

The Climate Change Countermovement

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In a sustainability economy, one generation meets its needs without compromising future generations' capacity to meet theirs. Anthropogenic global warming (AGW) is human induced climate change. The idea was introduced in the late 19th century when a physical chemist, Svante Arrhenius, estimated that the mean global temperature would rise several degrees if the CO₂ in the atmosphere were doubled (Arrhenius, 1896). Similarly, in 1956, Gilbert N. Plass demonstrated that CO₂ in the atmosphere blocks heat radiation from leaving the planet (Plass, 1956). Climate scientists were initially skeptical about these estimations. As of 2016, data shows that 97 percent of actively publishing climate scientists agree that AGW is occurring (Cook et al., 2016).

AGW is often blamed on the burning of fossil fuels, which emits heat-trapping greenhouse gases (GHG) into the atmosphere. Recent polls show that most Americans are now aware of and worried about AGW (Wong-Parodi & Feygina, 2020). GHG emissions have been increasing with time, intensifying climate change; its effects include lengthening of frost-free and growing seasons, changes in precipitation patterns, extreme natural events, a rise in sea level, and eventually an ice-free arctic (NASA, 2020). If the effects of AGW are so detrimental, why has the response been minimal?

The case for more comprehensive knowledge of climate change was presented by scientists at an international meeting in 1985 (Hulme, 2017). The growth of computer modeling and environmental regulations led to the conclusion that anthropogenic global warming (AGW)

is a major global risk (Hulme, 2017). June 1988 was a turning point for the U.S. when James Hanson's Senate testimony placed AGW on the agenda (Besel, 2013). Shortly after, the Intergovernmental Panel on Climate Change (IPCC) was formed to promote a scientific and political consensus on the impacts of AGW globally (Lee, 2015). In response, politicians were pressed to enforce policy.

Legislation restricting GHG emissions particularly concerns fossil fuel industries and their allies, whose profits may be lowered. Fossil fuel industry-funded think-tanks, contrarian scientists, conservative media, and conservative politicians have promoted skepticism about humans' contributions to climate change. Similarly, sociological and psychological effects contribute to skepticism. Such efforts can confuse the public and delay efforts to fight climate change.

Review of Research

According to Dunlap (2013), there has been an organized disinformation campaign against AGW from the start. Internal corporate memos from the 1980's show that fossil fuel companies have been aware of the harm from their products, and have purposefully misled the public for decades (Gustafson et al., 2020). Since the 1990's, the tobacco industry has joined efforts to manufacture uncertainty and forestall government action regarding AGW (Shulman, 2012). Mainstream media have reported diverse views on climate, confusing the public (Dryzek, Norgaard, & Schlosberg, 2011).

According to Cook et al. (2016), misunderstanding of the scientific consensus has led many Americans to doubt AGW. Prasad (2019) blames the climate change denial movement on critical theorists and social constructionists, alleging that such perspectives reject objective

reality. Some analysts suggest that AGW skeptics' view of the natural world comes from the Judeo-Christian assumption that nature was created for human use (Dunlap & McCright, 2010). Gifford (2011) describes the psychological barriers involved with climate change denial, including limited cognition of the problem, ideological world views that neglect environmental impacts, comparisons with other people, sunk cost, discredence, perceived risks, and positive but inadequate behavior change. Engels et al. (2013) correlate skepticism with low environmental awareness and low risk awareness. Research suggests that although its awareness is now very high, climate change continues to be a low priority issue for most people (Whitmarsh, 2011).

Fossil Fuel Industries and Their Allies

In December 2015, world governments agreed to limit global temperature rise to a 2°C budget, but analysis shows that carbon emissions from current operating fossil fuel industries would exceed this criteria (Oil Change International, 2016). Since then, nine cities and counties in the U.S. have sued major fossil fuel companies, seeking compensation for climate change damages (Hasemyer, 2020). According to a study done by Gustafson et al. (2020), a majority of Americans support making fossil fuel companies pay for a portion of damages in communities caused by global warming.

A study done by Heede (2014) shows the top two global GHG producers, Chevron and ExxonMobil, are US oil producers. Chevron (n.d.) indicates that they are taking steps to address climate change. ExxonMobil (n.d.) recognizes climate risks and is focused on reducing their GHGs. The American Petroleum Institute (API) is a trade association representing all oil and gas industries nationwide. API supports reducing risks related to climate change (API, n.d.) and

industries now admit climate change and are shifting from coal to natural gas sources, alleging the switch cuts CO₂ (API, 2019).

Publicly, it is obvious that the fossil-fuel industry has been promoting itself as a supporter for GHG reduction, but the topic remains privately controversial. In December 1997, the United Nations adopted the Kyoto Protocol, committing industrialized countries to limit GHGs (UNFCCC, n.d.). In response, the Global Climate Science Communication Plan was introduced by API in April 1998, emphasizing the uncertainty around climate change to reevaluate the Kyoto Protocol in the U.S. (GCSCCT, 1998).

ExxonMobil has received the most attention for its knowledge of climate science. In the 1980's, Roger Cohen led Exxon's industrial research around climate change (Physics Today, 2017). Initially, Cohen (1982) found that an increase in carbon emissions would result in an increase in the average global temperature. Decades later, Cohen (2008) admits there is no evidence based on AGW. He authored reports for the IPCC, supervised other climate scientists (Cohen, 2008), and is also associated with organizations that promote climate skepticism (Physics Today, 2017). During a shareholder meeting in 2013, four proposals related to global warming mitigation, transparency, and accountability were shut down by ExxonMobil's board (Crank & Jacoby, 2015). In November 2015, environmental leaders delivered a petition with over 350,000 signatures to the U.S. Attorney General Loretta Lynch to investigate whether ExxonMobil misled the public on global warming (Bagley, 2015). A month later, ExxonMobile announces support for the Paris Agreement, focusing on limiting carbon emissions (ExxonMobil, 2016).

According to ExxonKnew (n.d.), Exxon spent over \$2 million in 2015 to organizations that engage in climate denial, hypocritizing their goal to limit carbon emissions. Activists formed

a hashtag campaign against ExxonMobil, #ExxonKnew, utilizing social media to publicize the argument that ExxonMobil deceived the public, misled their shareholders, and robbed humanity of a generations worth of time to reverse AGW (ExxonKnew, n.d.). In 2018, the Market Choice Act was introduced as a bill in Congress, imposing a tax on all fossil fuel emissions and within the first month, American for Prosperity attacked the bill, asserting that its costs would outweigh the benefits (AFP, 2018). According to AFP (2018), a carbon tax is an ineffective tool that may increase pollution. ExxonMobil's environmental policy manager, Trelenberg (2017) states that a carbon tax is a sensible approach to the problem. AFP has received over \$1.3 million from ExxonMobil since 1998 (ExxonSecrets, n.d.).

Similarly, the coal industry has been well aware of their contribution to AGW. Published in the *Mining Congress Journal*, Garvey (1966) describes how the combustion of coal contributes to GHG emissions, warming the atmosphere. Peabody Energy (n.d.) recognizes coal's impact on AGW and states they are taking steps to reduce their carbon footprint. However, according to Goldenberg and Bengtsson (2016), this company has participated in funding organizations and contrary scientists that cast doubt on AGW.

Contrarian Scientists Conservative Think Tanks

To battle the environmental movement, conservative foundations and think-tanks mounted an anti-climate change movement (Dunlap & McCright, 2010). Fossil-fuel industries have been linked to the funding of these groups, creating the impression that climate change doubt is widespread (Monbiot, 2006). Bruelle (2013) found that the organizations that make up the climate change countermovement in the U.S. have an annual income of over \$900 million, most of it from conservative foundations. The Marshall Institute, the Heritage Foundation, the

Heartland Institute, and the Cato Institute are conservative think tanks (CTTs) that joined efforts to influence public opinion and policy.

CTTs have publicized arguments skeptical of AGW and are often represented by contrarian scientists (Dunlap & McCright, 2010). According to Dunlap (2013), many are linked to the proliferating books espousing climate denial. Climate scientists Ball & Burnett (2020) ignore evidence of a climate crisis. Similarly, Lehr and Burnett (2019) claim climate change is a “hoax” and argue that abandoning fossil fuels would end life as we know it. Dunlap and McCright (2010) found that the Heartland Institute is the most visible US think tank promoting AGW skepticism. According to Pappas (2012), the Heartland Institute plans to implement school materials that contradict the science on AGW, confusing future generations.

In 1970, during the Nixon administration, the Environmental Protection Agency (EPA) enforced new environmental standards (Nixon, 1970, para. 2). In 1981, President Reagan and Congress reduced environmental regulations (Dunlap & McCright, 2010). According to Dunlap and McCright (2010), the Marshall Institute, formed in 1984 by the three physicists: Robert Jastrow, William Nierenberg, and Frederick Seitz, was among one of the first conservative think-tanks to focus on environmental skepticism. According to Lahsen (2007), these physicists joined the environmental countermovement to defend their understanding of science, challenged by the ongoing concern of AGW. The Heritage Foundation also influenced environmental policy during this time and Reagan (1988) referred to them as a “vital force” during his administration.

Today, the Heritage Foundation argues against environmental regulations, stating they are not good for the environment or for humans (Loris, 2019). In 2015, the Marshall Institute morphed into the CO₂ Coalition, a nonprofit think tank (Vaidyanathan, 2015) whose purpose is to inform the public of the importance made by CO₂ in the atmosphere (CO₂ Coalition, n.d.).

This organization remains linked to the fossil fuel industry; It is led by two members of the API and is receiving funding from ExxonMobil (Vaidyanathan, 2015).

In addition to the fossil-fuel industry, other industries, such as the Koch Industries, participate in funding the organizations promoting AGW skepticism. According to Koch (n.d.), the company is committed to reducing their carbon footprint but data from Greenpeace (n.d.) show that Koch has spent over \$127 million to climate denial front groups from 1997-2017, many to CTTs. The Cato Institute (CI) was founded by the chairman of Koch Industries, Charles Koch, in 1977 (Desmog, n.d.). CI claims they accept global warming is real (Desmog, n.d.), but Murphy, Michaels and Knappenberger (2018) of CI claim there is mounting evidence that human-induced CO₂ emissions cause little warming and that a carbon tax is a dubious policy instrument. According to Desmog (n.d.), CI has received funding from both Koch Industries and ExxonMobil. However, in 2019, the Cato Institute quietly shut down an effort to raise uncertainty of climate change after climatologist Michaels left (Waldman, 2019).

Links to the Tobacco Industry

According to Bendix (2017), the think-tanks supporting climate science denial also push misinformation on tobacco's health impacts. The funding of these conservative groups and contrary scientists began with the tobacco company, Philip Morris International (PMI) (Monbiot, 2006). According to Bendix (2017), PMI knew its products cause cancer since the 1950's, but have spent decades misleading the public to believe otherwise.

The Advancement of Sound Science Coalition (TASSC) was created in 1993 as a front group for PMI, as it attempted to discredit research into Environmental Tobacco Smoke (ETS) as a long-term cause of increased cancer and heart problems (CIC, n.d.). While active, TASSC

received \$50,000 in grants from ExxonMobil (CIC, n.d.). In 1994, Frederick Seitz of the Marshall Institute published a report called “Global warming and ozone hole controversies. A challenge to scientific judgment,” emphasizing both the uncertainty around climate change and the uncertainty of health effects from tobacco smoke (Hirschhorn & Bialous, 2001).

According to WHO (2017), tobacco usage also has a harmful impact on the environment in terms of climate change. PMI has identified ways to profit from AGW due to the potential for ideal tobacco growth conditions, leading to ramping up the lifecycle and improving the quality of their product (Bendix, 2017). However, PMI (n.d.) publicizes their image as a sustainable company; PMI has received the top score from CDP, the global disclosure system that enables organizations to manage GHG emissions. This industry has been guilty of lying to the public about harmful health effects from their products (*Philip Morris USA v. Williams*, 2006).

Political Associations

There is a divide over global warming on the basis of political party identification in the US. Marquart-Pyatt et al. (2019) found that in general, Democrats are more concerned about sustainability than Republicans. According to Engels et al. (2013), some social scientists link climate skepticism in the U.S. to political campaigns, also predicting a growing divide between liberals and conservatives rather than an emergence of a social consensus. In particular, evidence proves that white males associated with the conservative party are more likely to be skeptical of climate change than any other social group (Engels et al., 2013).

Relative to the Obama administration, the Trump administration is uninterested in carbon reduction and favors fossil fuels (Davenport & Lipton, 2016). According to Panno et al. (2019), support for Trump and climate change denial are not clearly linked. As a presidential

candidate, Trump selected fossil-fuel ally Scott Pruitt to head EPA (Davenport & Lipton, 2016). In 2017, under Pruitt's support, President Trump announced that the US will withdraw from the Paris Climate Agreement, an international step towards reducing GHG emissions (Bush, 2018). Trump (2017) says the US would be under a very big economic disadvantage under the Paris Climate Agreement, transferring coal jobs out of America. Many CTTs and organizations promoting environmental skepticism personally wrote President Trump a letter, urging him for making this decision (Ebell et al., 2017).

According to Goldenberg and Bengtssen (2016), coal companies have donated twice as much to Republican groups than to Democratic ones. Pruitt resigned in July 2018 in response to controversies, and was replaced by former coal lobbyist Andrew White (Bush, 2018). In August 2018, Trump's EPA proposed an Affordable Clean Energy (ACE) Rule, protecting the coal industry while limiting emissions. Months later, Trump proposed revisions to allow coal plants to emit more CO₂ (EPA, 2018).

Political identification in the US. contributes to the delay in climate change action. The way the electoral system is designed in the US leads to more polarised political positions, preventing the formation of environmental empathy to arise (Tschötschel et al., 2020). Party identification has a 'simplifying function' in which political leaders provide cues that guide the political thought and action of the party identifier, which makes the identifier less likely to engage with an assessment of competing evidence (Tranter & Booth, 2015). According to Wong-Parodi and Feygina (2020), this rift in party association is also driven by moral values and cultural meanings, proving that conservatives are driven by actions of loyalty, purity, and authority.

Participation of the Media and Society

The media plays a large role in society's understanding of the world, as it is a mediator between expert and non-expert knowledge; According to the *framing theory*, the media shapes complex science into narratives, playing a key role in framing scientific subjects by selecting and emphasizing certain viewpoints (Areia et al., 2019). The vast majority of the uncertainty in climate change journalism comes from political actors, not real scientists (Tschötschel et al., 2020). The aspects of climate change constitute simplified and familiarized reporting, often pointing towards the political conflict within the issue.

According to a study by Boykoff et al. (2020), the *New York Times* has published the most coverage related to climate change related to 5 other newspapers, while *USA Today* and the *Wall Street Journal* have published the least. Boykoff and Roberts (2007) proved climate science first reached mass media in 1932 in the *Times*, emphasizing the current circumstances causing melting polar ice caps (New York Times 1932, 4). Since then, the *Times* has provided more facts related to climate science (Boykoff and Roberts, 2007), but public polls show that Americans lack the understanding of these facts leading to the conclusion (Sanders, 2019). Research by the Media Insight Program (2018) shows society prefers verified facts supplemented by background and analysis.

According to Antilla (2005), the media uses methods to frame climate science as uncertain and are often pressured by think-tanks affiliated with the fossil fuel industry. The irreversibility of climate change is likely misunderstood by Americans due to the fact that *Times* mentions this in only 0.4 percent of its articles related to AGW (Sanders, 2019). Also, the fact that climate change is due to burning of fossil fuels is mentioned in 0.1 percent of *Times* articles related to AGW (Sanders, 2019).

Tsfati (2003) describes ‘media skepticism’ as a subject of alienation and mistrust toward the mainstream news media, and hypothesizes that this would be associated with a tendency to reject the mediated opinion climate. This likely became more popular when “fake news” was introduced as a prominent issue in the 2016 U.S. Presidential election, which misled the public to trust false information (Guess et al., 2018). According to Johnson and Levin (2009), poor communication can also contribute to the bias concerning AGW.

Over 90 percent of Americans are aware of global warming, and even without skeptics pushing the countermovement, this problem can still exist due to psychological barriers (Johnson & Levin, 2009). Steele’s (1988) research shows that people tend to cope with threats in their own self-regard rather than on the way they cope with it themselves. Therefore, acknowledging climate change requires individuals to critically examine their impact. Due to the lag time between the actions taken today and future consequences (in terms of AGW), it is unnatural for humans to fully react to stimuli beyond our personal experiences (Johnson & Levin, 2009).

Conclusion

Though it is obvious that most are aware of AGW, the well-organized climate change countermovement has been successful at delaying action. Largely blamed for AGW, the fossil-fuel industries portray a false environmentally friendly platform, which confuses the public. Due to society’s perception of the media, along with the influence of the AGW countermovement, the gap between enforcing policy and understanding how to solve this problem remains. More research is recommended focusing on society's perspective of actors in the countermovement. Communicating information and critically examining behavior is essential for understanding

personal impacts on AGW, and in doing so, the link between personal action and politics can strengthen.

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