimum engagement and input from citizens. Those who were in jobs that could adapt to work remotely were far better off than those who were unable to work or even lost their job entirely due to the shutdown (Pannell & Adamwic,

2020). This becomes important when considering similarly drastic policies for mitigating climate change. With their implementation, accounting and accommodating for the impacts on all socioeconomic groups will be essential to attain widespread public support.

Proximity to the impacts of COVID-19 is what needs to be reflected in the rhetoric when talking about climate change. The consequences of climate change will impact economies, cultures, livelihoods, national security, and public health. Policy implementation needs to reflect the immediacy of climate change, just how policies reflected the immediacy of COVID-19. When discussing climate change, we must put it in the context of how it will impact people in their everyday lives. The well-known ramifications of climate change (warming, more extreme weather events, drought, flooding, and precipitation variability) will increase the "risk of death, ill-health, or disrupted livelihoods in low-lying coastal zones" and urban areas prone to inland flooding (Intergovernmental Panel on Climate Change, 2014). Climate change will also potentially facilitate the "breakdown of food systems… and food insecurity," especially in poorer communities (Intergovernmental Panel on Climate Change, 2014). Rural livelihoods risk income loss "due to insufficient access to
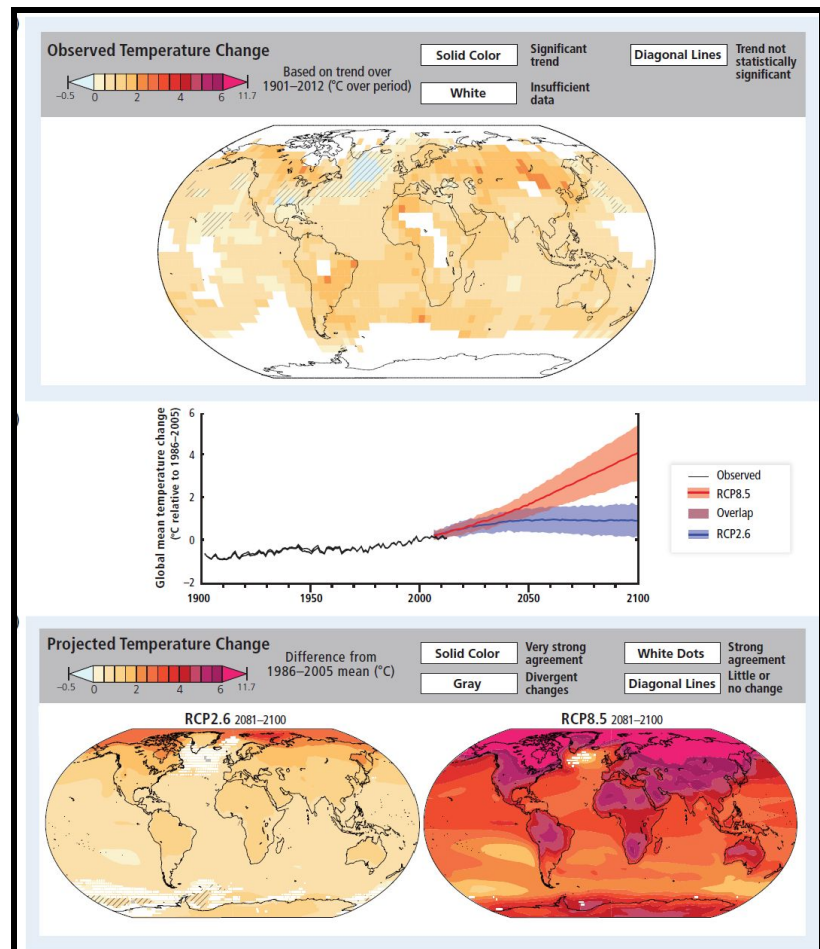

Figure 3. Observed and projected warming of annual surface temperature in high and low emission scenarios (Intergovernmental Panel on Climate Change, 2014).

drinking and irrigation water and reduced agricultural activity (Intergovernmental Panel on Climate Change, 2014). In addition, as the issue of human health and global diseases has been at the forefront of current events, climate change will result in an increase in food-, water-, and vector-borne diseases (Intergovernmental Panel on Climate Change, 2014).

Observing the global standstill that ensued after the announcement of the pandemic, limiting the possibility of that happening continually as warming increases seems like the next logical step. Now, more than ever, is it important to emphasize the impact on human health climate change will have across the world. In addition, the extraction of fossil fuels, such as oil, coal, and natural gas, and other energy resources, such as uranium, has profound negative impacts on the communities surrounding them (Brosemer et al., 2020). Not only do they rely on the income from those operations, but they reap the negative environmental health costs of living near them, such as heart and lung diseases, which become potentially fatal pre-existing conditions in the time of COVID-19 (Brosemer et al., 2020). Climate change and human health are inextricably intertwined, whether that be through the transmission of diseases or the unhealthy extraction of Earth's resources. As we have seen from both COVID-19 and climate change, marginalized communities are likely to see the negative impacts to a greater extent and more frequently (Brosemer et al., 2020). Going forward, it is essential we apply the lessons learned from the cultural and political reaction to COVID-19 and use the knowledge we have about climate change to form a response and dialogue about how to address the inevitable impacts climate change will reap on our society.

One of the most sustainable, equitable, and achievable set of policies that would have drastic impacts on our society is the Green New Deal (GND). A resolution outlining the goals of the GND passed the House of Representatives in February 2019, and included the following

goals: "achieve net-zero emissions [in 10 years] through fair and just transition for communities and workers; creates jobs; invest in sustainable infrastructure and industry" (Stoner, 2020). The GND would radically change what the energy system looks like in the United States. However, the benefits of relying on renewable energy are numerous. In the context of economic stimulus, renewable energy creates more jobs in the short-term, while in the long-term "requires less labor for operation and maintenance," thus freeing up more labor "kick starting the green innovation machine" (Hepburn et al., 2020). The GND also aims to decrease income inequality. Increasing carbon emissions are not equally distributed and are inextricably intertwined with wealth inequality (Galvin & Healy, 2020). The GND would be effective in both transitioning smoothly and equitably to a renewable energy-based economy and reducing greenhouse gas emissions in the United States by 2030.

The economic standstill caused by the pandemic creates a new environment to potentially make changes to our energy system. As "the price of U.S. oil futures [turned] negative for the first time in history and global demand for oil [was] estimated to reach a 25-year low," the need for a more resilient energy system has become clear (Rosenbloom & Markard, 2020). If the recovery from this pandemic is taken as an opportunity to transition away from fossil fuels to renewable energy, the U.S could facilitate the beginning of its Green New Deal. To do this, instead of bailing out fossil fuel companies and industries, relief must go to the impacted employees, in the form of retraining, financial support, and retirement benefits (Rosenbloom & Markard, 2020).

Economic hardship is another consequence of climate change. Climate change will not only impact the ecological systems that humans around the world rely on, but it will subsequently impact our economic way of life, whether that be natural disaster, another

pandemic, or natural resource depletion. Putting climate change risks in terms of the economy and public health, the proximity of the issue seems far closer. Studies have shown "that individual concern about climate change and willingness to adopt mitigation measures are positively related to experiences of climate change-related risk" (Botzen et al., 2020). In addition, a phenomenon called the "finite pool of worry" states that "concern about one issue increases, [while] concerns about other issues decrease," which limits the ability for someone, for example, to be emotionally concerned with both the environment and the economy or national security (Botzen et al., 2020). However, if the messaging and policies surrounding climate change emphasize the subsequent economic and international security ramifications of inaction, or even discussing the benefits of policies without mentioning the benefits to climate change mitigation, there may be a shift in support of "climate change" policies.

Addressing climate change in an effective way in the midst of a pandemic seems unlikely. In addition, the clear cultural and political rifts in accepting climate change, and science, in general, provide a barrier to decreasing our reliance on fossil fuels. We can learn a lot about how to address climate change from how we responded to the COVID-19 pandemic. They are strikingly similar issues, but their differences provide insight in how discussing climate change and its associated policy can be more effective. If we think life was disrupted by COVID-19, the impacts of climate change if action is not taken in time will be a new caliber of global disruption. As with COVID-19, climate change does not impact everyone equally and in the same way. Going forward, we can use the recovery from this pandemic as a time to initiate implementing policies that address our economic dependence on consumption and fossil fuels by using recovery funds to start the equitable transition to renewable energy. While it may be difficult to contemplate taking on another global issue, the impacts of climate change will be

more profound and devastating, which is why action for both COVID-19 and climate change

must not be mutually exclusive.

References

Botzen, W., Duijndam, S., & van Beukering, P. (2020). Lessons for climate policy from

behavioral biases towards COVID-19 and climate change risks. *World Development*,
105214.

Brosemer, K., Schelly, C., Gagnon, V., Arola, K. L., Pearce, J. M., Bessette, D., & Olabisi, L. S.

(2020). The energy crises revealed by COVID: Intersections of Indigeneity, inequity, and
health. *Energy Research & Social Science*, *68*, 101661.

Buhr, Susan M., McCaffrey, Mark S, and Buhr, Susan M. "Clarifying Climate Confusion:

Addressing Systemic Holes, Cognitive Gaps, and Misconceptions Through Climate

Literacy." Physical Geography 29.6 (2008): 512-28.

Climate Change Evidence: (2020, May 27). Retrieved from https://climate.nasa.gov/evidence/

Dentzman, K., Charters, M., Dietz, T., and McCright, A. (2013). "The Influence of Political

Ideology on Trust in Science." Environmental Research Letters : ERL. 8.4: 044029. Web.

Dunlap, R. E., & McCright, A. M. (2015). Challenging climate change. *Climate change and

society: Sociological perspectives*, 300.

Galvin, R., & Healy, N. (2020). The Green New Deal in the United States: What it is and how to

pay for it. *Energy Research & Social Science*, *67*, 101529.

Gemenne, F., & Depoux, A. (2020). What our response to the COVID-19 pandemic tells us of

our capacity to respond to climate change. *Environmental Research Letters*, *15*(10),
101002.

Global Warming's Six Americas. (2020, October 09). Retrieved from

https://climatecommunication.yale.edu/about/projects/global-warmings-six-americas/

Hepburn, C., O'Callaghan, B., Stern, N., Stiglitz, J., & Zenghelis, D. (2020). Will COVID-19

fiscal recovery packages accelerate or retard progress on climate change?. *Oxford Review
of Economic Policy*, *36*.

Intergovernmental Panel on Climate Change. (2014). *Climate Change 2014: Impacts,

Adaptation, and Vulnerability: Summary for Policymakers*. IPCC EG II.

Lidskog, R., Elander, I., & Standring, A. (2020). COVID-19, the climate, and transformative

       change: Comparing the social anatomies of crises and their regulatory responses.
       Sustainability, *12*(16), 6337.

Manzanedo, R. D., & Manning, P. (2020). COVID-19: Lessons for the climate change

       emergency. *Science of the Total Environment*, *742*, 140563.

Maibach, E., Fitzgerald, D., Edward W., and Cedeno, Y. (2013), "Do People "personally

       Experience" Global Warming, and If so How, and Does It Matter?" Global

       Environmental Change. 23.1: 81-91. Web.

Pannell, D. J., & Adamowic, W. L. (2020). What Can Environmental Economists Learn from the

       COVID‑19 Experience?. *Applied Economic Perspectives and Policy*.

Rosenbloom, D. and J. Markard (2020). "A COVID-19 recovery for climate." [Editorial].

       Science, 368 (6490), 447.

Stoner, A. M. (2020). Critical Reflections on America's Green New Deal: Capital, Labor, and

       the Dynamics of Contemporary Social Change. *Capitalism Nature Socialism*, 1-18.

Tang, Xu, and Höök, Mikael. (2013). "Depletion of Fossil Fuels and Anthropogenic Climate

       Change—A Review." Energy Policy 52: 797-809. Web.

Trisos, C. H., Merow, C., & Pigot, A. L. (2020). The projected timing of abrupt ecological
       disruption from climate change. *Nature*, *580*(7804), 496-501.

Tversky, A., & Kahneman, D. (1973). Availability: A heuristic for judging frequency and
       probability. *Cognitive psychology*, *5*(2), 207-232.

Ungar, Sheldon. "The Rise and (Relative) Decline of Global Warming as a Social Problem." The

       Sociological Quarterly. 33.4 (1992): 483-501.

Visschers, V., Siegrist, M., Tobler, C. (2012)."Addressing Climate Change: Determinants of

       Consumers' Willingness to Act and to Support Policy Measures." Journal of

       Environmental Psychology. 32.3 :197-207. Web.

Whitmarsh, Lorraine. (2011). "Scepticism and Uncertainty about Climate Change: Dimensions,

Determinants and Change over Time." Global Environmental Change. 21.2: 690-700.

Yilmaz, V., Can, Yaseman. (2020). Impact of knowledge, concern and awareness about global warming and global climatic change on environmental behavior. Environ Dev Sustain 22, 6245– 6260.