



# **An investigation into political division at federal level in the USA on anthropogenic climate change**

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## **Abstract**

*Climate change is a global issue and therefore, concerted global efforts are required to address this issue. Despite the USA (United States of America) being one of the biggest historical as well as the current emitter of greenhouse gasses, the USA has been a dragger in global climate negotiations and agreements. In this study, an attempt has been made to explore the division of political parties in the USA at the national level on their stated belief towards anthropogenic climate change. Statements of House of Representatives and Senators given in their respective houses on climate change from 1999 to 2017 have been studied, analyzed and categorized between “Believer” and “Skeptic”. Division of Believer and Skeptic has been studied along Party lines. Based on this study, conclusions have been drawn as to how major political parties are aligned on the issue of anthropogenic or human-induced climate change.*

**Keywords:** Congress, Congressmen, Senator, House of Representative, Greenhouse gas, Anthropogenic climate change.

## **1. Introduction**

Climate change has drawn the greater attention of policymakers, civil societies as well as general public across the globe as it has posed a major threat to the existence of living beings of this planet. Several studies have suggested that global temperature has been rising since the mid-nineteenth century (1850) especially after the industrial revolution. Intergovernmental Panel on Climate Change (IPCC), a United Nations (UN) body for assessing the science related to climate change has stated in its Special Report on Global Warming of 1.5°C released in 2018 that human activities are estimated to have caused approximately 1.0°C of global warming above pre-industrial levels, with a likely range of 0.8°C to 1.2°C, and global warming is likely to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate (IPCC, 2018b). One of the major reasons attributed by the scientists for global warming and in turn climate change is the anthropogenic or human-induced emission of greenhouse gases (GHG) such as carbon dioxide, methane, nitrous oxide, ozone, water vapor, chlorofluorocarbons (CFC), and hydrofluorocarbons (HFC) etc having property of absorbing infrared radiation. As per 2014 Climate Change Synthesis Report by IPCC, warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and oceans have warmed, the amounts of snow and ice have diminished, and sea level has risen. Global warming is likely to cause extreme weather conditions. Changes in many extreme weather and climate events have been closely observed since the 1950s. Some of these changes such as the decrease in cold temperature extremes, an increase in warm temperature extremes, an increase in extreme high sea levels and an increase in the number of heavy precipitation events in a number of regions have been attributed to human influences (IPCC, 2014). Variability in precipitation has caused severe and frequent floods and droughts in varying degree depending on geographical region adversely affecting agriculture, living conditions for human life, sea level rise, and the increase in tropical cyclone etc.<sup>1</sup> The overall impact of climate change on human life is likely to be reflected in changes in agricultural yield, mortality rate, energy expenditures, labour risk, coastal damages, property crimes and violent crimes etc. in varying degree (Hsiang, et al., 2017).

<sup>1</sup> The First Assessment Report of IPCC served as the basis for negotiating the United Nations. Available from [http://ipcc-wg1.ucar.edu/wg1/Report/AR4WG1\\_Print\\_Ch10.pdf](http://ipcc-wg1.ucar.edu/wg1/Report/AR4WG1_Print_Ch10.pdf). [Accessed 6 May 2008]

Use of fossil fuel based energy is the main contributor to the emission of carbon dioxide, which is a major constituent of GHG causing global warming and climate change. Fierce competition for expanding the market through process of globalization and increasing production capacity backed with high technology especially by developed and some of the developing countries, and quest to achieve reasonable level of economic and social development by developing and least developed countries have continuously increased the use of energy, and major content of this increased use of energy comes from fossil fuel that increases GHG emission (Srinivasta and Oyama, 2009). Climate change is a global issue that would affect the entire world in varying degree, irrespective of the fact that who is responsible for degrading the climate more by emitting more GHG. While some regions may be adversely affected, a few regions may likely to get benefited also. However, the overall impact of climate change as projected by experts is likely to be overall detrimental.

USA, historically the highest emitter of GHG having 29 per cent cumulative historical emission of total global emission as of 2009 with 1850 as base year, and second highest emitter at present with highest per capita CO<sub>2</sub> emission of 16.5 Tons/person with annual CO<sub>2</sub> emission of 5.33 billion Tons; a global leader in economy, military and technology is acting as dragger in global negotiations and agreement to address climate change issue, despite the fact that the United States (US) exerted global leadership in adopting and implementing the Montreal Protocol successfully which also addressed similar environmental issues concerning ozone-depleting substances (ODS). And some of these ODS are fluorinated gases like HFC, perfluorocarbons (PFC), and sulphur hexafluoride (SF<sub>6</sub>) that are also GHGs and responsible for causing global warming and climate change. These make one think and understand how environmental politics and more specifically climate politics work and policies are shaped in the US.

A few academic works on the politicization of climate change in the USA have been carried out in the past. (Sprinz and Weiß, 2001) have argued in comparative study of the US, EU (European Union), Germany and India that the United States can be viewed as a weak dragger in international climate negotiations as compared to the EU because of the strong influence of domestic business and expected to negotiate in favours of a “weak treaty” (Sprinz and Weiß, 2001, Chapter 4<sup>2</sup> pp.67-94). (Lahsen, 2005) has argued that the study of the U.S. climate politics reveals complexities and obstacles to the democratized and robust decision making envisioned by the theorists of reflexive modernization by reducing technocracy and elitism. The U.S. public has been subjected to numerous media-driven campaigns to shape understandings of the widely perceived threat of climate change since the early 1990s, citing the case of White House under Goerge W Bush in 2003 that made an effort to control or eliminate discussion of climate change and various environmental problems reviewed by U.S. Environmental Protection Agency (EPA). New York Times also published an article that how the White House officials edited out of the EPA report reference to IPCC and U.S. National Research Council conclusions related to humans' negative effect on the global climate. He further argued that the disproportionate influence of political interests has instigated an important part of these campaigns to undermine attempts at policy action designed to avert or reduce the threat of climate change. (Armitage, 2005) has argued that climate science in the United States has been politicized uniquely, which has caused considerable confusion among the general public regarding the climate change issue. Right-wing politicians and think tanks have used their climate research strategically to deny the current crisis by falsely depicting greenhouse science as uncertain and contradictory, and the corporate media has largely accepted this frame of the issue. This helps the success of the carbon interests and the politicians who work for them leading to lack of political action against global warming in the United States. (Srivastava and Oyama, 2009) has stated that in Kyoto Protocol emission reduction targets are very modest, so most of the countries have sooner or later accepted the target except the US. (Giddens, 2009)<sup>3</sup> has stated that well organized powerful industrial lobbies in the US played a major role in influencing Bush administration towards efforts to take action against global warming and managed to block or dismember legislation regarded as a threat to fossil fuel interests. Based on the analysis of the data from the Gallup Organization's annual environment poll through telephone interview covering years 2001 to 2010, (McCright and Dunlap, 2011) have argued that Liberals and Democrats are more likely to report beliefs consistent with the scientific consensus and express personal concern about global warming than their conservatives and Republican counterparts. Further, they have argued that the effects of educational attainment and self-reported understanding on global warming belief and concern are positive for liberals and Democrats, but are weaker or negative for conservatives and Republicans. They have also reported that significant ideological and partisan polarization has occurred on the issue of climate change over the past decade. (Fisher, et al., 2013), using network analysis of discussions about the issue of climate change in 109<sup>th</sup> and 110<sup>th</sup> sessions within the US Congress have argued that consensus formed around the economic implications of regulating greenhouse gases and the policy instrument should do the regulating, and further argued that a polarized ideological actor space in the 109<sup>th</sup> Congress transforms into a more consensual actor landscape in the 110<sup>th</sup> Congress. (Hein and Jenkins, 2016) has argued that a major reason why the United States lacks national global warming policies is because of the opposition from the inner circle of the corporate elite. Despite significant disagreements within the corporate elite about global warming policy, the inner circle has provided the core

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2 Chapter 4: Domestic Politics and Global Climate Policy.

3 Anthony Giddens, Politics of Climate Change: Chapter 5: A Return to Planning?, Polity Press, 65 Bridge Street Cambridge CB2 1 URi UK, p.119.

corporate leadership opposing these policies as represented by their significant presence on the boards of the leading anti-global warming policy think tanks in the post-Kyoto period. This opposition was expressed in different ways ranging from complete denial to opposition to cap-and-trade and other international regulatory policies, such as the Kyoto Protocol and similar treaties. (Dunlap, et al., 2016) has studied the political division on climate change in the US based on the data of annual Gallop Organization Poll on environment and climate change conducted till 2016 telephonically with adult American people and based on analysis of this data. They have argued that partition polarization in the U.S. has further widened between Democrat and Republican over the years.

This paper aims to explore as to how politicians in the US and more specifically members of the US Congress perceive anthropogenic climate change and its impact on human lives as their perception on anthropogenic climate change will have bearing on the US acting as a dragger or pusher in international negotiations and agreements on climate change. Since the decisions on such international issues taken by a country are normally decided at the highest level in the government, accordingly such decisions in the US are taken in the US Congress. Here, the views of members of both the houses of Congress i.e. House of Representative and Senate play an important role in the decision on such issues like climate change. In order to address issues relating to climate change, it is therefore, essential that members of the US Congress be first convinced and admit publicly that climate change is taking place due to human activities and this is going to adversely affect the lives of human beings in long run and then make their commitment to addressing climate change.

The research methodology used in this paper is a mix of statistical analysis as well as deductive reasoning applied to 107 samples of statements of congressmen and senators given in their respective houses of the US Congress i.e. House of Representatives and Senate from 1999 to 2017.<sup>4</sup> These statements have been taken randomly from Congressional Record: *Proceedings and Debate of the US Congress* available on the US Congress website [www.congress.gov](http://www.congress.gov) as it appeared on the website of the US Congress. However, some of the records were dropped where there is no clear view on human-induced or anthropogenic climate change.

Based on their statements, they have been categorized between “Believer” and “Skeptic”. Though, normally a member of House of Representative is called a congressman and member of Senate is called a senator. However, in this study, both members of the House of Representative and Senate have been taken collectively and are termed as a congressman as both are part of the US Congress.

Those members of the US Congress who have unequivocally stated in their respective house that climate change is taking place and primarily caused by human activities and its adverse impact on human lives is there in long run or support/advocate action to be taken for mitigation and/or adaptation to climate change or support legislation, Bill or negotiation to combat climate change have been considered as “Believer”. Those member of Congress who are out rightly rejecting climate change or rejecting the role of human activities in causing climate change or stating it as natural phenomenon or proposing more studies to establish it without taking any action to combat climate change have been considered as "Skeptic". Their statements are also analyzed in terms of party lines,

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4. Statements of House of Representatives given on the date(s) are shown in bracket subsequent to their names which has been retrieved from CONGRESSIONAL RECORD-SENATE. They are Jay Robert Inslee(14.03.2001, 16.11.2004); Earl Blumenauer(19.06.2001, 21.04.2009); Wen Thomas Gilchrest(10.03.2004); Dennis Kucinich(27.10.2005); Russ Dew Holt Jr(06.12.2007); James L Oberstar(12.03.2008); Bob Filner(08.04.2008); Charles B Rangel(09.04.2008, 11.06.2008); Raul Manuel Grijalva(30.04.2009, 19.03.2013, 18.04.2013); Joe Linius Barton(08.12.2009); Lois Capps(15.12.2009, 15.02.2013, 21.05.2013, 09.12.2015); Paul David Tonko(10.12.2009, 23.06.2015); John Joseph Hall(04.05.2010); Mike Quigley(19.07.2012, 10.06.2015, 17.09.2015, 22.10.2015, 04.11.2015, 03.02.2016, 24.05.2016, 07.07.2016); Henry Arnold Waxman(15.02.2013, 09.04.2013, 02.08.2013); Emanuel Cleaver II(15.02.2013); Doris Okada Matsui(15.02.2013, 20.09.2013, 03.12.2013); James Patrick Moran(12.03.2013, 24.04.2013); Hank Jhonson(17.05.2013, 27.09.2013, 09.01.2014, 27.01.2014); Jerry Mc Nerney(05.06.2013, 26.06.2013, 30.09.2013); Ben Ray Luján(18.07.2013); Peter Francis Welch(19.07.2013); Barbara Jean Lee(02.08.2013, 30.10.2013); Edwin George Perlmutter(29.10.2013); Susan Davis(29.10.2013); Julia Andrews Brownley(02.04.2014); Mike Honda(28.04.2014); Ted W Lieu(26.03.2015); Allen Stuart Lowenthal(12.05.2015); Douglas Lamalfa(01.12.2015); Suzan DelBene(07.12.2015); Lamar Smith(07.12.2015, 16.05.2016, 24.05.2016); Derek Kilmer(09.12.2015); Reid Ribble(14.12.2015); Elise Stefanik(16.03.2017); Bradley Schneider(30.03.2017); Ileana Ros-Lehtinen(05.04.2017); Frank Joseph Pallone(05.04.2017); Watson Coleman(22.06.2017). Available from <https://www.congress.gov/congressional-record> [Accessed from 19 July 2017 to 21 May 2018].

Statements of Senators given on the date(s) are shown in the bracket subsequent to their names which has been retrieved from CONGRESSIONAL RECORD-HOUSE. They are Mike Enzi(26.10.1999); Frank Huges Murkowski(16.06.2000); Larry Edwin Craig(12.10.2000); Joseph Isadore Lieberman(26.04.2001); Robert Carlyle Byrd(04.05.2001); John Sidney McCain(03.08.2001, 19.03.2009); Theodore Fulton Stevens Sr(24.07.2002); James Mountain Inhofe(28.07.2003, 11.10.2004); Harry Mason Reid(30.10.2003, 15.07.2015, 30.11.2015); Jesse Francis Bingaman Jr(04.10.2004, 02.08.2007); Russ Feingold(23.05.2006); Norn Coleman(21.05.2007); Susan Margaret Collins(15.06.2007); Sherrod Campbell Brown(21.05.2008); Gordon Harold Smith(05.06.2008); John Randolph Thune(05.06.2008); Nenjamin Louis Cardin(09.12.2009); Allen Stuart Franken(14.12.2011); Barnard Sanders(05.02.2012); Sheldon Whitehouse(29.03.2012, 05.12.2012, 12.12.2012, 19.12.2012, 01.01.2013, 02.02.2015, 17.03.2015, 14.04.2015); Dick Durbin(06.12.2012); Dianne Goldman Berman Feinstein(13.07.2016); Thomas Stewart Udall(08.05.2017); Jeanne Shaheen(08.05.2017); Patrick Leahy(15.06.2017); Ben Cardin(26.09.2017). Available from <https://www.congress.gov/congressional-record> [Accessed from 17 December 2017 to 21 May 2018].

vulnerability to climate change and energy production and energy consumption rankings of the constituencies they represent.

In this paper, Section 2 describes the international activities for identifying and firming up views on global warming and setting agenda for future course of actions to address the same especially by the United Nations (UN). Section 3 investigates the divisions in the US Congress on anthropogenic climate change at the federal level based on party lines, State ranking on production and consumption of energy, and level of vulnerability of states to climate change that the congressmen and senators represent, and process of lawmaking at the federal level that also applies to laws/rules relating to climate change. In Section 4, we have analyzed the arguments of Congressmen and Senators for and against anthropogenic climate change. In Section 5, observations are summarized and conclusions are drawn.

## 2. Global warming and international activities by United Nations

In national and international forums, climate change has become one of the most important topics for discussion and debate being a global issue requiring global attention. The environmental concerns raised in the 1960s by western world led to the United Nations Conference on the Human Environment (UNCHE) in 1972 aimed at addressing the issues concerning the environment and sustainable development that was held in Stockholm where the environment was a major issue at international level (UNEP, 2008). This was the first international forum where climate change also got attention. In the recommendation 79 of report of the UNCHE conference, it was envisaged to monitor global trends in atmospheric constituents and properties on a long-term basis which may be causing changes in meteorological properties, including the climatic changes; and if necessary, it was also envisaged to establish new programmes to understand better the general circulations in the atmosphere and to ascertain the various causes of climatic changes whether these causes are the result of man's activities or natural phenomenon (United Nations, 2018). One of the major outcomes of this conference was the birth of the United Nations Environment Programme (UNEP) intended to serve as a focal point for environmental action and coordination within United Nations (UN) system. The growing concern about global warming and climate change led to the first World Climate Conference in 1979 in Geneva that concluded that anthropogenic carbon dioxide emissions could have a long-term impact on climate (Srinivasta and Oyama, 2009).

Environmental issues received a lot of attention in the last quarter of the twentieth century. Significantly warmer decade of the 1980s, acid rain, ozone depletion, wildlife loss, local pollution, and other environmental problems, and series of scientific conferences bolstered the consensus further that anthropogenic emission of carbon dioxide (CO<sub>2</sub>), a major contributor to inventory of GHG is the main cause of global warming and climate change; and its perceived detrimental impact on human society made climate change a major political issue during 1988 (Paterson and Grubb, 1992).<sup>5</sup>

In response to this issue, Intergovernmental Panel on Climate Change (IPCC) was set up in 1989 by UNEP and WMO (World Meteorological Organization) to address the issues concerning climate change by consolidating the scientific knowledge and proposing an outline of responses. Based on scientific information available, IPCC prepared various reports on all relevant aspects of climate change including its impact. In the United Nations Conference on Environment and Development (UNCED) also known as the Earth Summit held at Rio de Janeiro in 1992 to address interdependence of environment and development, creation of United Nations Framework Convention on Climate Change (UNFCCC), an international environmental treaty was one of the major achievements of UNCED. The main objective of UNFCCC was stabilizing emission of greenhouse gases at a level that could prevent dangerous anthropogenic interference with global climate (UNEP, 2008).<sup>6</sup>

The ultimate objective of the UNFCCC and any related legal instruments that the Conference of the Parties (COP) may adopt is to achieve, in accordance with the relevant provisions of the UNFCCC, the stabilization of the GHG concentrations in the atmosphere at such a level that would prevent dangerous anthropogenic interference with the climate system; and such level is to be achieved within a sufficient time-frame so as to allow ecosystems to adapt naturally to climate change in order to ensure that food production is not threatened and process of economic development could proceed in a sustainable manner (United Nations, 1992).<sup>7</sup>

A series of Conference of Parties (COP) to the UNFCCC are being held since COP1 held at Berlin, Germany in 1995. However, in COP3 held at Kyoto, Japan in 1997, one of the landmark achievements was the adoption of the Kyoto Protocol on 11 December 1997 that entered into force on 16 February 2005. The Kyoto Protocol is an international agreement under the UNFCCC, which commits its Parties by setting internationally binding emission reduction targets. Recognizing the fact that the developed countries are principally responsible for the current as well as historic high levels of GHG emissions in the atmosphere as a result of industrial activities for more than 150 years,

5. It was brought out in this paper that scientific conferences bolstered the consensus that anthropogenic emission of carbon dioxide, a major contributor to inventory of GHG is the main cause for global warming and climate change.

6. Creation of IPCC and UNFCCC and their main objectives are also discussed here.

7. UNFCCC provided a political and legal framework to achieve the stabilization of the GHG concentrations in the atmosphere to prevent dangerous anthropogenic climate system.

the Protocol placed greater responsibilities to reduce emission of GHG on developed nations under the principle of "common but differentiated responsibilities" (United Nations, 2018).<sup>8</sup>

The Kyoto Protocol that was seen as an important first step towards a truly global emission reduction regime to stabilize GHG emissions met a set back when the United States (US), the biggest emitter of GHG at that time did not ratify the protocol, while the same US exerted global leadership to reduce the production and consumption of substances that deplete the Ozone Layer under Montreal Protocol.

The detailed rules for the implementation of the Kyoto Protocol were adopted at COP7 in the 'Marrakech Accords'. Most of the countries in the world eventually agreed to the protocol, but in addition to the USA, some countries like Russia and Australia also initially chose not to ratify the protocol. Following the ratification of the Kyoto Protocol by Russia, the Kyoto Protocol entered into force on 16<sup>th</sup> February 2005. Further, Australia also ratified the protocol after the change of government in December 2007. But, Canada withdrew from the protocol in 2012. The process of negotiations and agreements continued in the series of Conferences of Parties (COPs) under UNFCCC and in COP21 'Paris Agreement' another landmark agreement was adopted on 12<sup>th</sup> December, 2015 which entered into force on 4<sup>th</sup> November 2016 after over 55 countries representing at least 55 per cent of the world's greenhouse gas emission ratified the agreement. Paris Agreement has set a long-term goal of keeping the increase in global average temperature well below 2°C above the pre-industrial level.<sup>9</sup> Considering the past experiences of flip-flop in being committed to Kyoto Protocol by some countries including one of the major emitter like the United States (US) and not achieving the emission reduction targets by many countries in first commitment period of Kyoto Protocol, it has raised doubt in meeting the ambitious target of keeping the increase in global average temperature well below 2°C above pre-industrial level through Paris Agreement. On 1st June, 2017, the US President Donald Trump announced his intention to withdraw the US from the Paris Agreement. This further raises doubt in achieving the target set in the Paris Agreement.

### **3. Investigating the divisions in the Congress in the USA on anthropogenic climate change**

The US is a constitutional federal republic with a presidential form of government. The US consists of 50 states, and each state has its own Legislature called Legislature/General Assembly/Legislative Assembly/General Court/ Senate that makes its own legislation. The three branches of the federal government are Legislature, Executive and Judicial. Congress is the legislative branch of Federal Government that consists of two houses i.e. House of Representative and Senate. There are 435 members of House of Representative and each member of House of Representative is elected for a period of two years and represents a congressional district, and each state sends the different number of House of Representatives based on the population of the state. The U.S. House of Representatives participates in making and passing federal laws as per the Constitution (United States House of Representative, 2018). There are 100 members in the Senate, and two members are from each state for six years. One-third of members of Senate are elected every two years. In addition to legislative and other functions, the U.S. Constitution also gives Senate the power to approve by two-thirds votes the treaties made by the executive branch, and to amend a treaty or adopt the changes made to a treaty (United States Senate, 2018). Thus, the Senate plays a vital role in international negotiations on climate change.

The US Congress is the legislative branch of the federal government and makes laws for the nation. A member of either body of Congress, i.e. the US Senate or the US House of Representative can propose a new law. A proposal for a new law is called a bill. A bill can be introduced in either chamber of Congress by a Senator or Representative who sponsors it. Once a bill is introduced, it is assigned to a committee and members of that committee research, discuss, debate, and make the required changes to the bill. The bill is then put before that chamber to be voted on. If the bill passes one body of Congress, it is then presented to the other body to go through a similar process of research, discussion, debate, make changes if required, and voting. Once both bodies vote to accept a bill, they work out any differences between the two versions. Then both chambers vote on the same exact bill and, if it passes, they present it to the President. The President then considers the bill. The President can approve the bill and sign it into law or veto a bill i.e. not approve. If the President chooses to veto a bill, in most cases Congress can vote to override that veto and the bill becomes a law. However, if the President pocket vetoes a bill after Congress had adjourned, the veto cannot be overridden. The Constitution grants the president 10 days to review a measure passed by Congress. If the president has not signed the bill after 10 days, it becomes law without his signature. However, if Congress adjourns during the 10-days period, the bill does not become law. Federal laws generally apply to people living in the United States and its territories. Federal Court may review these laws and if they think they do not agree with the US Constitution they strike them down (USA.gov, 2018). Thus, Congress plays a vital role in the legislative process. Therefore, for the enactment of any federal law relating to climate change, the

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8. The Kyoto Protocol was the first international agreement under the UNFCCC that had binding emission reduction targets on parties.

9. A long-term goal of keeping the increase in global average temperature well below 2°C above the pre-industrial level was set in Paris Agreement. GOV.UK: Guidance: Climate Change Explained. Available from <https://www.gov.uk/guidance/climate-change-explained>. [Accessed 6 August 2018]

Congress and its members i.e. Members of the House of Representative and Senators both play a vital role. However, any international treaty signed by Executive/President needs to be ratified by the simple majority of the Senate. Thus, Senators play an important role in any international treaties and agreements such as those under UNFCCC.

In this study that aims to investigate the divisions in the US Congress on the anthropogenic climate change, 107 statements of members of Congress belonging to both houses of Congress i.e. House of Representative and Senate relating to climate change given in their respective houses from 1999 to 2017 have been studied. Some of the congressmen and senators have given their statements more than once in their respective house of Congress at different point of time on the issue of anthropogenic climate change, but their each statement has been counted separately as they have generally given some new argument each time to support their views on anthropogenic or human-induced climate change. 16 Democrat and 3 Republican congressmen and senators have participated in debate more than once on the issue of anthropogenic climate change. One Democrat congressman has given statements 8 times while one Republican congressman has given statements 3 times on this issue. Based on their unequivocal stand on anthropogenic climate change, they have been categorized into two categories i.e. “Believer” (BL) and “Skeptic” (SK). The stand of congressmen and senators on being Believer or Skeptic have been studied on party lines as well as on State ranking on production of energy as well as on State ranking on consumption of energy based on Environmental Protection Agency (EPA) report and level of vulnerability of states to climate change that the congressmen and senators represent (U.S. Energy Information Administration, 2018a; U.S. Energy Information Administration, 2018b). The vulnerability of a State has been categorized as non-vulnerable (NV), low vulnerable (LV) and highly vulnerable (HV) based on a published report (Hsiang, et al., 2017). Believers (BL) have been further categorized in BL-NV, BL-LV and BL-HV based on the vulnerability of the constituency/district to climate change they represent. On similar lines, Sceptics(SK) has been also categorized as SK-NV, SK-LV and SK-HV. Based on these data, various graphs have been plotted.

We look at the party-wise distribution of congressmen and senators who put together participating in the debate in Congress on climate change. Their views on anthropogenic climate change are shown in Figure 1, which indicates that 77% of congressmen and senators participating in debate on climate change and having clear views on anthropogenic climate change dominantly belong to Democratic Party, while only 20% of congressmen and senators are from Republican Party participating and expressing their clear view on anthropogenic climate change. We know, as seen in Figure 2, that there has not been a wide gap between total strength of both the parties in both House of Representatives and Senates during the period under study (United States Senate, (2018); United States House of Representatives, (2018)). This implies that congressmen and senators from the Republican Party clearly tend to avoid participating in the debate on anthropogenic climate change.

In Figure 3 we show the party-wise distribution of congressmen and senators, 107 in total, who put together participating in the debate on climate change and expressing their views in more detail. Namely, those congressmen and senators are labelled as Believer (BL) or Skeptic (SK) according to anthropogenic climate change along with the level of vulnerability to climate change of the state they represent, thus they can be categorized by the degree of vulnerability as NV, EV and HV, respectively. Figure 3 shows that all the congressmen and senators belonging to Democratic (DEM) Party, Minnesota Democratic-Farmer-Labor (MDFL) Party and Independent (IND) are believers to climate change. It also shows that 91%, 97 out of 107, of congressmen and senators across the party lines participating in debate, endorse their affirmative view on anthropogenic climate change, while only 9%, 10 out of 107, are skeptical on this view. In Republican (REP) Party, both skeptics and believers exist almost equally among congressmen and senators, wherein 10 congressmen and senators are skeptics and 11 are believers. Republican and Democrat congressmen and senators participating in this debate are representing all levels of vulnerable states to climate change.

Figure 4 shows the triangular graph indicating the shares of three groups regarding as the vulnerability of no vulnerability (NV), low vulnerability (LV) and high vulnerability (HV), respectively. We find that for the DEM, participation in debate on anthropogenic climate change does not show a significant difference among all the three categories of vulnerable constituencies/district representing from congressmen and senators as they are 30%, 42% and 28%, for HV, LV and NV, respectively, as seen in their corresponding location near the center of the triangle. For the REP, LV is almost the same as 20% for both SK and BL, however, for the NV, BL is much higher as 55% than SK as 20% while for HV, SK is much higher as 60% than BL as 28%. Thus, participation in debate on anthropogenic climate change is generally higher from LV and HV states than from NV. Namely, in particular, for the DEM difference is not so significant. For the REP, SK is slightly higher for LV and much higher for HV than BL while oppositely BL is much higher than SK for NV.

Figure 5 shows that 70%, i.e. 7 out of 10, of SKs represent the states having very high energy production ranking states ranging from 1 to 10. This shows that it is very likely that skeptic congressmen and senators will be representing those states which have high energy production ranking. On the other hand, BLs are distributed more widely for all levels of energy production states.

Figure 6 shows that 70%, i.e. 7 out of 10, of SKs represent the states having very high energy consumption ranking states ranging from 1 to 10. This shows that it is very likely that skeptic congressmen and senators will be representing those states which have high energy consumption ranking. On the other hand, it is interesting that BLs

are distributed among rather less energy consumption ranking states. In particular, almost half, i.e. 50 out of 97, are in the least energy consumption ranking states ranging from 41 to 50.

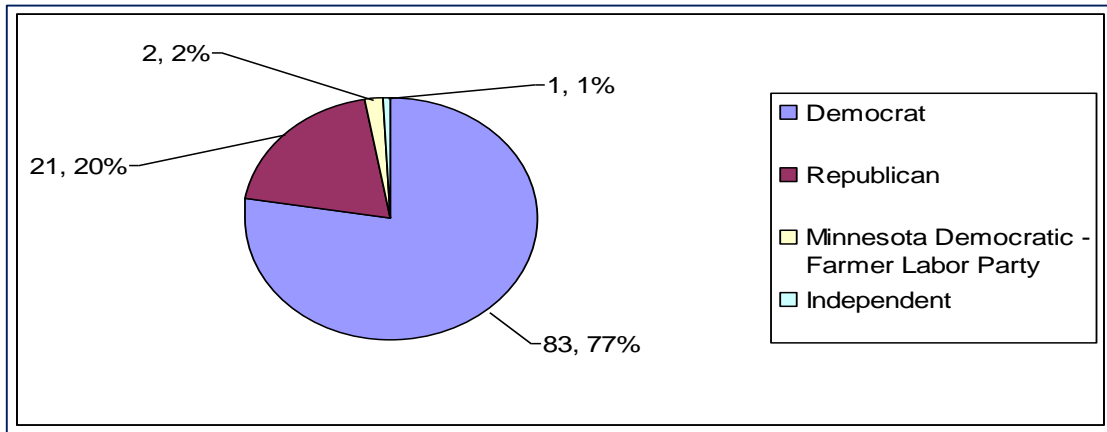


Figure 1. Party-wise distribution of members of the US Congress participating in the debate in the Congress with a clear view on anthropogenic climate change

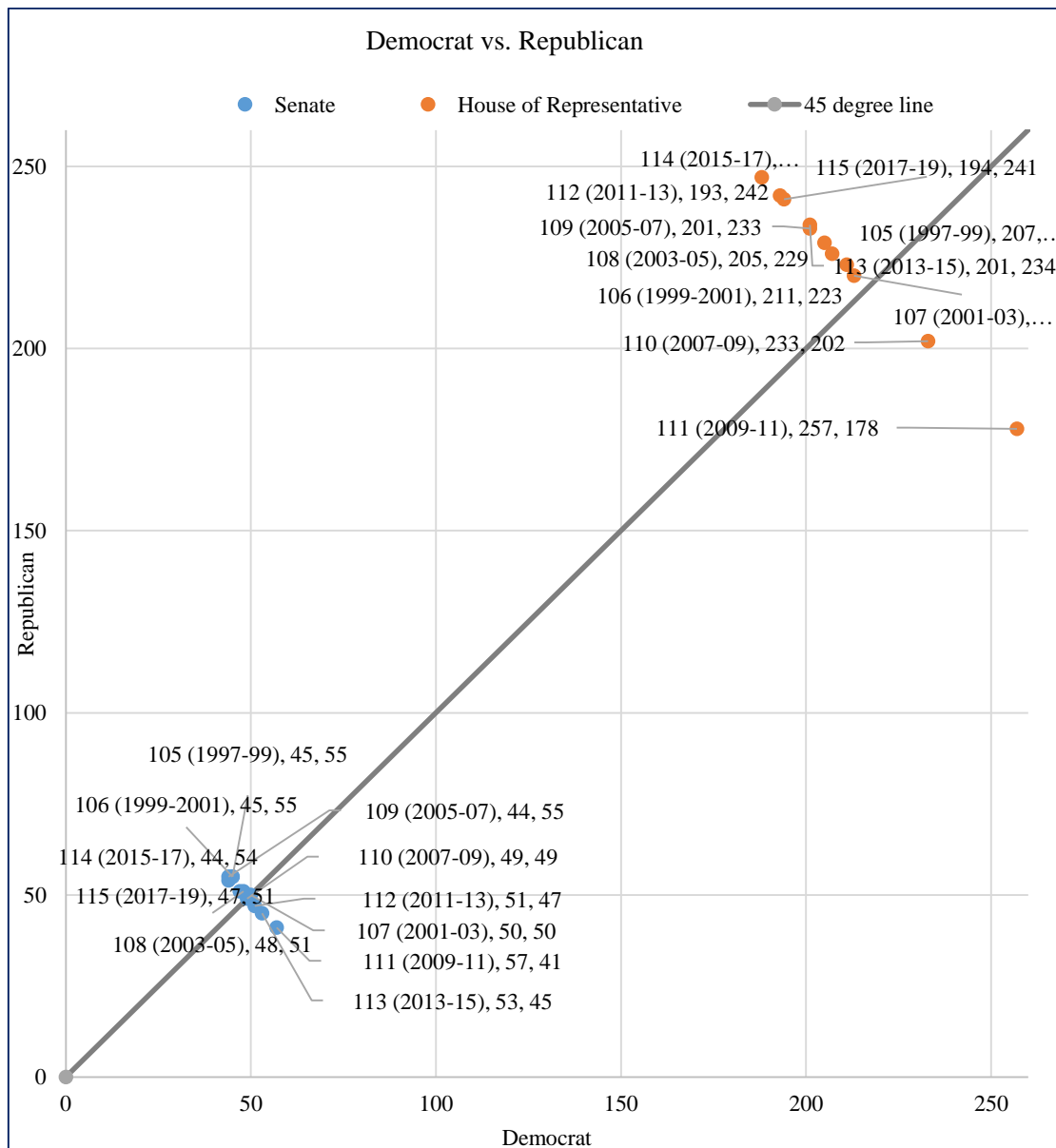


Figure 2. Congress (Year)-wise distribution of Republican and Democrat Congressmen/Senators in the House of Representatives and Senate.

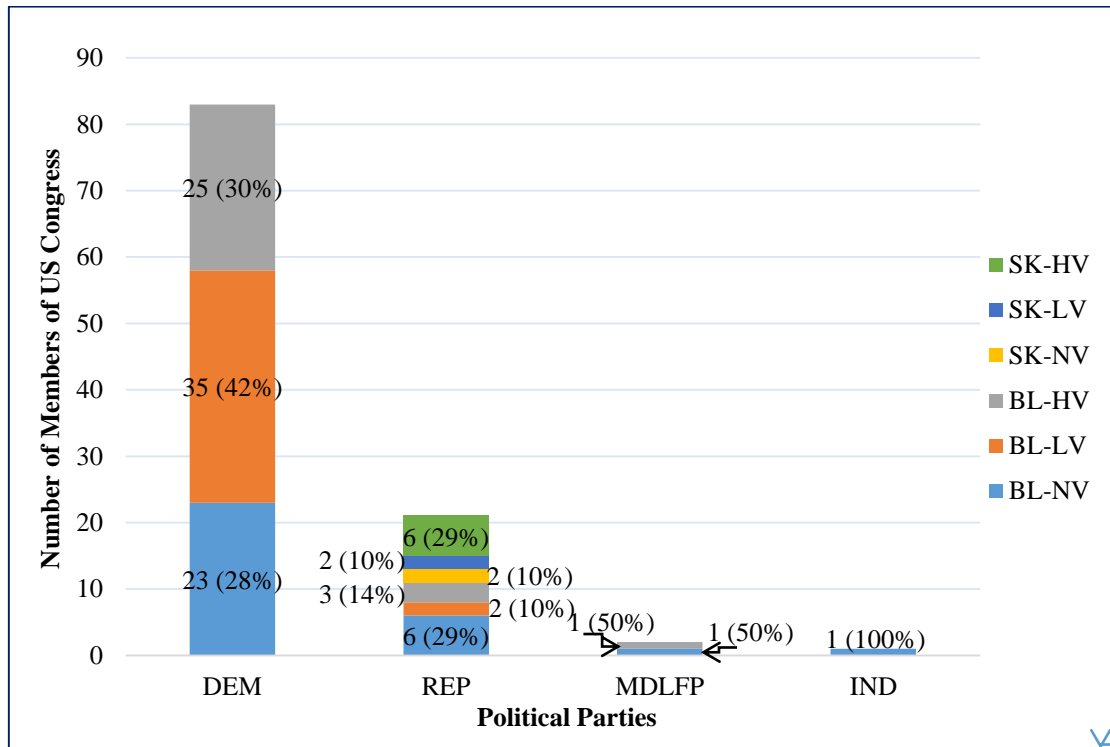


Figure 3. Party-wise distribution of members of the US Congress on their view on anthropogenic climate change along with the level of vulnerability of their constituency.

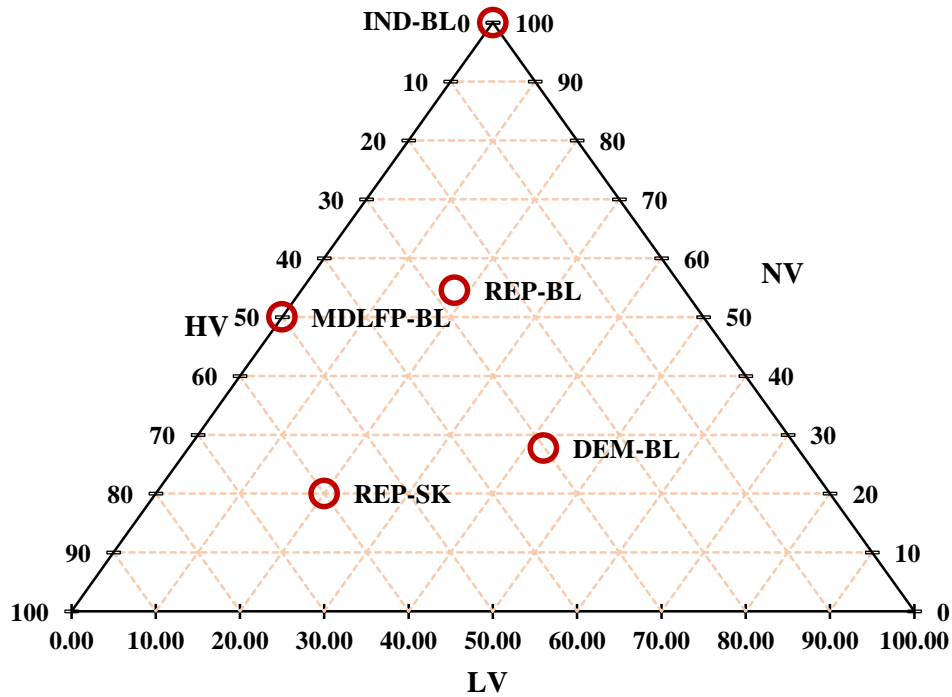


Figure 4. Vulnerability-wise distribution of the Congress belonging to various parties with their views on anthropogenic climate change



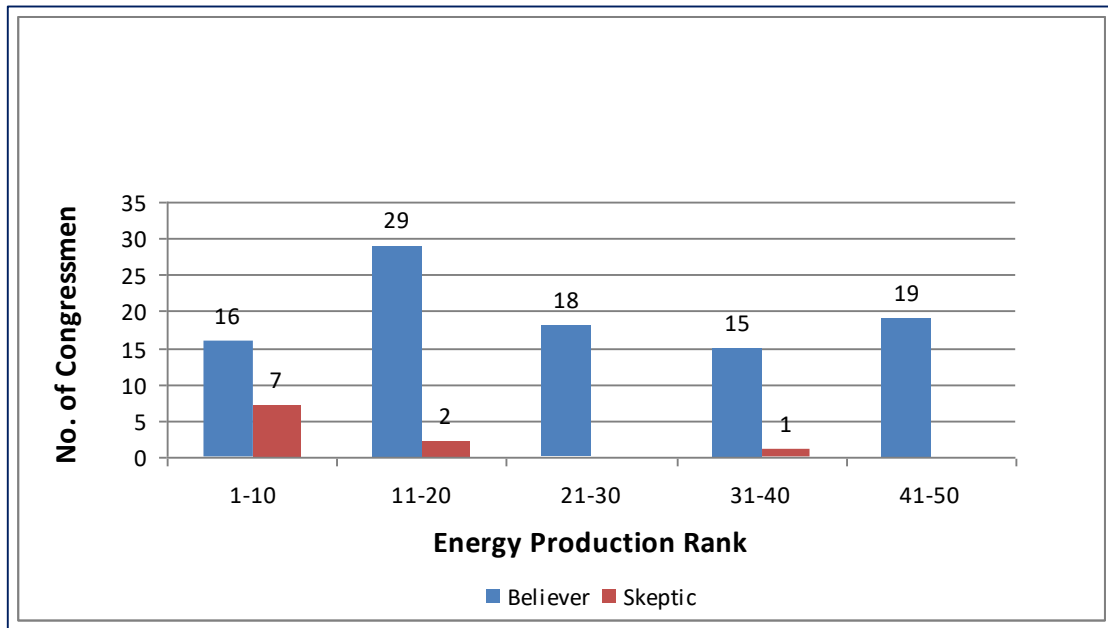


Figure 5. Distribution of members of the US Congress on anthropogenic climate change on the basis of energy production ranking of the states

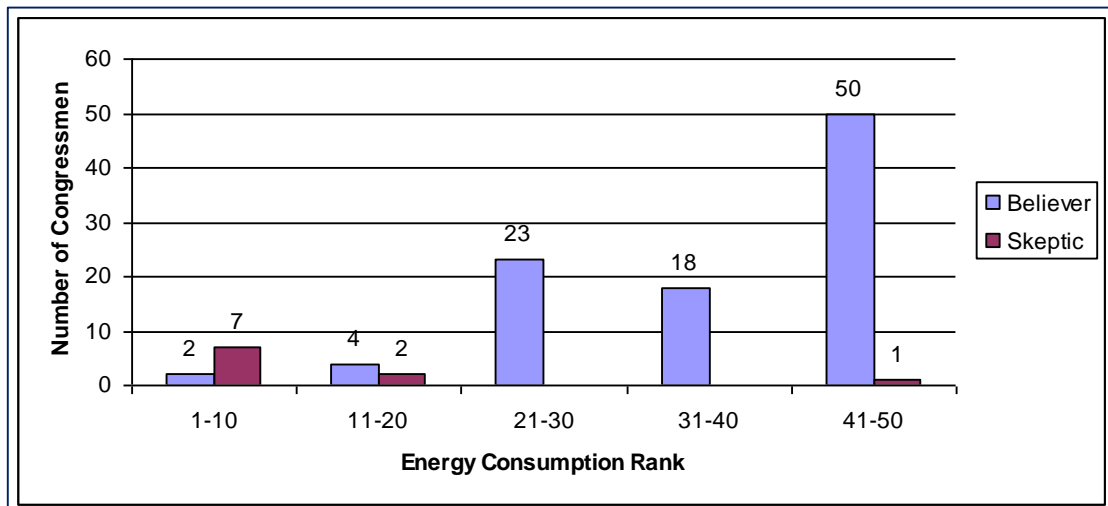


Figure 6. Distribution of members of the US Congress on anthropogenic climate change on the basis of energy consumption ranking of the states

#### 4. Arguments of Congressmen for and against anthropogenic climate change

Synthesis report of IPCC states that human influence on the climate system is clear, and recent anthropogenic emissions of GHG are the highest in history. Recent climate changes have had widespread impacts both on human and natural systems. As per 2014 Synthesis reports of IPCC, warming of the climate system is unequivocal, and many of the observed changes since the 1950s are unprecedented over decades to millennia. Both the atmosphere and oceans have warmed, the amounts of snow and ice have diminished, and the sea level has risen. Anthropogenic emissions of GHG have increased since the pre-industrial era, largely driven by the economy as well as population, and thus the emission of GHG are now higher than ever. This has led to an unprecedented high level of atmospheric concentrations of GHG such as carbon dioxide, methane, and nitrous oxide in the last 800,000 years. Their effects, together with those of other anthropogenic drivers, have been detected throughout the climate system and are extremely likely to have been the dominant cause of the warming observed since the mid-20th century (IPCC, 2018a).

The above views of Synthesis reports of IPCC are endorsed by a majority of congressmen and senators who believe in anthropogenic climate change. However, skeptics do not subscribe above views. The skeptics and believers to anthropogenic climate change give their own statements and arguments against or in favour of views expressed in the Synthesis Report. Clear statements and arguments of Congressmen skeptics or believers to anthropogenic climate change have been codified and arranged in the tabular form for the purpose of analysis.

#### 4.1 Skeptics

The statements of 7 skeptic congressmen given on 10 occasions against anthropogenic climate change have been codified as given in Table 1.

Name of Congressman and Party	Denial or doubt on human activities responsible for climate change	Doubts on climate models	Doubt/deny the impact of climate change on weather	Deny/doubt the adverse/disastrous impact of climate change	Endorses Global warming is hoax/conspiracy	Climate action is a threat to the Economy	No burden on other countries like China
Mike Enzi(R)	Y	-	-	-	-	Y	-
Frank Murko -wski (R)	-	Y	-	-	-	-	-
James Mountain Inhofe (R)	Y	-	-	Y	Y	Y	-
John Randolph Thune (R)	Y	-	-	-	-	Y	Y
Joe Linus Barton (R)	Y	Y	-	-	-	-	-
Douglas LaMalfa (R)	Y	Y	-	-	-	Y	-
Lamar Smith (R)	Y	-	Y	Y	-	Y	-
Frequency	6	3	1	2	1	5	1

**Table1. Distribution of points of arguments (skeptics)**

Occasions against anthropogenic climate change have been explained as follows:

1. Denial or doubt on human activities responsible for climate change: They deny or doubt that human activities are responsible or only responsible for climate change and ask for more peer review of documents on climate change. Their main arguments for denial or doubt over anthropogenic climate change is periodic natural variations in the planetary movements in terms of orbital path of Earth, and inclination angle of earth's axis; and possibility of variability in solar radiations and urban heat island etc.
2. Doubts on climate models: Skeptics also doubt on the credibility of the model used for predicting climate change due to non-consideration of effects of ocean oscillations, possibility of indirect solar variability, and other natural effects in the climate model.
3. Doubt/deny the impact of climate change on weather: They argue that there is no convincing scientific evidence that human release of greenhouse gasses such as carbon dioxide, methane etc is causing or will cause a catastrophic heating of the Earth's atmosphere and disruption of the Earth's climate in the foreseeable future leading to events such as temperature rise, hurricane, tornado, drought, and flood etc
4. Deny/doubt the adverse/disastrous impact of climate change: They argue that the impact of climate change will not be so much adverse or disastrous as it is being projected.
5. Endorses Global warming is hoax/conspiracy: They argue that global warming is the greatest hoax perpetrated on the American people as there is no compelling or convincing scientific evidence that anthropogenic greenhouse gas emissions is causing or will cause a catastrophic heating of the Earth's atmosphere disrupting its climate in the foreseeable future.
6. Climate action is a threat to the economy: They argue that rural economies are threatened by policies based on scare tactics developed by professional global warming special interest activists and the politicians. Moreover, American economy is largely fossil fuels dependent and moving away from fossil fuel may move some companies to Europe and other places.
7. No burden on other countries like China: Citing the example of China they argue that China has exceeded US in terms of CO<sub>2</sub> emissions and China's CO<sub>2</sub> emissions will not stop because of the US investment in climate change mitigation such as implementation of a cap-and-trade program. So the US will not gain environmental benefit and is likely to have some profound and devastating impacts on the US economy.

As shown in Figure 3 in Section 3 above, about 48 percent of the Republican congressmen are skeptic to anthropogenic climate change. The main arguments given by the congressmen skeptic to anthropogenic climate change are that they deny or doubt that human activities are responsible or only responsible for climate change quoting statements of particular scientists or their non-academic articles published in newspapers to substantiate their argument or ask for more peer review of documents on climate change and consider climate action is threat to U.S. economy. Other major reasons to be skeptic to anthropogenic climate change given by skeptic congressmen and senators are doubts about climate models predicting climate change and denial or doubt over the adverse or disastrous impact of climate change. The other reasons given by skeptic congressmen are doubt or denial on impact of climate change on weather events such as temperature rise, hurricane, tornado, drought, and flood etc; considers global warming is hoax or conspiracy, and there is no burden on other developing countries like China.

**4.2 Believer**

The statements of 19 believer congressmen given on 25 occasions in support of anthropogenic climate change have been codified as given in Table 2.

Name of Congressman and Party	Endorses man-made/fossil-fuel led climate change	Endorses documentary evidence/computer models predicting climate change	Endorses evidence of climate change on weather events	Endorses adverse/disastrou s impact of climate change	Alleges conspirac y of hiding facts about climate change	Endo rses clima te policy and action	Recommen ds use of clean-energy, renewable and energy efficient technology
JosephIsador-eLieberman (D)	Y	-	Y	Y	-	-	-
Robert Carlyle Byrd (D)	Y	-	-	-	-	-	Y
Earl Blumenauer (D)	Y	-	Y	Y	-	Y	-
Theodore Fulton Stevens (R)	-	-	-	Y	-	-	-
Wen Thomas Gilchrest (R)	Y	-	Y	-	-	-	-
Dennis Kucinich (D)	-	-	Y	-	Y	-	-
Norn Coleman (R)	Y	-	Y	Y	-	-	Y
Susan Margaret Collins (R)	-	-	Y	-	-	Y	-
Charles B Rangel (D)	-	-	-	Y	-	-	-
Raul Manuel Grijalva (D)	-	-	Y	Y	-	-	-
John Joseph Hall (D)	-	Y	Y	-	-	-	-
Allen Stuart Franken (MDFLP)	Y	-	-	Y	Y	Y	-
Sheldon Whitehouse (D)	Y	-	Y	-	Y	-	-
Henry Arnold Waxman (D)	-	-	-	Y	Y	-	-
Emanuel Cleaver II (D)	-	-	Y	-	-	-	-
James Patrick Moran (D)	Y	Y	Y	-	-	-	-
Mike Quigley (D)	Y	Y	Y	Y	-	-	-
Dianne Goldman Berman Feinstein (D)	Y	Y	Y	Y	-	-	-
Jeanne Shaheen (D)	-	-	-	Y	-	Y	Y
Frequency	10	4	13	11	4	4	3

**Table2. Distribution of points of arguments (Believers)**

Occasions against anthropogenic climate change have been explained as follows..

1. Endorses man-made/fossil-fuel led climate change: They argue that IPCC reports on climate change is authored by over 700 expert scientists concluded that there is convincing evidence that the planet is in distress due to slow overheating that may rise between 2.5 and 10.4 degrees Fahrenheit during this next 100 years with very serious and disastrous consequences for future generation and other similar reports also endorse the same.

2. Endorses documentary evidence/computer models predicting climate change: They argue that about three thousand international scientists, the National Academy of Science and many other organizations have all agreed through peer-reviewed literature that human is causing the climate change that global warming is real and its impacts are visible in the United States in the past few years in the form of storms, massive floods, infestation of spruce bark beetles etc. They also endorse that weather patterns are changing consistent with computer model predicting climate change.

3. Endorses evidence of climate change on weather events: They endorse storm Allison and hurricane such as Rita, Wilma etc, flood, temperature rise, melting glaciers and ocean acidification etc as evidence of climate change.
4. Endorses adverse/disastrous impact of climate change: They argue that temperature rise, flood and drought will have an adverse impact on agriculture and food production, human health, bio-diversity, migration, security and conflict.
5. Alleges conspiracy of hiding facts about climate change: They allege spreading misinformation and hiding facts about climate change by interest groups such as conservative groups and fossil fuel lobby.
6. Endorses climate policy and action: They argue that as per the Brookings report, a well-designed climate legislation would increase investment, increase employment, and significantly increase America's gross domestic product, and therefore, pro-climate behaviour and action will be better for the US economy.
7. Recommends use of clean-energy, renewable and energy efficient technology: they argue that the transition to energy efficiency, renewable and clean energy technologies presents one of the biggest economic opportunities to this century to create jobs and build wealth in this country.

As evident from Figure 3 in Section 3 above that about 91 percent of congressmen are believer to anthropogenic climate change. The main arguments given by the congressmen and senators who are believer to anthropogenic climate change are endorsement of pieces of evidence of climate change on weather events such as storm, flood, temperature rise, melting glaciers and ocean acidification etc; endorsement of adverse or disastrous impact of climate change on food, human health, biodiversity, migration, security and conflict; and endorsement of man-made or fossil-fuel led climate change and endorsement of IPCC and other similar reports on climate change that relates climate change to human activities. Other reasons to be a believer to anthropogenic climate change given by believer congressmen and senators are an endorsement of documentary evidence and computer models predicting climate change. They also allege conspiracy of spreading misinformation or hiding the facts about climate change by interest groups especially fossil fuel lobby that also reflects in Figure 5 and Figure 6 in Section 3 where more skeptics are from high energy producing and consuming states, and endorse climate policy and action for the betterment of economy; and recommends of use of clean-energy, renewable and energy efficient technologies.

## **5. Summary and conclusions**

Climate change is an alarming global issue that is posing a big threat to human and other animal and plant species on this planet. This problem can be addressed by reducing the emission of GHG globally through concerted efforts of all the nations as per their capability and level of development. However, this requires a big commitment and appropriate actions from current and historically big GHG emitter countries such as the US which is currently the second highest emitter and historically biggest emitter of GHG. In order to achieve GHG emission at the national level in the US, an appropriate policy is required to be put in place which further requires political will and consensus among major political parties on this issue.

In the case of the United States, there are two major political parties i.e. Democratic and Republican. There have not been wide variations in numerical strengths of these two major political parties in the Senate and House of Representatives during the period from 105<sup>th</sup> Congress (1997-1999) to 115<sup>th</sup> Congress (2017-2019). However, during this period, 77 per cent of Congressmen participating in the debate on climate change having clear views on anthropogenic climate change belong to Democratic Party, while only 20 per cent congressmen from Republican Party participate and express their view on anthropogenic climate change. This shows Republican congressmen avoids participation in debate on issues of anthropogenic climate change. However, congressmen representing all the three types of vulnerable states i.e. NV, LV, and HV are almost equally participating in the debate that shows congressmen representing even a state having low vulnerability to climate change are equally concerned about climate change issue irrespective of their view in favour or against. Across the party lines, 91 per cent of the congressmen believe in the anthropogenic climate change, and 9 per cent are skeptical to climate change. All the skeptics to anthropogenic climate change are congressmen belonging to the Republican Party. Among Republicans, 47.62 per cent of congressmen are skeptics of anthropogenic climate change. Contrary to believe, congressmen from high vulnerability area to climate change are over three times more skeptics to climate change compared to each LV and NV. Further scrutiny reveals that there are 35 statements from congressmen representing high vulnerable states, out of which 9 are from Republicans, 25 from Democrat and 1 from Minnesota Democratic-Farmer-Labor Party. And 6 out of 9 Republican participants were from states having energy-production ranking of 1 and 5, and remaining 3 Republican participants who are believers are from low energy-production states. This shows that Republican congressmen from top energy producing states are more skeptical to anthropogenic climate change compared to congressmen representing low energy-producing states that may be due to the influence of fossil fuel lobby. Since all the skeptics in this study belong to the Republican Party, therefore, a nexus appears between the some of the

congressmen from Republican Party and fossil fuel lobby. 70 per cent of skeptics are from high energy-producing states and all are Republicans. Similarly, 70 per cent of skeptics are from high energy consuming states and all are Republicans. This indicates that skeptics who are all Republicans are protecting the interest of both the high energy producing as well as high energy consuming states. The interest of high energy producing state is to save their fossil fuel industry, while the interest of high energy consuming state is to avoid extra expenditure in use of renewable energy and energy efficiency technologies in order to cut the emission of GHG.

As far as statements and arguments on anthropogenic or human-induced climate change are concerned, skeptics deny or doubt that human activities are responsible or only responsible for climate change and also ask for more peer review of documents on climate change. Moreover, they also argue or doubt that climate action is a threat to the US economy. Other major reasons to be skeptic to anthropogenic climate change given by skeptic congressmen are doubts about climate models predicting climate change and denial or doubt over the adverse or disastrous impact of climate change on human life. The other reasons given by skeptic congressmen are doubt or denial on impact of climate change on weather events such as temperature rise, hurricane, tornado, drought, and flood etc; and consider that global warming is hoax or conspiracy; and there is no burden on other developing countries like China.

The main statements or arguments given by the congressmen who are believer to anthropogenic climate are endorsement of pieces of evidence of climate change on weather events such as storm, flood, temperature rise, melting glaciers and ocean acidification etc; endorsement of adverse or disastrous impact of climate change on food shortage, human health, biodiversity, migration, security and conflict; and endorsement of man-made or fossil-fuel led climate change and endorsement of IPCC and other similar reports on climate change that relates climate change to human activities and its impact on human being. Other reasons given by congressmen believer to anthropogenic climate change are an endorsement of documentary evidence and computer models predicting climate change. Believers also allege conspiracy of spreading misinformation or hiding the facts about climate change by interest groups, especially by fossil fuel industry lobby. They also endorse that climate policy and action will be better for the US economy; and recommends the use of clean energy, renewable and energy efficient technologies to create economic benefit to the US.

At the global level, if climate change is to be effectively addressed, the US need not only to be brought on board in fighting climate change, but should also be encouraged to take a lead, being one of the biggest emitters of GHG, economic powerhouse and technology leader. There appears to be a pact between fossil fuel lobby and quite a good number of Republican congressmen on issues of anthropogenic climate change who reject this theory due to short-term economic interest. However, in democracies, people's voices are the most potent and their representatives must listen to people in order to get re-elected. Here, civil societies, academia, and intellectuals can play an important role in educating the people about the truth of climate change so that they can put pressure on politicians to admit the realities of anthropogenic climate change and take suitable actions to mitigate climate change through policy, plans and actions to reduce emission of GHG by use of renewable energy and energy efficient technology.

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## Works Citation

- Armitage, K.C., 2005. State of Denial: The United States and the Politics of Global Warming, *Globalizations: The Globalization of Environmental Crisis*, December 2005, Vol. 2, No. 3, pp. 417–427
- CONGRESSIONAL RECORD-HOUSE, 2018. Available from <https://www.congress.gov/congressional-record> [Accessed from 17 December 2017 to 21 May 2018].
- CONGRESSIONAL RECORD-SENATE, 2018. Available from <https://www.congress.gov/congressional-record> [Accessed from 19 July 2017 to 21 May 2018].
- Dunlap, R.E. McCright, A.M. and Yarosh, J.H., 2016. The Political Divide on Climate Change: Partisan Polarization Widens in the U.S. *Journal of Environment: Science and Policy for Sustainable Development*, Volume 58, 2016-Issue 5, 25 Aug 2016, pp. 4-23 downloaded from <https://www.tandfonline.com/doi/full/10.1080/00139157.2016.1208995?scroll=top&needAccess=true> [Accessed on 02.08.2016]
- Fisher, D.R., Leifeld, P. and Iwaki, Y., 2013. Mapping the ideological networks of American climate politics, *Climatic Change* 116: 523. Available from <https://doi.org/10.1007/s10584-012-0512-7>[Accessed 14 August 2018]
- Giddens, A., 2009. *Politics of Climate Change*, Policy Press, 65 Bridge Street Cambridge CB2 1 URi UK.
- GOV.UK, 2018. *Guidance: Climate Change Explained*. Available from <https://www.gov.uk/guidance/climate-change-explained>. [Accessed 6 August 2018]
- Hein, J.E. and Jenkins, J.C., 2016. Why does the United States lack a global warming policy? The corporate inner circle versus public interest sector elites, *Environmental Politics*. Accessed on 05.02.2019 through <http://dx.doi.org/10.1080/09644016.2016.1244966>
- History, Art and Archives, 2018. *United States House of Representatives: Party Division of the House of Representatives*. Available from <http://history.house.gov/Institution/Party-Divisions/Party-Divisions/> [Accessed 13 August 2018]
- Hsiang, S., Kopp, R., Rising, J.A.J., Delgado, M., Mohan, Rasmussen, S.J.D., Muir-Wood, R., Wilson, P., Oppenheimer, M., Larsen, K. and Houser, T., 2017. Estimating economic damage from climate change in the United States, *Science* Vol. 356, Issue 6345, pp. 1362-1369, 30th June 2017. Available from <http://science.sciencemag.org/> [Accessed 26 November 2017]
- Intergovernmental Panel on Climate Change (IPCC), 2007. “Global Climate Projections” in *Climate Change 2007: The Physical Science Basis, Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, Cambridge University Press, Cambridge.
- Intergovernmental Panel on Climate Change (IPCC), 2014. *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151p.
- Intergovernmental Panel on Climate Change (IPCC), 2018a. *Climate Change 2014: Synthesis Report: Summary for Policymakers*. Available from [https://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5\\_SYR\\_FINAL\\_SPM.pdf](https://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf) [Accessed 12 August 2018]
- Intergovernmental Panel on Climate Change (IPCC), 2018b. *Special Report on Global Warming of 1.5°C: Summary for Policymakers*, 2018. Available from [http://www.ipcc.ch/pdf/special-reports/sr15/sr15\\_spm\\_final.pdf](http://www.ipcc.ch/pdf/special-reports/sr15/sr15_spm_final.pdf) [Accessed on 21/11/2018]
- Lahsen, M., 2005. *Technocracy, Democracy, and U.S. Climate Politics: The Need for Demarcations, Science, Technology, and Human Values*, Vol. 30, No. 1, Special Issue: Demarcation Socialized: Constructing Boundaries and Recognizing Difference (Winter, 2005), pp. 137-169 Published by: Sage Publications, Inc. Stable. Accessed on 19-07-2017 from <http://www.jstor.org/stable/1558016>

- McCright, A.M. and Dunlap, R.E. 2011. THE POLITICIZATION OF CLIMATE CHANGE AND POLARIZATION IN THE AMERICAN PUBLIC'S VIEWS OF GLOBAL WARMING, 2001-2010, *The Sociological Quarterly*, Vol. 52, No. 2 (spring 2011), pp. 155-194, Wiley on behalf of the Midwest Sociological Society. Accessed on 19-07-2017 from <http://www.jstor.org/stable/23027550>
- Paterson, M. and Grubb, M., 1992. "The International Politics of Climate Change, *International Affairs*", Royal Institute of International Affairs 1944-, Vol. 68 No.2, (Apr. 1992) pp. 293-310. Available from <http://www.jstor.org/stable/2623216> . [Accessed 7 April 2008]
- Sprinz, D.F. and Weiß, M., 2001. *International Relations and Global Climate Change*, edited by Urs Luterbacher and Detlef F. Sprinz, MIT Press, 2001.
- Srivastava, D.C. and Oyama, T. (2009) Evaluating the emission reduction targets in UNFCCC Kyoto Protocol by applying primary energy data analysis", *Journal of Asian Public Policy*, Vol.2.No. 1, March 2009, 36-56
- United Nations, 1992. UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE UNITED NATIONS. Available from [https://unfccc.int/files/essential\\_background/background\\_publications\\_htmlpdf/application/pdf/conveng.pdf](https://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/conveng.pdf). [Accessed 15 February 2018]
- United Nations Environment Programme (UNEP), 2008. GEO-3: Global Environment Outlook, Integrating Environment and Development: 1972 to 2002. Available from <http://www.unep.org/GEO/geo3/pdfs/Chapter1.pdf>. [Accessed 6 May 2008]
- United Nations, 2018. "Report of the United Nations Conference on the Human Environment", Stockholm, 5-16 June 1972. Available from <http://www.un-documents.net/aconf48-14r1.pdf> [Accessed 13 February 2018]
- United Nations Environment Programme (UNEP), 2008. GEO-3: Global Environment Outlook, Integrating Environment and Development: 1972 to 2002 . Available from <http://www.unep.org/GEO/geo3/pdfs/Chapter1.pdf>. [Accessed 6 May 2008]
- United Nations, 2018. Climate Change. Available from [http://unfccc.int/kyoto\\_protocol/items/2830.php](http://unfccc.int/kyoto_protocol/items/2830.php). [Accessed 8 March 2018]
- U.S. Energy Information Administration, 2018. Rankings: Total Energy Consumed Per Capita, 2015 (Trillion BTU) . Available from <https://www.eia.gov/state/rankings/#/series/12>. [Accessed 27 February 2018]
- U.S. Energy Information Administration, 2018a. Rankings: Total Energy Production, 2015 (Trillion BTU). Available from <https://www.eia.gov/state/rankings/#/series/101> [Accessed 27 February 2018]
- U.S. Energy Information Administration, 2018b. Rankings: Total Energy Production, 2015 (Trillion BTU). Available from <https://www.eia.gov/state/rankings/#/series/101> [Accessed 27 February 2018]
- United States House of Representative, 2018. House explained, loaded on 11/06/2018 from <https://www.house.gov/the-house-explained> [Accessed 11 June 2018]
- United States House of Representatives, 2018. History, Art and Archives, Party Division of the House of Representatives. Available from <http://history.house.gov/Institution/Party-Divisions/Party-Divisions/> [Accessed 13 August 2018]
- United States Senate, 2018. Powers and Procedures, loaded on 11/06/2018 from <https://www.senate.gov/history/powers.htm> [Accessed 11 June 2018]
- United States Senate, 2018. Party Division. Available from [https://www.senate.gov/pagelayout/history/one\\_item\\_and\\_teasers/partydiv.htm](https://www.senate.gov/pagelayout/history/one_item_and_teasers/partydiv.htm) [Accessed 13 August 2018]
- USA.gov, 2018. How Laws Are Made and How to Research Them. Available from <https://www.usa.gov/how-laws-are-made>, loaded on 12/06/2018 [Accessed 12 June 2018]