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Much has been written on the conflicting range of domestic interests that have driven the politics of climate change in the US, and on the potential implications of the US shale gas revolution for US energy and climate outlook. Less analysed is the long term impact of extreme weather events on US public perceptions of climate change. With such extreme events becoming more prevalent, the question arises whether extreme weather could help re-shape US politics and policies on climate change. This paper

discusses the political implications of extreme weather events in the US, and the associated public opinion changes. It highlights the challenges confronting the US environmental community in putting in place comprehensive climate policies, and explores how a higher level of awareness on the cost of preparedness and responses presents opportunities to reshape the public narrative around climate change and to mobilise grassroots constituencies in undertaking climate action.

New Drivers of US Climate Action? The Politics of Extreme Weather and Adaptation

Bernice Lee and
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The Politics of Extreme Weather and Adaptation

Bernice Lee and Diarmuid Torney*

United States Climate change Public opinion Climate policy

Introduction

The conflicting range of domestic interests that have driven the politics of climate change in the United States (US) is well documented, as is US reluctance to engage fully with the global climate regime (Falkner 2005, Depledge 2005). The fractured agendas on energy security and climate change have frustrated the efforts of many US leaders in putting forward economy-wide plans to reduce greenhouse gas emissions, the implications of which extend beyond US borders (Bartosiewicz and Miley 2013, Pooley 2010, Skocpol 2013). Congressional reluctance in ratifying prospective international legal instruments on climate change has been one of the principal factors constraining progress at the international level.

Even though the two presidential candidates in 2008 agreed on the need for rapid climate action, a bipartisan mandate did not ensue. In 2010 efforts to push comprehensive legislation to reduce carbon pollution through the cap-and-trade pricing system collapsed in Congress. The first administration of President Barack Obama resorted to pursuing the climate agenda largely through executive actions. These included tightening fuel efficiency standards for new cars, supporting the development of wind and solar power through grants, tax incentives and loan guarantees, and taking the first steps to limit emissions through the Environmental Protection Agency (EPA) under the Clean Air Act (Weiss 2013, Kelly 2013).

Although climate change hardly featured in the 2012 presidential election – nor was it mentioned in the televised debates – President Obama devoted significant attention to the issue in his second inauguration speech in 2013. Promising to “respond to the threat of climate change, knowing that the failure to do so would betray our children and future generations”, President Obama made a clear link to extreme weather events, arguing that “[s]ome may still deny the overwhelming judgment of science, but none can avoid the devastating impact of raging fires and crippling drought and more powerful storms” (White House 2013). As the world looks to the second Obama term for renewed engagement on global climate action, several new factors have emerged to challenge status quo thinking.

** Bernice Lee is Research Director for Energy, Environment and Resource Governance at Chatham House, London. Diarmuid Torney is a Transatlantic Post-Doctoral Fellow in International Relations at Chatham House.*

Much has been written on the potential implications of the US shale gas revolution for US energy and climate outlook (Ebinger, Massy and Avasarala 2012, Hyland et al. 2013, Medlock, Jaffe and Hartley 2011, Skone 2011, Stevens 2012, Ratner et al. 2013). Increased production of domestic unconventional fossil fuels is indeed offering the US some assurances of physical access to energy. Looking to 2020 and beyond, the trend is for diminishing imports of oil and growing surpluses of gas for the US (Mitchell 2013). This new energy context is presenting both opportunities and challenges for US climate activists.

Less analysed in the public domain is the long term impact of extreme weather on US public perceptions of climate change. Extreme weather events are becoming more common, and their frequency is predicted to rise in the coming decades. Around the world, the international community has yet to comprehend fully the potential disruptions that these and other environmental changes will bring to the global economy (Paskal 2010, Lee et al. 2012). US observers are increasingly asking in recent months if extreme weather after the summer drought and “super storm” Sandy will bring new impetus to US discussions on climate change and the implications for future US international engagement on climate change.

To date, there has also been scant analysis on the interplay between the mitigation and the adaptation agendas in the US, and how the evolution of the adaptation issue – triggered by debates on disaster preparedness – may contribute to a shift in the US climate policy in the medium term. This analytical omission is not unique to the US. Adaptation has historically been cast as the poor relative of mitigation in climate change policy-making, especially in the more advanced economies. It was even characterised as a taboo by some scholars in the 1990s, fearing admission to the necessity of adapting to climate change may dampen what has been seen as the action-oriented agenda related to mitigation. Though there has been higher uptake of the adaptation agenda in international negotiations since 2004, concrete translation into specific policy remains limited beyond financing.

Notwithstanding the dominance of carbon politics in US climate debates, adaptation has slowly climbed the policy agenda under the Obama administration. An Interagency Climate Change Adaptation Task Force was set up in 2009. Federal departments and agencies have also been developing adaptation plans and strategies to safeguard natural resources as well as working with local communities to build resilience. The demonstrable engagement of the national security community has also ignited interests in climate resilience, as has the manifested vulnerability of the US to extreme weather and changing climate patterns.

This paper discusses the political implications of extreme weather events in the US, and the associated public opinion changes and explores how a higher level of awareness on the cost of preparedness and responses presents opportunities to reshape the public narrative around climate change and to mobilise grassroots constituencies.

1. Recognising Climate Vulnerabilities

1.1 Extreme Weather and Its Costs

In recent years, the frequency of “high impact, low probability” extreme weather events has increasingly been described as the “new normal” (Lee, Preston and Green 2012, Weiss and Weidman 2012). “super storm” Sandy – an iconic event – impacted several north-eastern states in late October 2012, resulting in at least 147 direct

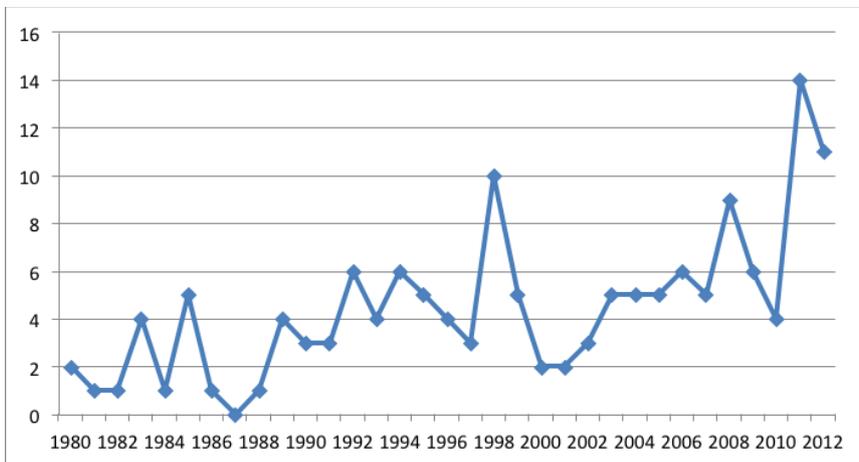
deaths. While estimates for the final cost of Sandy will not come in for some time, preliminary damage estimates are close to 50 billion dollars (Blake et al. 2013). Others put the cost for New York and New Jersey alone at 71.3 billion dollars (Russ 2012). It also left over eight million homes without electricity (Webley 2012).

Also in 2012, a severe drought – characterized as the most severe since the 1930s – swept through large parts of the US (NCDC 2013). Half of the contiguous US suffered from drought conditions for a majority of 2012, peaking at about 65.5 percent on 25 September. Across the central agricultural states, there was widespread harvest failure for corn, sorghum and soy bean crops. Extensive wildfires also spread across 9.2 million acres of land. Among the worst affected were the Western states, with Colorado bearing the highest cost (NASA 2012).

2012 was also the warmest year on record for the contiguous US (NCDC 2012). The average annual temperature was 3.2°F (1.8°C) above the 20th century average, and was 1°F (0.6°C) warmer than the previous record warm year of 1998. 2011 also saw many temperature and precipitation extremes. Sixteen states had average temperatures among their top ten on record, with Delaware and Texas experiencing highest and second-highest average temperatures on record. Precipitation was highly unequally distributed across the country. 58 percent of the contiguous US was characterised as either “extremely wet” or “extremely dry”, with seven states experiencing their wettest year on record and one state experiencing its driest year on record (NCDC 2012).

The extreme weathers throughout 2012 were not isolated cases. There has been a broadly upward trend in the number of weather/climate events in the US costing more than 1 billion dollars (adjusted to 2012 prices) each year since 1980, with particular spikes in the late 1990s and in 2011-12 (NCDC 2013) (see Figure 1).

• Figure 1 | Number of disasters each year costing more than 1 billion dollars



Source: NCDC 2013.

Although scientists are generally cautious about linking any specific event to climate change, the prevalence of extreme events is projected to increase over time even in the best-case scenario, according to the latest findings (IPCC 2012). The IPCC assessment is that many types of extreme events, including heat waves and heavy precipitation events, have likely become more common globally since 1950. Estimates suggest that the annual economic cost to the US of more severe hurricanes, residential property losses to sea-level rise, and growing water and energy costs, could reach 1.4 percent of GDP by 2025 (Ackerman and Stanton 2008).

1.2 Factoring Climate Risks Into Planning

Even though the first Obama administration was unable to deliver comprehensive climate legislation in his first term, the federal government remains active in analysing climate risks and identifying US vulnerabilities to climate impacts. The administration supported the second National Climate Assessment, which was suspended during the Bush years. This 2009 assessment affirmed that climate-related changes are already occurring in the US, including increases in heavy downpours, rising temperature and sea level, rapidly retreating glaciers, thawing permafrost, lengthening growing seasons, lengthening ice-free seasons in the ocean and on lakes and rivers, earlier snowmelt, and alterations in river flows (Karl, Melillo and Peterson 2009). The report also warned of these and further changes that will impact upon a range of geophysical and social systems in the US including water, agriculture, coasts, and human health, with differing impacts across regions.

These findings were again confirmed in the Third National Climate Assessment, a draft of which was released online for public comment in January 2013 (NCADAC 2013). The draft also points to similar conclusions, and that the frequency of extreme events has increased in recent decades. It also reaffirms that there is “new and stronger evidence that many of these increases are related to human activities”¹

On the positive side, a number of public stakeholders have begun to factor climate risks into their planning processes. Partly due to the legislative lull over climate change and the prevalence of extreme weather events, the perspectives of these stakeholders or constituencies are becoming more visible within the US national debate.

Military and the Defence Community

The past six years saw a steady uptake of climate threats in national security assessments. American military and strategic planners have been active in incorporating climate factors into their threat assessments. This began in 2007 when climate change was described as a “threat multiplier” for instability in some of the most volatile regions of the world, presenting significant US national security challenges (CNA 2007).

The US National Intelligence Council (NIC) – a centre for strategic thinking supported by the sixteen US government agencies that constitute the US intelligence community – completed in 2008 a classified assessment on the threats posed by climate change to US security in the next twenty years by causing political instability, mass movements of refugees, terrorism, or conflicts over water and other resources in specific countries (Earth Institute 2008, Fingar 2008). The 2010 *Quadrennial Defense Review* for the first time identified climate change as a significant shaper of the operating environment, roles, and missions the US military undertakes. It also highlighted climate-related challenges for military installations within the US, particularly its extensive coastal infrastructure, and for civil society (US DoD 2010:84-5).

Meanwhile, the US military is undertaking comprehensive operational assessment of its capabilities to reduce future climate vulnerabilities. The Pentagon has begun, for example, to reduce its dependency on fossil fuels through large-scale investment in biofuels, micro-grids and renewables (Pew Project 2011). The navy is

¹ The draft highlights the impacts of changes in the climate system to water supplies, oceans, biodiversity and natural ecosystems, and assesses the implications for human and physical infrastructure and economic development. Physical infrastructure is already being impacted by sea level rise, storm surge, heavy downpours, and extreme heat. Agriculture is projected to be resilient over the coming decades due to adaptive actions, but by mid-century, yields of major crops are projected to decline as a result of an intensification of temperature increases and precipitation extremes, bringing threats to food security in the US and internationally.

assessing the impacts of melting permafrost in Alaska and droughts in the southeast and southwest on US military installations. Future sea level rise and storm surge will increase the likelihood of inundation of coastal infrastructure, and may limit the availability of overseas bases (US Navy 2010:5). The Strategic Environmental Research and Development Program is also examining the vulnerability of US military installations to sea-level rise (SERDP 2013).²

The NIC's latest quadrennial *Global Trends 2030* report reaffirms the security threats posed by increasing frequency of weather extremes, changes in precipitation patterns, ice shelves and sea levels for the US (US NIC 2012). It points to the worsened outlook for the availability of critical resources including food, water and energy due to climate change, not only for the US but also at a global level. It also warns that rapid climate change could be a "black swan" event causing much more severe impacts than projected in the report's core scenarios.

State-level Responses

Some of the state authorities are beginning to incorporate climate threats into their planning processes. As of December 2012, fifteen states had completed state adaptation plans, and another four were in the process of formulating plans (C2ES 2012). These processes have involved assessing local and state-wide risks resulting from climate change impacts, and strategies to build resilience.

Various states have also implemented policies and measures to increase resilience to specific climate risks. For example, California has implemented building standards which mandate energy and water efficiency savings, in line with the State Adaptation Plan call for a 20 percent reduction in per capita water use. Several states are also attempting to build climate resilience into their urban planning procedures. Maryland's "Building Resilience to Climate Change" policy has established procedures related to facility siting and design, new land investments, habitat restoration, government operations, research and monitoring, resource planning, and advocacy. Maine and Rhode Island have implemented regulations that require planning authorities to take into account projected sea level rise (of 2 and 3-5 feet respectively) when considering new land use applications (Bierbaum et al. 2012).

2. Reframing the Climate Debate: Obstacles and Opportunities

2.1 Lessons Learnt from the Cap-and-Trade Mobilisation

The challenges faced by US stakeholders towards comprehensive action to tackle climate change are well known. These range from significant hurdles in Congress and the absence of a political mandate for President Obama to address climate change, to competition from other priorities in the policy agenda, among others (Kelly 2013).

Notwithstanding these challenges, fuelled in part by extreme weather in 2011/12 and the re-election of President Obama, early 2013 saw an intensification of debates on the strategy for future climate policy battles. A paper commissioned by the Rockefeller Family Fund and written by Harvard political scientist Theda Skocpol,

2. The program is a joint initiative of the DoD, the Department of Energy and the EPA. The installations being studied are: Eglin Air Force Base, Florida; Naval Station Norfolk, Virginia; Marine Corps Base and Camp Lejeune, North Carolina; Naval Base Coronado and Marine Corps Base Camp Pendleton, California. The studies assess impacts of sea level rises of 0.5, 1.0, 1.5, and 2.0 meters.

for example, has sparked a round of lively public reflections on lessons learnt from the failed attempt to push through bipartisan legislation on cap-and-trade during the first Obama administration.

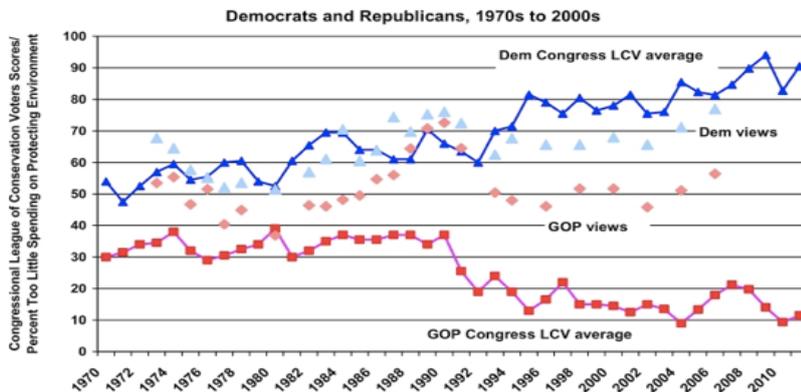
Skocpol's analysis was a thinly veiled critique of the strategy embraced by large DC-based environmental groups. One of her misgivings was that environmental elites were too focused on replicating partial success models (like acid rain and the bipartisan legislative push in the early 2000s) through insider bargaining and consensus-building. Another was that environmental leaders got locked into an asymmetric relationship with big businesses in their vision for a broad coalition. While big businesses continued to hedge both sides, the environmental leaders could not go on the attack due to fear of alienating the Republicans.

One major unforeseen challenge has been the rapid radicalisation of the Republican Party through the Tea Party movement – a significant turning point in the battle for cap-and-trade legislation in late 2000s. As the Tea Party's anti-big business sentiment infiltrated the Republican Party, it rendered the strategy of engaging big businesses embraced by environmental groups to mobilise Republican votes obsolete (Skocpol 2013). She also highlighted the failure of environmental elites, as compared to the healthcare groups, to mobilise needed grassroots constituencies.

Critics of Skocpol focused on four main points. First, no one foresaw the rise of the Tea Party. Second, the failure to mobilise at the grassroots level is connected to the constraints of political timing. Environmental leaders, emboldened by the relative success of previous bipartisan bills that went to Congress in the 2000s, saw the opportunity presented by the 2008 election. This left them with little time to mobilise. Third, Skocpol underplayed, on the one hand, the impact of active climate change denial campaigns funded by the extreme right and the fossil fuel industries and, on the other, the role of the presidential office who had prioritised healthcare over climate change. Last but certainly not least, unlike healthcare, which is a key plank of Democratic values, any climate legislation would require votes from both parties. Mobilising the Democrats alone would not deliver the needed votes in the US Senate (McKibben 2013, Pooley 2013, Romm 2013).

History also points to a recurring hurdle in the form of low Congressional appetite for reducing greenhouse gas emissions due to competitiveness concerns, especially from emerging economies. The Byrd-Hagel *Sense of the Senate* resolution in July 1997 argued that a commitment to cap greenhouse gas emissions could seriously harm the US economy, "including significant job loss, trade disadvantages, increased energy and consumer costs" in the absence of any similar binding commitments on the developing world (US Senate 1997). This sentiment continues to resonate – especially in light of the ferocious anti-green public campaigns that continue to highlight the cost of alternative energy, and the US perception that emerging economies, especially China, are not bearing their commensurate burden in global emissions reduction.

• Figure 2 | Congressional pro-environment scores and citizen support for increased environmental spending



Source: Skocpol 2013:58.

One point that resonates even with Skocpol’s critics was the failure of US environmental groups in engaging with the public on climate change, especially in times of austerity following the 2008 financial crisis. Public communications campaigns on climate action – with the emphasis on green jobs and energy independence – ultimately failed to connect to the electorate. This is in part because the right quickly branded cap-and-trade as a tax-and-spend issue or a big government agenda. The emphasis of environmental groups on bipartisan consensus-building and moving national polls – rather than public mud fights – may have also exacerbated this imbalance in the public discourse on climate change.

2.2 The Shifting Public Opinion on Climate Change

Changing weather patterns, particularly the increasing prevalence of extremes, appear to have helped drive a shift in public opinion around climate change over the past two years. A number of separate opinion polls tracking public attitudes towards climate change over time have reported a broadly similar trend of initially declining beliefs about climate change over the period 2008-10/11, followed by a rebound in the period since:

- *Yale/George Mason Universities’ Climate Change in the American Mind project*: The proportion of Americans who believe that climate change is occurring declined from 71 percent in November 2008 to 57 percent in January 2010, and then rebounded to 70 percent in September 2012. Over the same period, the proportion who believed that climate change – if it is happening – is mostly caused by human activity declined from 57 percent to 47 percent and then rebounded to 54 percent. The survey also found that the proportion either “somewhat” or “very” concerned about climate change declined from 63 percent to 50 percent, and then rebounded to 58 percent over the same period (Leiserowitz et al. 2012a).
- *University of Michigan/Muhlenberg College National Surveys on Energy and Environment*:³ There was a decline in belief that temperatures are rising from 72 percent in autumn 2008 to 52 percent in Spring 2010, followed by a rebound to 67 percent in late Autumn 2012 (Borick and Rabe 2013).⁴ An increasing proportion of this group of respondents reported that they are “very confident” about their views.
- *Pew Research Center*: Following a decline from 71 percent in April 2008 to 57 percent in October 2009 in the proportion believing that the average global temperature has been increasing over recent decades, this fi-

3 This survey was formerly known as the *National Survey of American Public Opinion on Climate Change*. Previous iterations of the survey were published by the Brookings Institution.

4 The question asked was: “Is there solid evidence that the average temperature on earth has been getting warmer over the past four decades?”

gure increased to 67 percent in October 2012 (Pew Research Center 2012). Furthermore, among those who believe the earth is getting warmer, there was a rebound in the proportion believing that this is due to human activity, from 34 percent in October 2010 to 42 percent in 2012.

- *Gallup*: The rebound was less pronounced in Gallup polling data but is still evident. The percentage believing that the effects of climate change have already begun fell from 60 percent in 2008 to 49 percent 2011, but rose again to 52 percent in 2012 (Gallup 2012). A similar rebound is also visible since 2010 on a number of other related questions in the Gallup poll, including the proportion of people who believe that global warming is caused by human activity and the proportion who believe that there is scientific consensus.

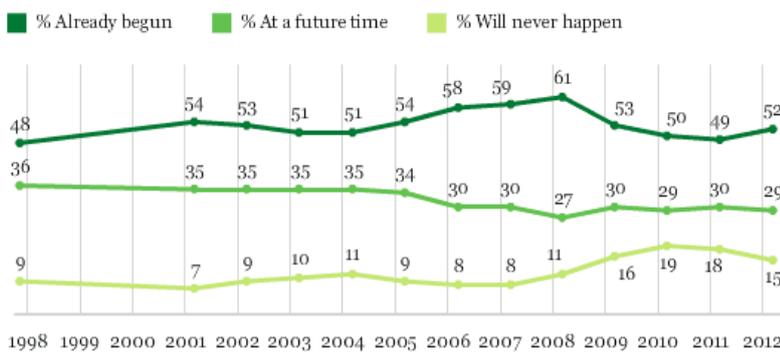
The 2010-12 rebound in public opinion reported in all four polls cannot necessarily be taken as evidence that people’s perceptions of changing weather patterns drives public opinion on climate change, which could potentially be driven by other, unrelated factors. Recent surveys found that a large and growing majority of the US population – 74 percent in August-September 2012 for example – believe that climate change is affecting US weather patterns. In the same study, large majorities agreed either strongly or somewhat that climate change had made specific extreme events worse, including the record temperatures of mid 2012 (73 percent) and the drought in the Great Plains and Midwest in 2012 (71 percent) (Leiserowitz et al. 2012b).

The National Surveys on Energy and Environment found that, among respondents who believed the climate is changing, the proportion identifying “warmer temperatures” or “weather changes” as the primary factor driving their opinions increased significantly between 2010 and 2012, a period characterised by a variety of extreme events (Borick and Rabe 2013).⁵ While there may be additional factors contributing to changes in public opinion on climate change, based on the available evidence, it seems highly probable that individual experiences of unusual weather patterns is at least partly responsible for the shifts identified above.

• **Figure 3 | US public opinion: when will climate change begin to happen?**

Opinion About When Effects of Global Warming Will Happen

Which of the following statements reflects your view of when the effects of global warming will begin to happen -- [they have already begun to happen, they will start happening within a few years, they will start happening within your lifetime, they will not happen within your lifetime, but they will affect future generations, (or) they will never happen]?



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5 In Spring 2010, 30 percent of respondents who believed that temperatures are rising identified “warmer temperatures observed” or “weather changes observed” as the primary factor driving their views, whereas in Fall 2012, this figure was 46 percent.

Another reason to treat public opinion trends with caution is that they may not be sustained over time. Viewing the recent increase in public opinion over a longer time horizon shows that there was a similar increase in the period after Hurricane Katrina (2005-2008), though its causal connection with Katrina remains unclear⁶ (see Figure 3). In any event, that increase was followed by a significant decline. This pattern could repeat itself in the coming years.

Second, despite the public opinion bounce in the period 2010-12, the proportion believing climate change is already occurring remains lower than the levels seen in the 2005-08 period (see Figure 3). The rebound in the 2010-12 Gallup poll was less pronounced – at most a return to roughly 2008 level.

While issues around adaptation and climate resilience have increasingly found their way onto the US public agenda, especially at the state level, it remains challenging to translate these positive public opinion rebounds into concrete support for climate action and grassroots mobilisation. This is not least because a majority of the American public continues to view climate change as a somewhat distant threat.

According to the most recent Yale/George Mason survey in September 2012, less than half of the respondents believed that climate change would cause either a “moderate” or “great deal” of harm for them personally (42 percent), their family (46 percent), and people in their community (48 percent). Significantly higher proportions believed it would harm “people in developing countries” (64 percent), “plant/animal species” (68 percent), and “future generations of people” (68 percent) (Leiserowitz et al. 2012c).

Political polarization around climate change also remains. For the climate sceptics, extreme weather incidents are one-off events, not part of a broader pattern and many commentators do not make explicit links between extreme weather patterns and climate change. Indeed, to admit a broader pattern would concede crucial political ground in the debate over climate science. For those who believe that extreme weather events are not part of a broader pattern, there is no compelling reason to invest in adaptation measures with high up-front costs.

Public opinion about climate change also correlates strongly with political affiliation (see Table 1). Support among Republicans is roughly half that of Democrats when it comes to specific concerns about climate change in terms of their impacts for current and future generations, with Independents closer to Democrats than Republicans. Polling by Gallup in March 2012 identified a similar pattern of systematic polarization (see Table 2). There was even a significant partisan difference in perceptions of weather trends.

• Table 1 | **Concern about climate change by political affiliation, September 2012**

	Republicans	Independents	Democrats
	%	%	%
I am (somewhat or very) worried about global warming.	33	63	73
Global warming will harm people in the US (a moderate amount or a great deal).	35	57	73
Global warming will harm future generations (a moderate amount or a great deal).	46	66	84
Global warming will harm plant or animal species (a moderate amount or a great deal).	46	65	83

Source: Vraga et al. 2013:2.

6 Of the four sets of opinion poll data used in the previous section, only the Gallup poll data began before 2006. The Pew Center commenced polling in 2006, while Brookings and the Yale/George Mason survey began in autumn 2008.

• Table 2 | Beliefs about climate change by political affiliation, March 2012

Summary of Global Warming Views, by Party ID

	National adults	Republicans	Independents	Democrats
	%	%	%	%
Most scientists believe global warming is occurring	58	43	56	75
News reports of seriousness are correct/underestimated	55	31	55	76
Global warming mainly caused by human activities	53	36	55	65
Effects of global warming already begun to happen	52	40	51	65

March 8-11, 2012

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2.3 Connecting to the Public on Adaptation and Resilience

Notwithstanding these caveats, changes in public attitudes on climate change since 2010, driven at least in part by individuals' experiences of unusual weather patterns, could provide fresh opportunities for environmental groups to reframe the climate agenda.

Lessons could also be learnt from the political battles around the US military and alternative energy. Making the connections between climate change and risks to US national security has not been easy, despite the proliferation of assessments and analysis on future climate threats (CNA 2007, US NIC 2008, US DoD 2010, US Navy 2010, US NIC 2012). This is partly because national security is traditionally regarded as the purview of the Republican agenda; and the alternative energy strategies and investments pursued by the military have regularly been dismissed by Congressional Republicans as political favours for the clean energy lobbies. Other factors, including the active lobbying of powerful carbon intensive industries, also played a role, to which we will turn later.

Ultimately, the US military only took concrete steps to promote operational use of alternative energy once many headlines had linked fuel or water supply convoys to deaths of soldiers in Afghanistan and Iraq and these threats were translated into specific costs in both financial and casualty terms (Deloitte 2009).⁷ Saving money and bringing more soldiers home became the rallying points for specific interventions, not climate change. A greener force is not only leaner; it is safer too (Zaffos 2012).

One critical challenge is whether the environmental community could capitalise on the upward swing in pro-climate action sentiments and translate it into grassroots mobilisation and meaningful votes down the line by building awareness of the high cost of preparedness and responses to climate change impacts. Even though the president will likely resort again to executive authority to pursue the climate agenda in his second term – as a split Congress is unlikely to favour imminent moves towards comprehensive climate action – it is important to

⁷ Attacks on fuel resupply convoys were reported to account for more than one-third of the US Army casualties in Afghanistan in 2007.

enhance and step up public engagement. To do so would require investments in the following areas.

First, it is critical to ensure that all the data on costs of disasters and adaptation are robust, and are communicated in a meaningful manner to the electorates. Worldwide, insured claims paid for weather catastrophes average 50 billion dollars per year, and have more than doubled each decade since the 1980s adjusted for inflation (Mills 2012). In the US, total estimated insured losses in 2011 from extreme weather events were 34.7 billion dollars (Munich Re 2012), while for 2012 losses were at least 56.9 billion dollars (Munich Re 2013), including the biggest loss in US agricultural insurance history. Both the 2011 and 2012 figures are significantly above the 2000-2011 average of 27 billion dollars.

In the recent past, IPCC data on disaster costs had been a rallying force for climate sceptics (who question the link between higher costs and higher frequency). These groups will likely cry foul again should the debate on these costs and preparedness continue to feature in the public domain. In any case scaremongering rarely withstands the test of time and short attention spans. Further, making too explicit a link between current extreme events and future climate change could also be counter-productive. The key is to use these numbers to communicate how this will translate into current and future costs.

Therefore, stakeholders and analysts must prepare far more detailed and concrete breakdown of the costs of adapting to a world threatened by dangerous climate change. In many respects, the public debate on costs has been dominated by attacks on the costs of alternative energy. Rebalancing this debate with the clear and present cost of adaptation is an important first step, an exercise that is being undertaken by various groups and analysts today (Ackerman and Stanton 2008, McHale and Leurig 2012, Davenport 2013, Paskal 2010, Union of Concerned Scientists 2009). Concrete areas for further investigation, for example, could include assessing and communicating:

- Current and future tax burden and/or insurance costs due to the costs of climate damages to infrastructure (especially along flooded and eroding coastlines);
- The cost of weather-proofing residential and office buildings to a higher standard;
- Costs of falling agricultural outputs and water scarcity (due to severe droughts in the western and southern agricultural areas) to household income in the US;
- Higher fiscal burden, and hence higher tax, associated with neglecting climate risks;
- Increasing economic cost with decreasing availability of insurance as well as mass movement of internal refugees (as seen with Katrina), floods and droughts.

The frequency of extreme weather events could also provide an opportunity to engage with farming communities, notwithstanding the reported prevalence of climate scepticism among farmers in swing states. A rural poll by Iowa State University in 2011 suggested that while 68 percent of farmers acknowledged climate change, only 10 percent attributed it to humans. 28 percent believed there was insufficient evidence to know if the climate was changing or not (Arbuckle, Lasley and Ferrell 2011). As pointed out by the *Financial Times*, these sentiments translate into concrete blockages, as the American Farm Bureau Federation – with over six million members – helped defeat the 2010 climate legislation (Meyer 2012a).

Perversely, farmers' low support for climate action may in part be attributable to moral hazards arising from extensive federal crop insurance. Net farm income in 2012 is estimated to have been the second highest on record in nominal terms, despite the worst drought in half a century (Schnepf 2012). High prices and private crop insurance helped offset crop losses, but farm incomes were also boosted by significant federal insurance

indemnity payments (Schnepf 2012, Meyer 2012b). Farmers insulated from the true costs of weather risk may also be less likely to invest in adaptation. Incentive systems must be redesigned to correct this cognitive dissonance. Particular opportunities include support for adaptation and shifting the insurance costs back to farmers.

Conclusion: Climate Change in the Era of the US Energy Revolution

Whilst US environmentalists may be better equipped today in mobilising constituencies through connecting in the post-Sandy world, the reality of US energy independence in the imminent future could take the public sentiment to a different direction. On the positive side, US imports of oil from all sources are diminishing rapidly. Cheap gas is also crowding out the use of coal, which has already contributed to meeting the emissions reduction target set by President Obama since the 2009 Copenhagen climate conference, alongside many demand-side measures such as tougher fuel efficiency standards for new cars (Weiss 2013). Perhaps more significantly, in the context of reduced US oil dependence, “energy security” may no longer suffice in justifying further tax breaks for oil companies or further leasing of environmentally controversial federal acreage (Mitchell 2013).

On the negative, cheap energy at home is now seen as a saviour and a timely engine for future US growth amidst economic hardship and austerity. It is increasingly depicted as the game-changing factor that might again propel the US back to the forefront of global manufacturing. The potential of energy self-sufficiency may also further curb the interest of the electorates in issues beyond its immediate borders – even though the shift to a producer (and exporter) state may necessitate further reliance on the international markets for longer-term growth.

The role of US business interests in climate politics has long been a source of controversy, with accusations that some large US corporations have sought to block climate policies or discredit the science of climate change (Union of Concerned Scientists 2012). For some business sectors, including conventional energy generation and manufacturing sectors with large CO₂ emissions such as cement, chemicals, petrochemicals and metals, strong climate action indeed threatens their business models. There are others, however, that stand to lose due to exposure to weather-related losses.

The insurance industry is amongst the most exposed in terms of losses arising from climate extremes. Their high losses to date have clear implications for both the margins of insurance companies and the affordability of future insurance. In response, insurance companies are reassessing their risk models. Risk Management Solutions, a modeller of catastrophe risk, has recognized that its 100-year database of historical Atlantic hurricane activity can no longer accurately predict future risk (McHale and Leurig 2012:5). One question is whether the insurance sector can help drive the development of political narrative for a new generation of US climate policy.

Against this backdrop, stakeholders bent on ambitious climate policies in the US will continue to face many political hurdles. Ever since Hurricane Katrina, the politics of extreme weather in the US has continued to sharpen. The storm generated significant political costs beyond the human and economic devastation in New Orleans, leading to job losses and restructuring at Federal Emergency Management Agency and significant decline in public opinion for President Bush as well as local officials.

As the responses to “super storm” Sandy had shown, there is today a marked difference in the political attitude towards extreme weather events as well as the role of public agencies and the federal government in ensuring

resilience, with President Obama renewing his commitment to addressing climate change in both his second inauguration address and his 2013 State of the Union speech. Notwithstanding the continued toxicity of the climate change agenda in US politics, there is today a window of opportunity for renewed climate engagement with the public that must not be missed.

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THE PROJECT

In an era of global flux, emerging powers and growing interconnectedness, transatlantic relations appear to have lost their bearings. As the international system fragments into different constellations of state and non-state powers across different policy domains, the US and the EU can no longer claim exclusive leadership in global governance. Traditional paradigms to understand the transatlantic relationship are thus wanting. A new approach is needed to pinpoint the direction transatlantic relations are taking. TRANSWORLD provides such an approach by a) ascertaining, differentiating among four policy domains (economic, security, environment, and human rights/democracy), whether transatlantic relations are drifting apart, adapting along an ad hoc cooperation-based pattern, or evolving into a different but resilient special partnership; b) assessing the role of a re-defined transatlantic relationship in the global governance architecture; c) providing tested policy recommendations on how the US and the EU could best cooperate to enhance the viability, effectiveness, and accountability of governance structures.

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