

Women's Impact on Environmental Policy: The Case for Greater Female Representation In the Legislature

Isabelle Hayes

Professor Minkoff

POL 401: Seminar in American Government & Politics

Abstract: Female legislators make for different legislators than their male counterparts. One aspect of this lies in their role in shaping environmental policy. Women are disproportionately impacted by climate change and therefore will have a unique perspective and insight to offer. In this analysis, I frame environmental issues as ones women will be more likely to support and advocate for. Using the data from the Congressional Bills Project, I seek to discern whether female legislators are more likely to introduce environmental bills in the House of Representatives than their male counterparts. I look at specific environmental and energy subtopics and find that gender is positive and significant for a few issues, but that the percent of females in the legislature has more of a positive and significant impact on the introduction of environmental policy that promotes sustainability and serve as a step to solving the global climate crisis.

Keywords: Political Science, Women, Female Representation, Legislature, Female Legislators, House of Representatives, United States, Climate Change, Environmental Issues, Environmental Policies, Energy, Energy Policies, Female Policymakers, Carbon Dioxide Emissions, Female Status, Disproportionate Effects, Women's Impact

Climate change is seen as “perhaps the most serious environmental crisis of our time,” (Ergas & York 2012). Climate change is characterized as an overall rise in global temperatures, with erratic weather patterns, such as more frequent and intense storms, hurricanes, droughts, and flooding. According to the 2007 Intergovernmental Panel on Climate Change report, “CO₂ emissions from human activities, principally the combustion of fossil fuels, are the most significant cause of anthropogenic climate change,” (Ergas and York, 2012). The effects of climate change (e.g. rising sea levels, high temperatures, and stronger natural disasters) will have serious social, economic and political implications.

Women are disproportionately impacted by climate change and other environmental issues more than men (Norgaard & York 2005; Mavisakalyan & Taverdi 2019; Ergas & York 2012). This connection mainly lies in the gendered divisions of labor that women face, especially in developing countries, where women carry out the duties that are impacted the most by the effects of climate change, such as growing the food, fetching the water, etc. (Ergas & York 2012), and due to the gendered roles women face as the traditional caregivers and caretakers (Norgaard & York 2015). It is therefore advocated that women receive more representation within their legislatures and within the global environmental treaties, as they have unique and useful insight to offer on ways to mitigate the effects of climate change. When there are more women represented in a country’s legislature, or when there’s more of an equal amount, the legislature is more likely to ratify environmental treaties (Norgaard & York 2005), adopt climate change mitigation policies (Mavisakalyan & Tarverdi 2019), and favor stricter environmental policies (Fredriksson & Wang 2011). Societies that have a higher degree of gender equality and foster that kind of environment have lower emissions of carbon dioxide (Ergas & York 2012).

Female legislators support women's issues bills more than their male counterparts (Swers 1998). While these issues are typically regarded as issues relating to women's health, reproductive rights, etc., I argue that climate change is an issue that women are more willing to pay attention to, be concerned about, and respond to, due to the disproportionate way it affects them. With this in mind, women also tend to sponsor more bills regarding women's issues than their male counterparts (Gerrity, et al. 2004). Therefore, I seek to find the effect female legislators have on the introduction of environmental bills—are women more likely to introduce bills concerning environmental issues than their male counterparts? I also inquire whether merely the presence or a greater population of female representation of women in the legislature will have a positive impact on the amount of environmental bills that are introduced.

Literature Review: Gender and Policymaking—The Unique Contribution Female Legislators Make

Female legislators make for different legislators than their male counterparts—they exhibit a more collaborative behavior (Volden et al. 2013), tend to vote for women's issues (Swers 1998), and sponsor and speak about more women's issues (Gerrity et al. 2004). Even further, women are more effective legislators than men in the “right configuration of law-making institutions,” mainly drawing on the notion that women are more collaborative and consensus oriented (Volden et al. 2013 (327). Volden et al. (2013) argue that women are more likely to be effective than their male counterparts when they're in the minority party. They argue that being in the minority requires certain behaviors and skills that aren't required when in the majority party, and that these required behaviors are exhibited more by women. The skills that the minority party have to exercise—“maintain a focus on policy over political advantage, must reach across the aisle, and must work extremely hard to gain policy expertise and political

acumen,” (327)—are those that are more attached to female legislators (Volden et al. 2013). The authors test the ability of a policymaker to get their issues pushed through the policymaking process by measuring their legislative effectiveness, which is “the advancement of a member’s agenda items through the legislative process and into law,” (Volden et al. 2013, 327). Through this measure, the authors find that women are more effective lawmakers than their male counterparts—this relationship is positive and statistically significant. To “put into more concrete terms, when compared to the average member of their party, women in the minority are about 33% more effective, and women in the majority are about 5% more effective than their male counterparts, all else equal,” (Volden et al. 2013, 331).

Volden et al. (2013) also found that women in the minority are more successful at getting their bills through the “legislative pipeline” than women in the majority. The authors find that “taken together, these findings suggest that the key to female lawmakers' effectiveness lies at the intersection of behavioral traits (i.e. being consensus oriented) and in situational positioning (i.e. being in the minority party, where such traits are necessary and valuable),” (Volden et al. 2013, 338). These findings provide evidence that women may have a greater chance at not only introducing legislation, but then actually getting that legislation further into the policymaking process and bringing it to fruition. These findings are critical to analyzing furtherance of bills in Congress. I frame environmental issues as ones that female legislators are more likely to take action on. If women are more likely to introduce environmental bills, this research then shows that these bills will have a greater chance in becoming policy—thus further substantiating women’s roles and abilities as legislators and bringing us closer to combating climate change.

However, it has also been found that there aren’t substantial sex differences in the way male and female legislators view power and how they should behave to get the job done.

Reingold (1996) measures the different kinds of behaviors typically associated with men and women—“power over” and “power to,” respectively. “Power to” contains more abrasive tactics, associated with command-and-control—“competition is fierce, conflict is inevitable, and manipulation and coercion of others is commonplace” (Reingold 1996 465). Whereas “power to” envisions “a more egalitarian and empowering type of leadership” where information is shared, and decisions are made through mutual cooperation and compromise. (Reingold 1996 465).

Reingold’s findings contradict what we would normally think about the gendered behaviors of males and females. Men weren’t exhibiting more of an affinity to “power over” tactics, and almost all of the legislators interviewed (95%) advocated for at least one “power to” strategy. This provides a greater insight into the way that gender and legislative behavior interact, and shows us that it may not be as gendered as we would assume (although these were interviews about how legislators would act, not analyses of their actual behavior). This research highlights a core quality of my analysis—the fundamental differences between male and female legislators. My theory rests on the assumption that women have different legislative insights, abilities, and skills—which would also influence their affinity to support environmental issues. The characterizations associated with “power over” and “power to” provide my analysis a framework when looking at the different tactics typically associated with and employed by each gender. However, as Reingold’s findings suggest, this gendered nature of policymaking may not be so straightforward. These findings may help contextualize my results, if they don’t clearly demonstrate a difference in sponsorship between men and women on environmental issues, or if the results are more in favor with the male legislators.

When analyzing the effectiveness of female legislators, an implied question arises—are female legislators less effective? (Jeydel & Taylor 2003). The ineffectual hypothesis is based on

the assumption that legislatures are gendered institutions, the particular skills women have aren't as amenable to the policymaking process, and upon the notion of the critical mass theory, that women need to make up at least 15% to have an influence (Jeydel & Taylor 2003). Legislative effectiveness, defined as turning policy preferences into law (Jeydel & Taylor 2003), can be measured by the legislator's sponsorship of important and successful legislation. Two studies analyze the effect that gender has on bill sponsorship.

Jeydel & Taylor (2003) use a "hit rate," the percentage of bills sponsored by a member of Congress that were passed into law, to measure this. Their gender variable doesn't turn out to be statistically significant, but they did find that male legislators in the majority party sponsor twice as many bills that get turned into law than female legislators. While the gender coefficient doesn't reach significance, there are a few cases in their study where it's negative, providing some possible evidence to support the ineffectual hypothesis. However, Jeydel & Taylor conclude that overall, there aren't substantial gender differences in the ability to legislate, and that legislative effectiveness is more of a result of seniority and factors relating to important House institutions (committees, being in the majority party, and leadership positions).

To expand upon these findings, another study was done that measured the sponsorship of women's issues bills, and the speech patterns of House floor comments surrounding them (Gerrity et al. 2004). The authors claim that bill sponsorship and the remarks on the House floor are an indication of a legislator's time and effort. They control for district and party variables—the legislators replacing each other are from the same district and are of the same political party. In cases where female House representatives replaced male representatives, women introduced more women's bills than when men replaced women in their legislative seats—this notion fits generally with what we would surmise would be the outcome, and it aligns with previous

research (Swers 1998). When testing for the floor remarks, women that replace men in their district seats do mention women's issues in their floor remarks more, however, there was no significant difference in the mean number of when men replaced women. In my theory, I discuss that taking into account the speech patterns between men and women on these issues can provide us insight into the introduction of bills. The space that women are provided to speak, and how the legislators speak about these issues may impact female legislators' sense of efficacy, impacting their inclination to take action on an issue (such as introducing a bill). On average, the new men that are coming in are mentioning women's issues more than the men in the old Congress.

While it's encouraging that both men and women are speaking about women's issues in their floor remarks, this doesn't test the nature of the actual remarks. Mendelberg et al. (2014) and Kathlene (1994) demonstrated that men can have a negative impact on the speech patterns of women and curtail their voices from being heard. In sum, these results suggest that women sponsor and speak about women's issue bills more, and this difference is especially significant in districts where women replace men—they exhibit these behaviors more than the men they're replacing. The measure and justification of using bill sponsorship substantiates my dependent variable, which measures the sponsorship of environmental bills by women. A legislator sponsoring a bill that furthers women's interests is "a public statement about how a legislator chooses to devote their time and resources," (Gerrity et al. 2004, 9). Legislators sponsor bills to demonstrate their support for an issue, to exhibit their knowledge and expertise in a specific policy area, and to show that they're working to represent the interests of their constituents (Gerrity et al. 2004).

When analyzing the sponsorship of bills, it's important to factor in the political party of the candidate as this can be a factor in the kinds of issues legislators advocate for and introduce bills on. Past research has shown that women tend to be more liberal, and that political party is the main determinant of liberalness or conservatism (Schwindt-Bayer & Corbetta 2004). Schwindt-Bayer & Corbetta (2004) build upon the theory that a legislator's ideological leaning determines to a great extent the nature of his or her voting decisions. However, through their study, they find that overall, when they control for party and constituency influences, gender is not a determinant of the liberalness of a representative's roll-call voting behavior.

Gender and Climate Change Policy

Women have an impact on the process of climate change policy making. National parliaments where women have a higher degree of representation lead to more stringent climate change policies being made (and therefore lower carbon dioxide emissions) (Mavisakalyan & Tarverdi 2019). In order to measure the role that female parliamentarians have on climate change policies, Mavisakalyan & Tarverdi (2019) use the Climate Laws, Institutions, and Measures Index (CLIMI) from the United Nations Framework Convention on Climate Change (UNFCCC), which is an index that measures the climate change mitigation policies adopted by countries—a more inclusive list rather than just environmental policies or international treaties that other research tends to measure. There is a strong positive relationship between women in parliament and the CLIMI score (Mavisakalyan & Tarverdi 2019). The implications that come from these findings are important when arguing for the necessity for more representation of women—that this could produce changes in climate change actions that countries are trying to achieve. This also relates to Gerrity et al.'s (2004) discussion of the necessity of descriptive representation and how it can lead to substantive policies.

Eragas & York (2012) test the level of gender equality in a country, and how this elevation in status affects the country's level of carbon dioxide emissions. They measure a woman's status through the amount of years women have had the right to vote in that particular country, and women's representation in parliament and ministerial government. This provides a more inclusive insight into the relationship between women and climate change—that while it relates to the representation of women in a legislature and their ability to sponsor and/or pass environmental bills, it also tells us about women's status in general and its effect on climate change—these countries have lower carbon dioxide emissions. This suggests that it's beneficial to a county that's seeking to reduce their carbon footprint to look to ways that they can elevate a woman's status. It also further substantiates that there is a significant relationship between women and climate change—the researchers found that there is a statistically significant relationship between a women's political status and a country's carbon dioxide emissions. In their study, they found that women's status was the only variable to have a negative coefficient and be statistically significant (democracy didn't) showing that where women's status is higher, there are lower levels of carbon dioxide emissions.

One study that is of particular note addresses the issue of gender and environmental issues within the U.S legislating context—within the House of Representatives. This literature differs because most discuss this connection between women and climate change on the global level. In this study, Fredriksson & Wang (2011) rely on the pattern of the roll-call votes on environmental issues within the House. They find that “female legislators are significantly more pro-environment than their male colleagues,” (Fredriksson & Wang 2011, 229). This hits the central focus of my research question and helps to contextualize my hypothesis that there is a relationship between female policymakers and environmental policy.

Fredriksson and Wang (2011) also analyze the role of the voter in a more in-depth way than in other literature. They apply the role of gender to discern whether voters affect or elect environmental policy. For the affect aspect, they look to see if the median voter “affect[s] environmental policy and push it towards the middle,” therefore influencing the incumbent to move their position closer to the median (Fredriksson & Wang 2011, 228). For the elect aspect, the authors seek to find whether the voters elect the policymaker with the closest preferences to them. In both of these cases, they find that when they include gender as a factor, voters don’t push legislators toward the middle, they elect environmental policy. However, they find a bias when gender is ignored, because their findings imply that voters both affect and elect environmental policy (Fredriksson & Wang 2011). These findings relate to the notion of descriptive representation, as they provide deeper insight into the behavior of the voters. Gender has an impact on how voters vote for environmental issues.

There are many implications that can be drawn from this literature and these findings that relate to my analysis. One of the main questions that I seek to answer is what impact does the presence of women in the legislature have on environmental policy. However, to go further, I also want to discern whether to go beyond the mere presence of women, and see what the relationship is between the percent of women in the legislature and environmental policy being introduced. The literature cited above provides context and evidence that both the presence and number of women has an impact on climate change policies that get pushed through, or global environmental treaties that get signed (Mavisakalyan & Tarverdi 2019; Ergas & York 2012; Norgaard & York 2005). There is literature that also proves that women introduce more bills regarding women’s issues than their male counterparts (Gerrity et al. 2004). This may tie into my

framing of environmental issues as ones women are more inclined to address, and will allow me to see if those findings hold true when looking at female sponsorship of environmental bills.

Theory

Women have to deal with climate change in a way that men do not. Part of this is due to the gendered role that women experience. Women's "traditional roles as caregivers, subsistence food producers, water and fuelwood collectors and reproducers of human life," impact the way they're disproportionately affected by climate change (Ergas & York 2012, 965). Women are more likely to engage in activities that subject themselves to the effects of climate change. For example, in countries or societies where women are the main farmers, they will feel the impacts more if there's over flooding, or where women are the ones to collect water, they will have to walk farther to get it if there's a drought. Their daily lives will be impacted more. Norgaard & York (2005) discuss the existence of a link between sexism and environmental degradation. They also discuss the structural elements of society that help to perpetuate the disproportionate effect that women feel from climate change—in the Global North the explanation primarily lies in women serving as the caretakers and caregivers, and in the Global South, the explanation primarily lies in the gendered division of labor—more women now are responsible for growing their food and collecting the water. Also, in the wake of a natural disaster, women tend to stay back to take care of people left behind.

These are activities that climate change has a direct impact on, as these geographic areas experience more severe droughts and massive floods. Women also have differing attitudes towards climate change than men—they have a greater awareness and concern about this issue. Women see this issue as more of a risk, and are more inclined to take action to address it (Mavisakalyan & Taverdi 2019). According to a Pew research study done in 2015 that measured

people's attitudes towards climate change, it found that in seven out of 11 developed countries, "women are more likely to consider climate change a serious problem, be concerned it will harm them personally and say that major lifestyle changes are needed to solve the problem," (Zainulbhai 2015). The study also found that American women are more likely than men to say that climate change is a somewhat or very serious problem, by a margin of 17 percentage points (Zainulbhai 2015).

While a lot of the literature discusses how women are disproportionately affected by climate change in developing countries, the same logic can be applied to women all over. Since women are disproportionately impacted by the effects of climate change, they have a unique perspective to offer. However, women are still underrepresented in legislatures and at the global level. In order to find substantial, and successful ways to mitigate the impacts of climate change, women's voices need to be heard.

On the international level, there are a number of factors that influence the descriptive representation within global conversations and policymaking on climate change issues—such as the UN climate change negotiations (Kruse 2014). Kruse (2014) defines them as "institutional factors, such as the level of democracy and political gender equality, socioeconomic factors, including level of development and gender-equal development, and cultural factors." Kruse (2014) argues that increasing female representation among climate negotiations may enhance the accountability and legitimacy of the global negotiations, as there is a gender-inclusive perspective, thus being more representative of the people overall. Kruse (2014) also argues that including more women may "help parties to recognize the gendered nature of climate change, devise gender-sensitive mitigation and adaptation strategies, and evaluate existing policies with regard to their impact on women." Women's increased representation would also allow them

strengthen their position as a national climate policymaker, by expanding their knowledge, being a part of the debates on climate policy, and establishing networks with others (Kruse 2014).

Swers (1998) shows that women tend to support women's issues bills more than their male counterparts. However, women's issues are typically framed as relating to women's health, education, reproductive rights, etc. In this, I argue that environmental issues are a gendered issue, because women are disproportionately affected, and therefore female legislators will have a unique impact on whether environmental legislation is introduced. Female legislators also exhibit different behaviors than their male counterparts in the way they legislate—they're more collaborative, compromising, and consensus oriented (Volden et al. 2013).

I theorize that the presence (and possibly number of women) will influence the amount of environmental bills that are introduced in the House of Representatives:

H₁: Female legislators are more likely to introduce environmental bills in the House of Representatives than their male counterparts.

H₀: There is no relationship between female legislators and the introduction of environmental bills in the House of Representatives.

Gender impacts the way men and women speak about issues. Mendelberg et al. (2014) showed that the speaking patterns between men and women are different in deliberative settings. Overall, when women are in the minority under majority rule, they get interrupted (negatively) more by men, therefore not allowing their voices and insight to be heard. This relates to women's perceived efficacy—these speech behaviors and patterns influence the way women view themselves and how they are viewed by others. A study done within the committees of state legislatures analyzed the way that committee members, witnesses, chairs, and sponsors spoke to

one another (Kathlene 1994). Kathlene (1994) found that gender played a significant role. Most notably (to my research), the findings suggest that “as the proportion of women increases in a legislative body, men become more verbally aggressive and controlling of the hearing,” (Kathlene 1994).

These speech patterns may influence women’s ability and desire to discuss policy issues. This could have an impact on the ability of female legislators’ voices being heard on environmental issues. I theorize that women offer a different perspective on environmental/climate change issues—if they’re not given the same opportunities to have their voices heard, this would affect their ability to discuss environmental issues and policies that reflect their insights. If women feel like they can’t discuss these issues, it could impact the likelihood of whether they would introduce environmental bills. However, part of a study done by Gerrity et al. (2004) found that women are more likely than men to talk about women’s issues in their floor remarks (when women are replacing men’s House seats from the same political party and district). But, even if they’re more likely to speak about these issues, they still have to be given the space and ability to have their voices heard.

If I find it is the case that having a greater proportion of women in the legislature produces more sponsorship of environmental legislation, this will have major impacts for the argument to include more women in the legislature. Climate change is a pressing issue that is becoming more salient and viewed more as a serious threat (Ergas & York 2012). The need for more female representation around this is more dire than ever. If women have an impact on environmental bills being introduced, then there needs to be more women in the legislature, and they need to be given the space to make their voices and concerns heard.

The connection between descriptive and substantive representation (Gerrity et al. 2004) is also important here. Gerrity et al. (2004) state that if “descriptive representation translates into substantive representation, women’s descriptive under-representation may result in a lack of substantive policy that addresses the unique concerns of women...” (2). I argue that climate change is an issue that especially affects women. If women aren’t being descriptively represented, and if there is a lack of female legislators, then the pressing environmental issues may largely go ignored. This impacts the kind of environmental policy that would be made that could have a positive effect on women, and society as a whole. Women need to be represented by women. Women need to be in the legislature to advocate on their behalf, and influence the kinds of environmental policies that are made.

Research Design

My research question is, what is the effect of female legislators in the House of Representatives on the introduction of environmental bills? I seek to find if there’s a relationship between a legislator’s gender and the number of environmental bills they introduce, and the effect that the percent of females in the legislature will have on the introduction of these bills. Essentially, do women introduce more environmental bills than their male counterparts? In order to test this question, I conduct a quantitative analysis using the congressional bills dataset from the Congressional Bills Project. In it are all of the bills that have been introduced in the House and the Senate between 1947 and 2016. Each bill is coded by subject area and contains variables that are crucial to my analysis. The unit of analysis is member-Congress. The dependent variable is the number of environmental bills introduced by a member in a given Congress. The main independent variables are gender (whether the member is male or female), and the percent of women in the House in a given session. I test whether women on an individual level are having

an impact on the introduction of environmental policy and whether the overall percent of women in the legislature leads to an introduction of environmental bills (i.e. when there's a higher percentage of women, are environmental bills more likely to be introduced). I also control for party, committee leadership, whether the legislator is in the majority party, and the total number of bills introduced in that given Congress. I acknowledge that male legislators introduce more bills than women, so I control for that through my total bills independent variable.

In analyzing party, I test if Democrats or Republicans are more likely to introduce environmental legislation by splitting my regression into two—analyzing Democratic and Republican members separately. I seek to test if there's a relationship between a legislator's leadership role in a committee on one of the environmental issues, and if this will have a positive relationship to the amount of environmental bills being introduced. Having a committee leadership position can provide more salience to an issue and provide the member more clout when introducing the bill. I also test whether the legislator is in the majority party as some of the research discussed above discusses how women make for different lawmakers and tend to contain legislative styles that more closely correlate with the behaviors exhibited by members in the minority party (Volden et al. 2013). This variable also relates to my theory about speech patterns. In deliberative settings, when women are in the minority party under a majority rule, they're more likely to be negatively interrupted and not allow their voice to be heard as much (Mendelberg et al. 2014). This could have an effect on whether female legislators are less inclined to introduce bills, if this finding causes them to exhibit a lower level of political efficacy.

I chose to analyze six different subject areas within the environmental topic. They are: General, Drinking Water Safety, Air Pollution, Global Warming, and Noise Pollution,

Recycling, Species and Forest Protection, and Research and Development¹. I chose these subtopics to provide a wide array that captures multiple issues, and ones that I viewed as relating to the most pertinent environmental issues we're facing right now.

I also chose five issues within the energy topic, as these relate to the environment as well. There's the General energy subtopic, and then I chose two "positive" and two "negative" energy issues to see if there's a difference in the sex of the legislator that introduces each one—i.e. are women more likely to introduce "positive" energy bills and are men more likely to introduce "negative" energy bills. The "positive" energy subtopics are Alternative and Renewable Energy, and Energy Conservation. The "negative" energy subtopics are Natural Gas and Oil (Including Offshore Oil and Gas), and Coal.² I also analyze two issues that are traditionally viewed as women's issues—bills in the Gender and Sexual Orientation Discrimination subtopic (under the main topic of Civil Rights, Minority Issues, and Civil Liberties) and bills in the Family Issues subtopic (under the main topic of Law, Crime, and Family Issues).³ The bills within these topics will allow me to control for "women's issues" bills, to analyze the effect that female legislators have on the introduction of these bills—i.e. since these issues are more traditional women's issues, will women be more likely to introduce these than environmental issues. By testing these traditionally women's issues, it also allows me to test the validity of the method I'm using and the past research on women's support for women's issues—I should get results that show that

¹ Environment: General – 700, 701- Drinking Water Safety, 705- Air Pollution, Global Warming, and Noise Pollution, 707- Recycling, 709- Species and Forest Protection, 798- Research and Development

² Energy: 800- General, 803- Natural Gas and Oil, 805- Coal, 806- Alternative and Renewable Energy, 807- Energy Conservation

³ Civil Rights, Minority Issues, and Civil Liberties: 202- Gender and Sexual Orientation Discrimination; Law, Crime, and Family Issues: 1028- Family Issues

women are more likely to introduce these traditional women's issues, which will also validate the data I'm using.

To test my hypothesis, I use a multivariate regression, to allow me to control for and test each independent variable's effect on the dependent variable. Even further, I will be able to assess the magnitude of each independent variable on the dependent variable, allowing me to see just how much gender (and the other independent variables) impacts the introduction of environmental bills. Doing this kind of regression also allows for the different kinds of variables that I'm testing. The dependent variable (the number of environmental bills introduced by a member) is continuous, and my main independent variables are categorical, dichotomous, and continuous. The equation is: $\text{Bills Introduced} = b_0 + b_1\text{Female} + b_2\text{Percent Female} + b_3\text{Party} + b_4\text{Majority} + b_5\text{Committee Leadership} + b_6\text{Total Bills} + e$, where b_1 is the effect of women (X_1) on the number of environmental bills introduced, holding for the percentage of the legislature that's female (X_2), whether the member is Democratic or Republican (X_3), whether the member is in the majority (X_4), whether the member has an environmental-related committee leadership position (X_5) and the total number of bills introduced in that session (X_6). Using a multivariate regression allows me to account for the variance among the dependent variable, and just one other independent variable (at a time)—which will help to specify the impact of the independent variable on the dependent variable.

A possible weakness to this design is that I'm strictly looking at the introduction of environmental bills, which doesn't fully capture the other factors, besides introduction, that can indicate a member's support for an issue. Another possible weakness is in my choice of which subtopics within the larger environmental issue to analyze. I had to limit my analysis, but my choices of which topics to study can skew some of my findings—perhaps women are more likely

to sponsor land conservation bills (a subtopic that I don't analyze). However, in order to narrow my focus, I had to decide which issues I believed the most inclusive.

I conduct several multivariate regressions within the analysis in order to test the multiple dependent variables under the umbrella of the main dependent variable. I analyze the independent variables against the main dependent variable of the environmental bills as a whole, and against each subtopic within the environmental and energy topic. This allows me to break down the larger environmental issue, and see how each variable, especially gender, affects the introduction of bills within the specific subtopics.

Analysis

In order to test the validity of the dataset, I ran regressions for two traditionally women's issues, i.e. issues that specifically pertain to women and that women are likely to support and/or introduce legislation on. They are Gender and Sexual Orientation Discrimination and Family Issues. Among Democratic female legislators, the coefficients for both female and percent female for these subtopics are positive and statistically significant. This is in-line with what we would presume—that women (and further, Democratic women), on average introduce more bills that relate to traditional women's issues than their male counterparts, and that the percent of females in the Congress would also have a positive impact on the introduction of these bills in the House as a whole. See Table I in the Appendix for the full table of results.

When conducting my analysis, I separated the regressions by party. I did the first set of regressions as $DemD=1$, meaning I only analyzed the bill introductions among the Democratic House members. Then I ran separate regressions where $DemD=0$, meaning I only analyzed the bill introduction among Republican House members. When analyzing my main dependent

variable, the number of bills introduced, I used the coded version that represented the raw number of bills, as compared to the percentage. I did this for every other dependent variable I tested—the categories and subtopics pertaining to the environment and energy—I used the raw number of environment and energy bills introduced, rather than the percentage.

Environmental Category

The first variable tested is the overall environment category—the number of bills introduced that relate to environmental issues as a whole (Table I). While just analyzing the Democratic members, the female variable is negative, but insignificant. The percent female variable is positive, but also insignificant. When controlling for the Republican Party, the female variable is negative (-.139) and significant at $p < .10$, meaning that on average, Republican female members introduce less environmental bills than their male counterparts. Percent female is negative, but not significant.

Table I: Environmental and Pollution Bills

	All Environmental Bills (Dem)		All Environmental Bills (Rep)		Pollution Bills (Dem)		Pollution Bills (Rep)	
	B	P-Value	B	P-Value	B	P-Value	B	P-Value
Female	-.074	.316	-.139	.091	-.037	.047	-.035	.200
Percent Female	.004	.361	-.004	.029	.002	.072	6.595E-5	.958
In majority	.116	.063	.177	.001	.032	.044	.032	.063
Committee Leadership	.104	.182	-.070	.261	-.004	.829	-.056	.006
Total bills	.029	.000	.036	.000	.003	.000	.003	.000
Constant	.062	.400	.051	.193	-.009	.652	.029	.026
N	9538		9538		9538		9538	
R-Square	.002		.154		.029		.014	

When testing the subtopics within the environment category, only a few were significant among both the Democratic and Republican House members. For the Pollution subtopic (Table I), when analyzing the Democratic members, the female variable is negative (-.037) and statistically significant at the $p < .05$ level, meaning that Democratic female legislators on average introduce less bills that strive to fight pollution than their male counterparts. However, the percent female coefficient is positive and statistically significant at the $p < .10$ level. This shows that for every one percent increase in the percent of legislators that are female (and Democratic), there is an expected .002 bill increase in the number of Pollution bills members introduce. When looking at the constant for the introduction of Pollution bills among Republicans, it shows us that when the congressperson is male, not in the majority, and not in committee leadership position, they on average introduce .029 Pollution bills, and it's statistically significant at the $p < .05$ level. For Species & Forest Protection, when analyzing Democratic members, percent female is positive (.004) and statistically significant (.029) at the $p < .05$ level meaning the percent of women in the legislature of that Congress has a positive impact on the number of Species Protection bills members introduce. When controlling for the Republican Party, the percent female variable for Recycling bills is negative and statistically significant (.017) at $p < .05$. This means that for every one percent increase in the percent of legislators that are female (and Republican), there is an expected .001 bill decrease in the number of Recycling bills members introduce. The coefficient for percent (Republican) female within the subtopic of Species & Forest Protection is positive (.004) and significant at the $p < .10$ level. These results can be seen in Table II. The results for the other subtopics within the environment category were insignificant. By looking at the constant for the Species & Forest Protection Bills introduction among the Democratic members, when the congressperson is male, not in the majority, and without a

committee leadership role, they on average introduce -.061 less bills, this is statistically significant at the $p < .05$ level. For this same subtopic within the Republican party, we can see when looking at the constant that when the congressperson is male, not in the majority, and doesn't have a committee leadership position, they on average introduce -.078 less bills, and this is statistically significant at the $p < .001$ level.

Table II: Recycling and Species & Forest Protection Bills

	Recycling Bills (Dem)		Recycling Bills (Rep)		Species & Forest Protection Bills (Dem)		Species & Forest Protection Bills (Rep)	
	B	P-Value	B	P-Value	B	P-Value	B	P-Value
Female	.004	.742	.004	.742	-.002	.960	-.057	.179
Percent Female	.000	.582	.000	.582	.004	.029	.004	.073
In majority	.009	.401	.009	.401	.042	.106	.038	.160
Committee Leadership	-.029	.034	-.029	.034	.048	.138	.044	.175
Total bills	.002	.000	.002	.000	.006	.000	.010	.000
Constant	-.004	.741	.000	.946	-.061	.047	-.078	.000
N	9538		9538		9538		9538	
R-Square	.021		.021		.036		.055	

Energy Category

I also tested the Energy category and select subtopics, as these relate to environmental issues as well. For the overall Energy category, when just testing Democrats, the coefficient for female is negative (-.243) and statistically significant at the $p < .10$ level. However, this may be due to the fact that the Energy category contains subtopics that would classify as anti-environment, such as gas and oil, and coal bills. However, the Energy category sees the most

significant results that are in-line with what we would expect to see among female legislators within the Democratic Party and their bill introduction of bills that address environmental issues. For the Gas & Oil subtopic, both female and percent female are negative and significant. For the female variable, on average, Democratic female legislators introduce .102 less Gas & Oil bills than their male counterparts—this result is statistically significant at the $p < .05$ level. For the percent female variable, for every one percent increase in the percent of legislators that are female (Democrats), there is an expected .004 bill decrease in the number of Gas & Oil bills members introduce—this relationship is statistically significant at the $p < .10$ level. For the introduction of Coal bills, for every one percent increase in the percent of legislators that are female (Democrats), there is an expected .002 bill decrease in the number of Coal bills members introduce—this relationship is statistically significant at the $p < .10$ level. See Table III for these results. Democratic female legislators on average introduce less anti-environment bills than their male counterparts, and when there's an increase in the percent of Democratic female legislators, these anti-environment bills are on average introduced less by members of the Congress as a whole.

Table III: Energy Bills & Gas & Oil Bills

	All Energy Bills (Dem)		All Energy Bills (Rep)		Gas & Oil Bills (Dem)		Gas & Oil Bills (Rep)	
	B	P-Value	B	P-Value	B	P-Value	B	P-Value
Female	-.243	.055	-.060	.460	-.102	.017	-.045	.369
Percent Female	.004	.477	.006	.102	-.004	.093	-.002	.436
In majority	.194	.016	-.143	.005	.023	.525	-.066	.037
Committee Leadership	-.120	.235	-.103	.095	-.153	.001	-.019	.622
Total bills	.049	.000	.041	.000	.016	.000	.016	.000

Constant	-.182	.458	.029	.458	.024	.577	.055	.023
N	9538		9538		9538		9538	
R-Square	.207		.194		.132		.093	

The two pro-environment energy subtopics contain positive and statistically significant coefficients when analyzing the Democrats. For Alternative & Renewable Energy, percent female is positive and significant at the $p < .001$ level—for every one percent increase in the percent of legislators that are female (Democrats), there is an expected .012 bill increase in the number of Alternative & Renewable Energy bills members introduce. For Energy Conservation, percent female is positive (.004) and significant (.006) at the $p < .01$ level—for every one percent increase in the percent of legislators that are female (Democrats), there is an expected .004 bill increase in the number of Energy Conservation bills members introduce. These findings overall prove that the percent of Democratic women in the legislature decreases the introduction of anti-environment bills, and has a positive impact on the number of pro-environmental bills introduced. The results can be seen in Table IV.

Table IV: Coal Bills & Alternative & Renewable Energy Bills

	Coal Bills (Dem)		Coal Bills (Rep)		Alternative & Renewable Energy Bills (Dem)		Alternative & Renewable Energy Bills (Rep)	
	B	P-Value	B	P-Value	B	P-Value	B	P-Value
Female	-.015	.310	.020	.064	-.034	.399	-.042	.164
Percent Female	-.002	.056	8.836E-5	.864	.012	.000	.008	.000
In majority	-.007	.559	-.006	.387	.113	.001	-.069	.000
Committee Leadership	.041	.008	-.011	.182	-.063	.149	-.012	.590
Total bills	.003	.000	.002	.000	.007	.000	.006	.000

Constant	.002	.904	-.008	.132	-.149	.000	-.032	.029
N	9538		9538		9538		9538	
R-Square	.034		.025		.028		.040	

When controlling for the Republican Party, the percent female coefficient for the introduction of energy bills as a whole is positive and approaches significance at the $p < .10$ level. However, because the energy category is both “pro” and “anti” environment, this doesn’t tell us as much as in clear terms whether Republican woman on average introduce more bills that are beneficial to the environment. When analyzing the introduction of Coal bills, the female variable, among Republican members, is positive and significant at the $p < .10$ level—on average, Republican female legislators introduce more Coal bills than their male counterparts. However, for the Alternative & Renewable Energy subtopic, percent female is positive and significant at the $p < .001$ level—for every one percent increase in the percent of legislators that are female (Republicans), there is an expected .008 bill increase in the number of Alternative & Renewable Energy bills members introduce. This means that the greater presence of women in the legislature leads to an increase in the introduction of bills relating to renewable forms of energy—a step towards a more sustainable future. This also illustrates that, in this case, the legislator’s gender is a greater factor, over their party, in the number of pro-environment energy bills introduced. Within the Energy Conservation bills, the coefficient for percent female is also positive and statistically significant at the $p < .05$ —for every one percent increase in the percent of legislators that are female (Republicans), there is an expected .002 bill increase in the number of Energy Conservation bills members introduce. Once again, the presence of Republican women has a positive impact on the number of Energy Conservation bills that are being introduced in a specific legislature. This also validates the point that being female is playing a larger role than

party in the introduction of pro-environment energy bills—the percent female variable among both Democratic and Republican female legislators are positive and significant for the number of pro-environment energy bills introduced. These results can be seen in Table V.

Table V: Energy Conservation Bills

	Energy Conservation Bills (Dem)		Energy Conservation Bills (Rep)	
	B	P-Value	B	P-Value
Female	-.037	.134	.004	.861
Percent Female	.004	.006	.002	.038
In majority	.053	.012	-.023	.118
Committee Leadership	-.064	.017	-.038	.037
Total bills	.007	.000	.006	.000
Constant	-.064	.010	-.017	.126
N	9538		9538	
R-Square	.062		.050	

Conclusion

Overall, the results were not what I totally expected. Mainly, I expected to see that the female variable among Democratic members when testing the overall environment category would have been positive and significant—meaning that on average, Democratic female legislators introduce more environmental bills than their male counterparts. However, there were still important and significant results that suggest that women do have a positive impact on the introduction of environmental bills and pro-environment energy bills that promote environmental sustainability. Most notable are the findings within the Energy subtopics, among both parties.

Percent female was positive, when it made sense to be in the pro-environment energy subtopics, and negative, when it made sense to be in the anti-environment energy subtopics, and significant among every Energy subtopic within the Democratic Party. Percent female, among the Republicans, was positive and significant for both of the pro-environment energy subtopics. These findings demonstrate that the presence of women, among both parties, fosters an environment in the House that promotes the introduction of pro-environment bills. The results aren't as positive and significant on the individual member level (female variable), but overall the percent female variable receives more positive and significant results.

This analysis provides evidence that women do have a positive impact on environmental issues in Congress, and in some cases, introduce more environmental bills than their male counterparts, or their presence leads to an increase in the introduction of environmental bills. These findings provide grounds to continue to advocate for greater female representation in the House of Representatives, as women do make a positive and significant contribution in the fight to solve our environmental issues and promote a more sustainable future.

There are a few ways this analysis could be improved or added upon. By just looking at bill introduction, it doesn't fully capture all of the factors that go into ones support for environmental bills. For example, I didn't measure the level of seniority of the legislator, which could influence the amount of bills a member introduces—they have more political clout and resources that may help them introduce a bill. There are also intangible qualities that I didn't account for, such as the different treatment women may receive from members within Congress because they are women, or perhaps they aren't taken as seriously, which could impact their desire or ability to introduce bills. Women as a group is relatively new to Congress, there

continues to be more male members represented—women are still navigating Congress and work to make their voices heard.

I also would have liked to analyze the speech patterns of the members when discussing environmental issues to see how male legislators speak about these issues compared to female legislators and see if women overall spoke more about environmental issues, or in more positive terms. I also would have tested race, to see if politicians of color, and specifically, female politicians of color, have a different relationship as marginalized groups and communities feel the effects of climate change more because they typically don't have as many resources, especially after the wake of a major natural disaster.

To make for a richer analysis I would need to analyze more deeply the factors that contribute to the introduction of bills (or lack thereof), and possibly look beyond strictly the introduction, and incorporate other ways that legislators can show their support for a bill. However, my analysis shows that for specific environmental or energy issues, female legislators do make a difference. I theorized that women will be more likely to introduce environmental bills because of their unique abilities as legislators, and because of their relationship to and their attitudes towards climate change issues. I believe the results of this analysis support my theory and provide evidence for the ability of female legislators to lead the fight against climate change.

Appendix

Table I: Gender Discrimination Bills & Family Issues

	Gender Discrimination Bills (Dem)	Gender Discrimination Bills (Rep)	Family Issues Bills (Dem)	Family Issues Bills (Rep)
--	---	--	------------------------------	---------------------------------

	B	P-Value	B	P-Value	B	P-Value	B	P-Value
Female	.069	.000	.043	.001	.152	.000	.169	.000
Percent Female	.001	.228	-.001	.029	.004	.005	-.001	.327
In majority	-.201	.203	.002	.855	-.007	.721	.000	.985
Committee Leadership	-.011	.597	-.015	.143	-.118	.000	-.051	.012
Total bills	.005	.000	.001	.000	.006	.000	.008	.000
Constant	-.039	.045	.014	.029	-.014	.556	-.006	.651
N	9538		9538		9538		9538	
R-Square	.060		.012		.070		.079	

Works Cited

- E. Scott Adler and John Wilkerson, Congressional Bills Project: (years of data), NSF 00880066 and 00880061. The views expressed are those of the authors and not the National Science Foundation.
- Ergas, C., & York, R. (2012). Women's status and carbon dioxide emissions: A quantitative cross-national analysis. *Social Science Research*, 41(4), 965–976.
<https://doiorg.libdatabase.newpaltz.edu/10.1016/j.ssresearch.2012.03.008>
- Fredriksson, Per G. & Wang, Le (2011). Sex and environmental policy in the U.S. House of Representatives. *Economic Letters* (113) 228-230.
- Gerrity, J. C., Osborn, T., & Morehouse, J. M. (2004). Women and Representation: A Different View of the District? Conference Papers -- Midwestern Political Science Association, 1–37. [https://doi-org.libdatabase.newpaltz.edu/mpsapass:\[\]proceeding_24997.PDF](https://doi-org.libdatabase.newpaltz.edu/mpsapass:[]proceeding_24997.PDF)
- Jeydel, A., & Taylor, A. (2003). Are Women Legislators Less Effective? Evidence from the U.S. House in the 103rd-105th Congress. *Political Research Quarterly*, 56(1), 19-27.
doi:10.2307/3219880
- Kathlene, L. (1994). Power and Influence in State Legislative Policymaking: The Interaction of Gender and Position in Committee Hearing Debates. *The American Political Science Review*, 88(3), 560-576. doi:10.2307/2944795
- Kruse, J. (2014). Women's representation in the UN climate change negotiations: a quantitative analysis of state delegations, 1995-2011. *International Environmental Agreements: Politics, Law & Economics*, 14(4), 349–370.
<https://doi-org.libdatabase.newpaltz.edu/10.1007/s10784-014-9245-6>

- Mavisakalyan, A., & Tarverdi, Y. (2019). Gender and climate change: Do female parliamentarians make difference? *European Journal of Political Economy*, 56, 151–164.
<https://doi-org.libdatabase.newpaltz.edu/10.1016/j.ejpoleco.2018.08.001>
- Mendelberg, Tali, Christopher F. Karpowitz, and J. Baxter Oliphant. 2014. “Gender Inequality in Deliberation: Unpacking the Black Box of Interaction.” *Perspectives on Politics* 12(1): 18–44.
- Norgaard, K., & York, R. (2005). Gender Equality and State Environmentalism. *Gender and Society*, 19(4), 506-522. Retrieved from
<http://www.jstor.org.libdatabase.newpaltz.edu/stable/30044614>
- Reingold, B. (1996). Conflict and Cooperation: Legislative Strategies and Concepts of Power among Female and Male State Legislators. *The Journal of Politics*, 58(2), 464-485.
Retrieved from <http://www.jstor.org/stable/2960235>
- Schwindt-Bayer, L., & Corbetta, R. (2004). Gender Turnover and Roll-Call Voting in the U.S. House of Representatives. *Legislative Studies Quarterly*, 29(2), 215-229. Retrieved from
<http://www.jstor.org.libdatabase.newpaltz.edu/stable/3598631>
- Swers, M. (1998). Are Women More Likely to Vote for Women's Issue Bills than Their Male Colleagues? *Legislative Studies Quarterly*, 23(3), 435-448. Retrieved from
<http://www.jstor.org.libdatabase.newpaltz.edu/stable/440362>
- Volden, C., Wiseman, A., & Wittmer, D. (2013). When Are Women More Effective Lawmakers Than Men? *American Journal of Political Science*, 57(2), 326-341. Retrieved from
<http://www.jstor.org.libdatabase.newpaltz.edu/stable/23496600>

Zainulbhai, Hani (2015). Women, More Than Men, Say Climate Change Will Harm Them Personally. Pew Research Center.