



# The Global Climate Action Summit (GCAS), San Francisco, 12-14 September, 2018

## KEY FINDINGS

Despite the Trump administration's decision to withdraw from the Paris Agreement and support for coal power, environmental progress continues in the U.S. with energy-related CO<sub>2</sub> emissions declining by 14% from 2005 to 2017.

The abundance of cheap natural gas following a sharp increase in domestic production, as a result of horizontal drilling and hydraulic fracturing techniques, has resulted in a significant change in the energy mix. The share of electricity generation from natural gas-fired power plants increased from around 23% in 2010 to 30% in 2017. In contrast, the share of electricity generation from coal-fired power plants declined from 46% in 2010 to 31% in 2017. This market trend is something that a pro-coal Trump administration is unlikely to reverse, indeed a further 6.3 GW of coal-fired capacity shut down in 2017.

Renewables accounted for 17% of the total electricity generation in the U.S. in 2017 with wind and solar reaching record shares. The deployment of renewables in the U.S. has benefited from federal financial subsidies (i.e. production/investment tax credits), renewable portfolio standards at the state level and from declining technology costs. Attempts by the Trump administration to weaken federal financial support for renewables in a tax reform bill was met with strong bi-partisan resistance in Congress – demonstrating that checks and balances exist on the Trump administration's energy agenda.

An increasing number of U.S. states are moving ahead with more ambitious policies than the Trump administration. For example; the United States Climate Alliance consists of 17 governors (representing 40% of the U.S. population) that are all still committed to reducing GHG emissions in line with the goals of the Paris Agreement regardless of the federal policy. Actions by non-state actors are also being encouraged in the U.S. and beyond through coalitions such as We Mean Business and C40 Cities.

The GCAS will build upon the efforts of previous summits such as COP 23 and the One Planet Summit by providing a platform for state and non-state actors to showcase their climate actions, ahead of COP 24, to demonstrate to national governments that more ambitious climate action is "necessary, desirable and achievable" (GCAS 2018b).

## Introduction

The 2018 GCAS, which will take place in San Francisco from the 12th until the 14th of September, will enable a range of state and non-state actors to publicize the climate actions currently being implemented 'on the ground' to help inspire further efforts to support and build upon the commitments pledged in the Paris Agreement (GCAS 2018a). Following the inauguration of President Trump, climate change policy in the U.S. has become increasingly fragmented between developments at the federal and state level. For example, the decision of the Trump administration to withdraw from the Paris Agreement has led to the rise of state and non-state actors stepping-up in order to fill the void in leadership on climate change through various



initiatives and coalitions. The extent to which such actions will offset the detrimental impact of the Trump administration’s energy policies remains, as yet, unclear. However, it is certainly clear that the ambition of U.S. climate change policy should not be defined by the actions of the Trump administration alone.

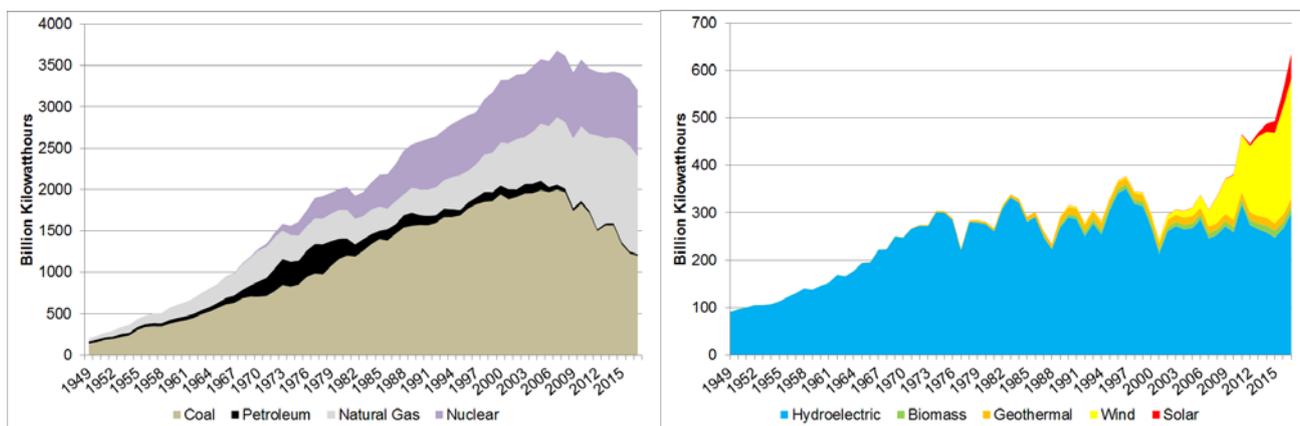
## Overview of U.S. climate change policy

### Federal level

According to the EPA (2018), total gross U.S. greenhouse gas (GHG) emissions were 6,511.3 million metric tons (MMT) of CO<sub>2</sub>-eq in 2016.<sup>1</sup> The transport and electricity generation sectors, both accounted for the largest share in GHG emissions in 2016 (28%), followed by industrial (22%), agricultural (9%), commercial (6%) and residential (5%) sectors. CO<sub>2</sub> accounted for the majority of the GHG emissions in 2016 (82%) followed by methane (10%), nitrous oxide (6%) and fluorinated gases (3%).<sup>2</sup> Total gross GHG emissions were 1.9% lower in 2016 than the previous year. This decline was driven by a decrease in CO<sub>2</sub> emissions from fossil fuel combustion as coal was substituted for natural gas and other non-fossil energy sources in the electricity power sector (EPA 2018).

More recent U.S. data on energy-related CO<sub>2</sub> emissions reports a 14% decline between 2005 and 2017 (EIA 2018f), which reflects significant changes in the country’s energy mix (Figure 1). The share of electricity generation from natural gas-fired power plants increased from around 23% in 2010 to 30% in 2017 (EIA 2018h). In contrast, the share of electricity generation from coal-fired power plants declined from 46% in 2010 to 31% in 2017 (EIA 2018h). The change in the energy mix reflects the sustained low prices for natural gas that have made the fuel competitive with coal. Renewables provided 17% of the total electricity generation in the U.S. in 2017 (EIA 2018h) with wind and solar reaching record shares in the same year that 6.3 GW of coal-fired capacity shut down (EIA 2018a).

Figure 1 Electricity net generation from fossil fuel and nuclear power plants (left) and renewables (right)



Source: EIA (2018h).

The extent to which the recently observed trend towards the decarbonisation of the power sector (and the economy overall) will continue became more uncertain following the election of Donald Trump to the White House, who campaigned on reversing several of the Obama administration’s key climate change policies. After more than one year in office, the Trump administration fully intends to follow through on promises made during the election campaign:

- On the 1st of June, 2017, Donald Trump announced that the United States would withdraw from the Paris climate accord (Washington Post 2017), which included a commitment by the

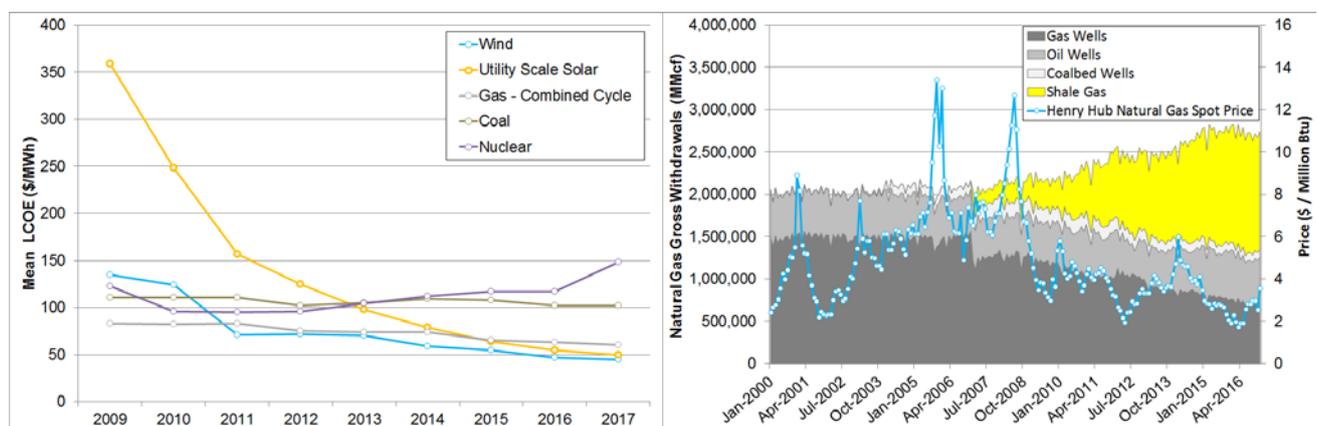
U.S. to reduce their economy-wide GHG emissions by 26-28% below 2005 levels by 2025 (United States of America 2015);

- On the 10th of October, 2017, the EPA Administrator Scott Pruitt<sup>3</sup> issued a Notice of Proposed Rulemaking, proposing to repeal the Clean Power Plan (CPP), which set state by state targets for CO<sub>2</sub> emissions that would have reduced national electricity sector emissions by 32% below 2005 levels by 2030;<sup>4</sup>
- On the 21st of August, 2018, the EPA revealed a proposal to relax federal limits on GHG emissions from power plants. The proposal would provide states with leeway to define their own emissions-reduction goals and this represents a shift away from the CPP previously advocated by the Obama administration (Nature 2018).

Whilst these headline policy reversals by the Trump administration have received a lot of publicity, the actual implementation of these changes will not happen overnight as the U.S. cannot quit the Paris Agreement until 2020 and attempts to repeal the CPP are likely to be litigated for many years to come.

Donald Trump aims at reinvigorating the coal industry; however, this is against a backdrop of relatively higher costs for U.S. coal power plants (Carbon Tracker 2018) while the cost of renewables and natural gas continues to decline (Figure 2). Indeed, the abundance of cheap natural gas following a sharp increase in domestic production – as a result of horizontal drilling and hydraulic fracturing techniques (EIA 2017) – is making coal even less competitive (Figure 2). Galik et al. (2018) argue that if Trump fulfilled an election campaign promise to reduce regulation and open more lands to oil and gas production, this would “further drive down natural gas prices even lower, marginalizing coal in the process”. Interestingly, Bloomberg New Energy Finance (2018) have suggested, that with cost improvements in batteries,<sup>5</sup> it may be possible to add four hour battery energy storage to existing wind or solar plants that would enable renewables to compete with gas plants, even in the U.S. with its cheap gas generation.

Figure 2 Changes in the Levelized Cost of Energy<sup>6</sup> of different generation technologies (left) and natural gas gross withdrawals<sup>7</sup> compared to the spot price (right)



Source: Lazard (2017); EIA (2018g); EIA (2018c).

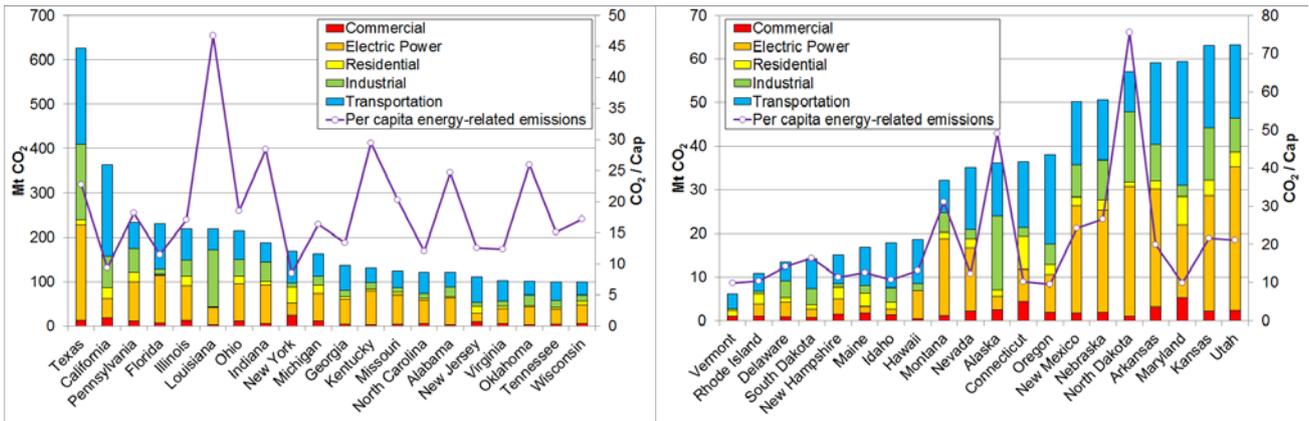
## State level

The variation in CO<sub>2</sub> emissions by U.S. states reflects the use of different fuels for electricity generation, different climates and different sources of economic output. Texas and California were the highest CO<sub>2</sub> emitting U.S. states in 2015 (Figure 3), which was driven by their large population and economic size. However, both states perform better when such driving factors are taken into account. California only emitted 9.3 metric tons of (energy related) CO<sub>2</sub> per person in 2015 reflecting its energy efficiency programs and the benefits of a milder climate. Texas emitted more than double the per capita (energy related) CO<sub>2</sub> emissions of California in 2015, due in part to its reliance upon coal (Figure 4) with around 40% of the coal-

fired power plants in the state burning lignite for electricity generation (EIA 2018e). In contrast, California relies more heavily upon less CO<sub>2</sub> intensive natural gas imports but efficiently uses the fuel, especially relative to other states (Figure 4).

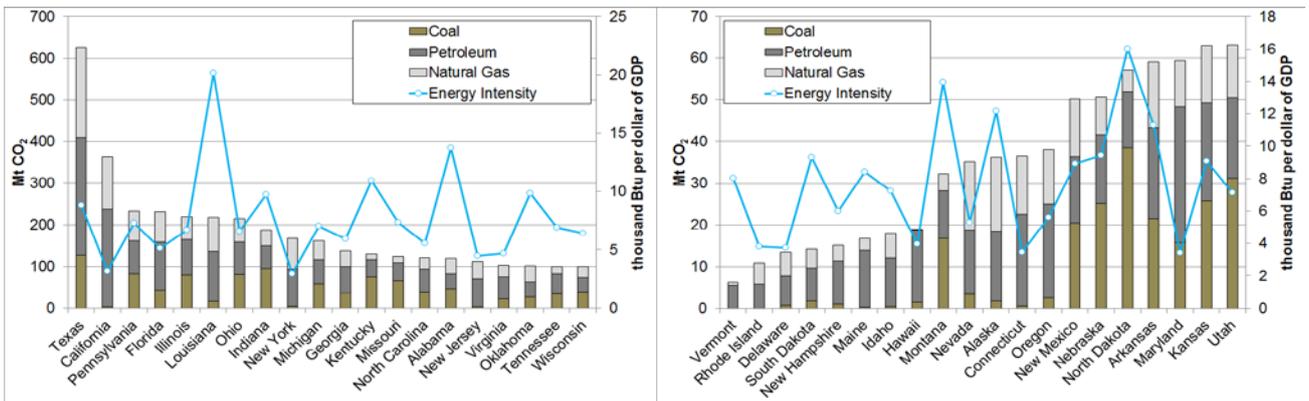
Vermont was the lowest CO<sub>2</sub> emitting U.S. state in 2015 (Figure 3), which reflects the fact that its electric power sector is virtually free of fossil fuel consumption (EIA 2018b). The main source of emissions originated from the residential sector, as petroleum products are used as the main heating fuel (Figure 4) in a relatively cold climate. In contrast, the residential sector represented a minimal share of the CO<sub>2</sub> emissions in Hawaii in 2015 due to the relatively warm climate. The transport sector represents a considerable share of CO<sub>2</sub> emissions in all of the U.S. states shown in Figure 3 for the year 2015.

Figure 3 Top 20 U.S. states with the highest (left) and lowest (right) CO<sub>2</sub> emissions by sector in 2015



Source: EIA (2018d).

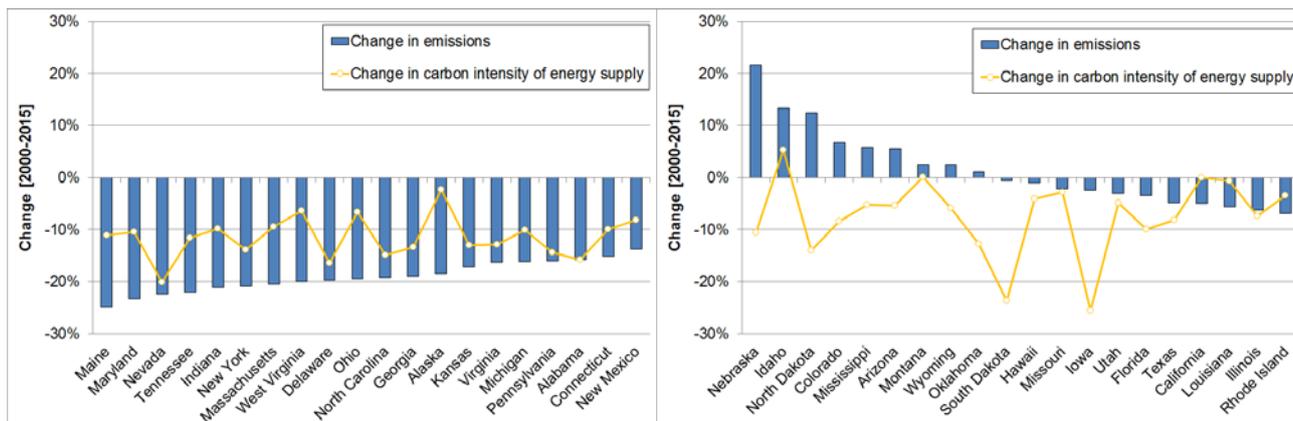
Figure 4 Top 20 U.S. states with the highest (left) and lowest (right) CO<sub>2</sub> emissions by fuel type in 2015



Source: EIA (2018d).

From 2000 to 2015, CO<sub>2</sub> emissions declined in 41 states and increased in 9 states (EIA 2018b). The greatest decrease in CO<sub>2</sub> emissions (in percentage terms) occurred in Maine (25%) while Nebraska accounted for the largest percent rise (22%) in CO<sub>2</sub> emissions (Figure 5). An explanatory factor for the reduction in the CO<sub>2</sub> emissions observed in the majority of states between 2000 and 2015 was the decline in the carbon intensity of energy supplies, however again the extent of decarbonisation in the power sector varies.

Figure 5 Change in total CO<sub>2</sub> emissions between 2000 and 2015 by the top 20 (left) and bottom 20 (right) performing U.S. states



Source: EIA (2018d).

### Impact of Renewable Portfolio Standards on CO<sub>2</sub> intensity:

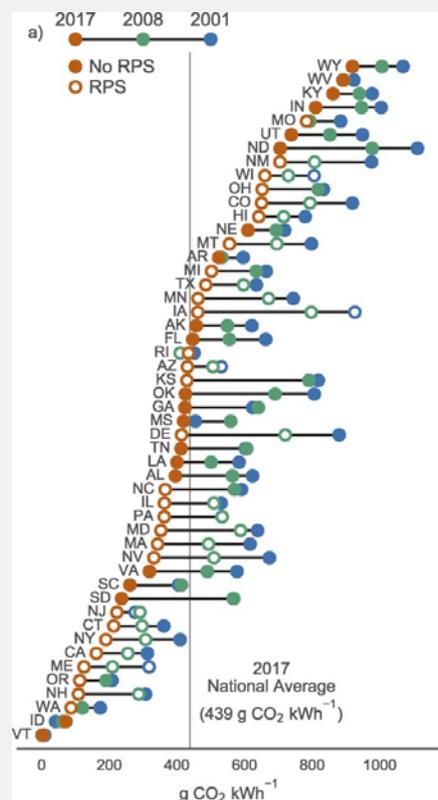
Schivley et al (2018) calculated the annual CO<sub>2</sub> intensity of electricity generation within each state for 2001, 2008 and 2017. The hollow circle markers indicate that the state had requirements for renewable generation as part of a RPS. Key findings include:

States with large declines in CO<sub>2</sub> intensity are not limited only to those that have implemented a RPS. Delaware & Iowa had largest declines with the implementation of a RPS. Oklahoma, North Dakota and South Dakota also experienced large declines without a RPS (but do have voluntary renewable energy goals).

States without an RPS have achieved a reduction in their annual CO<sub>2</sub> intensity via coal to gas fuel switch. Florida, Arkansas, Georgia, and Tennessee, which ended 2017 close to the national average, all increased generation from natural gas and decreased generation from coal.

Idaho, where nearly all power generation is from hydro, added some natural gas generation and is the only state that increased their CO<sub>2</sub> intensity between 2001 and 2017.

Schivley et al (2018) illustrate that reductions in the CO<sub>2</sub> intensity of electricity generation have also occurred in states without an RPS. The switching from coal to gas over time reflects a change in market fundamentals but may also have been further encouraged by policies at the state level, such as the introduction of a CO<sub>2</sub> price via emissions trading (i.e. Regional Greenhouse Gas Initiative (RGGI), California ETS) as well as other forms of state regulation to improve energy efficiency.



The deployment of wind and solar has historically been driven by state renewable portfolio standards (RPSs).<sup>8</sup> According to Barbose (2017), around half of all growth in U.S. renewable electricity generation and capacity since 2000 is associated with state implementation of RPS requirements. The impact of RPS policies on renewable energy deployment varies geographically. In certain regions, RPS policies continue

to play a significant role.<sup>9</sup> However, in certain states (i.e. Texas) the growth in renewable energy far exceeded the RPS requirements due to favourable wind resource and federal economic incentives (i.e. Production Tax Credit). Furthermore, renewables are now often being voluntarily installed in response to recent falls in cost.

## The Global Climate Action Summit

### Main issues at stake

The main issue at stake involves the inadequate level of ambition that has been collectively pledged so far by Parties to the Paris Agreement in order to prevent, or at least limit, the most detrimental impacts of climate change. The GCAS aims to facilitate new commitments by a range of non-state actors, which will contribute to meeting the Paris Agreement. In doing so, the Summit intends to demonstrate to national governments ahead of COP 24 that more ambitious climate action is “necessary, desirable and achievable” (GCAS 2018a).

Summit participants (including states, and local governments; businesses and investors; civil society, members of the faith community and other influencers; national governments and tribes; and individuals committed to climate action) are expected to make substantial climate commitments to support climate action in five key areas (GCAS 2018a):

- 1) *Healthy Energy Systems*: “A global shift toward clean and equitable energy and mobility systems advances climate progress and enable healthy people and places”;
- 2) *Inclusive Economic Growth*: “Climate leadership, and the clean technology and energy transition generate good jobs, broad-based economic opportunity, and inclusive, resilient growth”;
- 3) *Sustainable Communities*: “Sustainable buildings, cities, communities, and infrastructure are clean, healthy and livable and improve quality of life for all”;
- 4) *Land and Ocean Stewardship*: “Forests, food, lands and other ecosystems play a critical role in mitigating climate change and making our world more resilient, while also ensuring sufficient food supplies for a growing population”;
- 5) *Transformative Climate Investments*: “Investments are mobilized on the scale needed to achieve the Paris Agreement, spur innovation and accelerate a clean and resilient economy”.

### Positions of key participating actors

The failure to reach a consensus on several climate commitments at the recent G7 meeting in Canada, demonstrates the need for non-state actors to further encourage their national governments to increase the level of their climate ambition.

In the communique's section on climate change, every member of the G7 except the United States supported the Paris Agreement:

*“Canada, France, Germany, Italy, Japan, the United Kingdom and the European Union reaffirm their strong commitment to implement the Paris Agreement, through ambitious climate action” (G7 2018)*

Instead, U.S. negotiators prepared their own paragraph for the climate section of the communique that focused on promoting the burning of fossil fuels:

*“The United States will endeavour to work closely with other countries to help them access and use fossil fuels more cleanly and efficiently and help deploy renewable and other clean energy sources, given the importance of energy access and security in their Nationally Determined Contributions” (G7 2018).*

The **United States Climate Alliance** was created on the 1st of June, 2017, in an immediate response to the Trump administration's decision to withdraw from the Paris Agreement. The alliance currently consists of 17 governors (representing 40% of the U.S. population and a \$9 trillion economy) that are all committed to reducing GHG emissions in line with the goals of the Paris Agreement (U.S. Climate Alliance 2018). The U.S. Climate Alliance states are currently on track to meet their share of the Paris Agreement emissions target by 2025 and new areas of collaboration have recently been announced, which include reducing super pollutants, mobilizing finance for climate projects, grid modernisation, renewable energy, appliance efficiency standards, building resilient communities and infrastructure, increasing carbon storage in the landscape and deploying clean transportation (GCAS 2018b). Governors from the U.S. Climate Alliance plan to attend the GCAS in September and will provide an update on 2018 initiatives at the Summit.

In addition, the **We Are Still In** coalition released a declaration on the 5th of June, 2017 in support of the Paris Agreement that has subsequently been signed by more than 2,800 leaders (i.e. mayors, county executives, governors, tribal leaders, college and university leaders, businesses, faith groups, and investors) from America – representing more than 160 million Americans and \$6.2 trillion of the U.S. economy (We Are Still In 2017). In a further statement of intent, the We Are Still In coalition opened an U.S. Climate Action Pavilion during the recent COP 23 in Bonn to confirm that their network of states, cities, universities, faith groups and environmental activists continue to work towards the achievement of the U.S. GHG reduction pledge under the Paris Agreement. The We Are Still In coalition intends to contribute to the upcoming GCAS in San Francisco by showcasing the climate actions submitted by a range of stakeholders via their U.S. Climate Action Contribution tool (We Are Still In 2018)

**America's Pledge** is another separate initiative, which was formed in July 2017 with the objective of quantifying and reporting on how the actions of ambitious U.S. cities, states and businesses can compensate for federal inaction. Indeed, America's Pledge (2018b) reported that in 2017 "non-federal climate action and sustained investment in clean energy technology resulted in energy-related U.S. carbon dioxide emissions falling to their lowest levels in 25 years". In advance of the GCAS in September, America's Pledge will present their 2018 U.S. report on Bottom-Up Climate Action, which will "estimate the emission reductions associated with specific, ambitious policies and actions that can be taken by U.S. cities, states and businesses" (America's Pledge 2018a).

With momentum continuing to build, the **Chicago Climate Charter** was subsequently signed in December 2017 by more than 50 cities, and tens of millions of people – representing a first-of-its-kind international charter on climate change. By signing the Chicago Climate Charter at the North American Climate Summit (City of Chicago 2017), cities pledged, amongst other goals, to:

- "Achieve a percent reduction in carbon emissions in line with the Paris Agreement";
- "Quantify, track and publicly report city emissions, consistent with standards and best practices of measurement and transparency";

The leading role of cities looks set to continue at the GCAS in San Francisco with **C40 Cities** inviting mayors globally to further step up their climate actions. "City actions are being collected under the One Planet Charter, which is designed to provide cities with a swift, yet achievable road map for bold and inclusive climate action" (C40 Cities 2018).

The **We Mean Business coalition** consists of over 700 leading businesses around the world that have all made strategic climate commitments in the Take Action campaign. These commitments involve delivering emission reductions at scale, creating a low carbon energy system, re-imagining cities and transport, removing deforestation, cutting industry's carbon footprint, building climate competent companies and mitigating the impact of climate change (We Mean Business Coalition 2018b). These companies are collectively achieving a real impact; representing 2.62 gigatons of emissions (equivalent to the total annual emissions in India). Out of the 700+ companies involved in the Take Action campaign, over 130 of these companies have committed to go 100% renewable as part of the RE100 initiative, which corresponds to an

annual demand of 162 TWh of renewable electricity. It is expected that by the GCAS in September, over 500 companies will have committed to setting an approved scientifically based target (We Mean Business Coalition 2018a).

The **Under2 Coalition** is made up of in excess of 200 governments (representing over 1.3 billion people and nearly 40% of the global economy) that are all committed to keeping global temperature rise to less than 2°C. The Climate Group is the Secretariat to the Under2 Coalition and works with governments to accelerate climate action through the following three work streams (The Climate Group 2018b):

- *2050 Pathways*: “Deep decarbonization pathway planning: supporting governments to develop robust medium and long-term (2050) emissions reduction plans in line with the goals of the Paris Climate Agreement”;
- *Policy Action*: “Scaling innovative policy solutions: spreading today’s best climate policies and developing new policies to ensure full decarbonization”;
- *Transparency*: “Mainstreaming transparency: supporting governments so they have the expertise and systems in place to assess their emissions accurately, track progress and ensure policies remain fit for delivering against climate targets”.

The Climate Group will host the Under2 Coalition General Assembly at the GCAS on the 12th of September, where state and regional governments that have participated in the Under2 Coalition will show the progress they’ve made, and how they will further step up ambition (The Climate Group 2018a).

**Rise for Climate Jobs and Justice** is a movement, representing all aspects of civil society, to demand a “just, equitable and resilient 100% renewable energy economy that rapidly expands economic opportunity, creates family sustaining jobs, and protects vulnerable communities, workers and future generations” (Rise for Climate Jobs and Justice 2018). In order to raise further awareness, marches are being organised around the world that will take place on the 8th of September in advance of the GCAS.

### Relationship to other global summits on climate change

The adoption of the Paris Agreement at COP 21 in December 2015 framed the international action against climate change for the post-2020 period (UNFCCC 2015).

- Parties promised to limit the global temperature rise to well below 2°C compared to pre-industrial levels and to also continue efforts to keep the increase below 1.5°C (refer to Article 2 of the Paris Agreement);
- Parties aim to also reach the global peaking of GHG emissions as soon as possible so as to achieve a balance between anthropogenic emissions by sources and removals by sinks of GHGs in the second half of this century (refer to Article 4 of the Paris Agreement).

To deliver on that collective ambition, Parties will have to submit Nationally Determined Contributions (NDCs) every 5 years. By 2023, a global stocktake will assess these contributions to determine whether the collective efforts of the Parties are aligned with the temperature objectives they committed to in the Paris Agreement. In addition, it was decided at COP 21 to “convene a facilitative dialogue among Parties in 2018 to take stock of the collective efforts of Parties” (UNFCCC 2018), which was subsequently renamed the “Talanoa Dialogue”. Given that the current NDCs are not ambitious enough to limit global warming to 2°C (Climate Action Tracker 2018), the outcome of these discussions under the Talanoa Dialogue need to lead to more ambitious NDCs. The Dialogue aims to address three questions about climate action:

- Where are we?
- Where do we want to go?
- How do we get there?

Answers from non-state actors responding to at least one of the three questions can be submitted by the 29th of October for the high-level political segment during COP 24 in Katowice, Poland. A wide array of events over the course of 2018, such as the Global Climate Action Summit in California on the 12-14th of September and the One Planet Summit on the 26th of September (which will provide an opportunity for state and non-state stakeholders to account for the implementation of the commitments made in the previous year),<sup>10</sup> can be held in support of the Dialogue and play an important role in creating momentum and galvanizing stronger action. UN secretary general António Guterres has warned that nations that choose not to rapidly shift away from fossil fuels will be “left behind”. The message was clear:

*“The sustainability train has left the station. Get on board or get left behind... Those who fail to bet on the green economy will be living in a grey future”* (United Nations 2017).

In order to encourage leaders from around the world to advance a more positive agenda, the secretary general announced he would convene a climate summit in 2019. Guterres said the meeting would “make sure we reach the critical first review of Paris implementation with the strong wind of a green economy at our backs” (United Nations 2017).

## Conclusion

Despite the Trump administration’s decision to withdraw from the Paris Agreement and support for coal power, environmental progress continues in the U.S. with energy-related CO<sub>2</sub> emissions declining by 14% from 2005 to 2017. The abundance of cheap natural gas following a sharp increase in domestic production, as a result of horizontal drilling and hydraulic fracturing techniques has resulted in a significant change in the energy mix. Attempts by the Trump administration to weaken federal financial support for renewables in a tax reform bill was met with strong bi-partisan resistance in Congress, which demonstrate the checks and balances on the Trump administration’s energy agenda. The decision to withdraw from the Paris Agreement has acted as a catalyst for more ambition at the state level to offset policies at the federal level. This is a welcome development given the fact that the NDCs pledged by the Parties are currently insufficient to limit global warming to 2°C. The GCAS will build upon the efforts of previous summits such as COP 23 and the One Planet Summit by providing a platform for states and non-state actors to showcase their climate actions, ahead of COP 24, to demonstrate to national governments that more ambitious climate action is “necessary, desirable and achievable” (GCAS 2018a).

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- <sup>1</sup> Gross emissions total excludes emissions and removals from Land Use, Land-Use Change, and Forestry (LULUCF). Overall, net total emissions in 2016 were 11.1% below 2005 levels (EPA 2018).
  - <sup>2</sup> Totals may not add up to 100% due to rounding. Data taken from the EPA Greenhouse Gas Inventory Data Explorer (access here: <https://www3.epa.gov/climatechange/ghgemissions/inventoryexplorer/#tabs-6>).
  - <sup>3</sup> Scot Pruitt has since resigned on the 5th of July, 2018 following a series of ethic scandals and his deputy Andrew Wheeler has taken over as acting administrator (The Guardian 2018).
  - <sup>4</sup> Refer to <https://archive.epa.gov/epa/cleanpowerplan/fact-sheet-overview-clean-power-plan.html>
  - <sup>5</sup> Lithium-ion batteries have declined by 79% in costs since 2010 (Bloomberg New Energy Finance 2018).
  - <sup>6</sup> The Levelized Cost of Energy (LCOE) "is an economic assessment of the cost of the energy-generating system including all the costs over its lifetime: initial investment, operations and maintenance, cost of fuel, cost of capital" (NREL 2018).
  - <sup>7</sup> Gross withdrawals are defined as "full well-stream volume, including all natural gas plant liquids and all non-hydrocarbon gases, but excluding lease condensate. Also includes amounts delivered as royalty payments or consumed in field operations" (EIA 2018g).
  - <sup>8</sup> Renewable Portfolio Standards (RPS) requires utilities to ensure that a percentage, or a specified amount, of the electricity they sell comes from renewable resources.
  - <sup>9</sup> RPS policies accounted for 70-90% of 2016 renewable energy capacity additions in the West, Mid-Atlantic and Northeast (Barbose 2017).
  - <sup>10</sup> Twelve Commitments were made at the One Planet Summit in 2017, which included co-ordinated action towards a zero emissions target, a sectoral shift towards a decarbonized economy, achieving zero pollution in transport and commitments by several countries to establishing a more significant carbon price (One Planet Summit 2017).

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