

## Action by China and India slows emissions growth, President Trump's policies likely to cause US emissions to flatten

### Climate Action Tracker Update

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### Summary

Global leadership on climate is changing, with positive developments on coal use in China and India likely to reduce projected global carbon emissions by roughly two to three billion tonnes by 2030 compared to our estimate last year. The recent, highly adverse rollbacks by President Trump are unlikely to have a major impact on global emissions by 2030.

The Trump Administration's climate policies, if fully implemented and not compensated by other actors, are projected to flatten US emissions instead of them continuing on a downward trend.

China's coal consumption has declined in three consecutive years (2013 to 2016), and the outlook is for a continued slow decline. India has stated that planned coal-fired power plants may not be needed and with announced policies—if fully implemented—it would see a significant slowing down in the growth of CO<sub>2</sub> emissions over the next decade.

Both China and India look set to overachieve their Paris Agreement climate pledges. Five years ago, the idea of either country stopping—or even slowing—coal use was considered an insurmountable hurdle, as coal-fired power plants were thought necessary to satisfy the energy demands of these nations. Yet, recent observations show they are now on the way towards overcoming this challenge. This stands in contrast to the decisions of the US administration under President Trump, who appears intent on going in the opposite direction.

In the last ten years, the energy market has transformed: the price of renewable energy from wind and solar has dropped drastically. In many countries and regions, renewables are now cost-competitive with fossil fuels and, since 2015, have been responsible for the majority of new installations (UNEP & Bloomberg 2017; IEA 2016). Even with a decrease in the overall value of investment by almost a quarter, investments in renewables in 2016, without large hydro, increased by 9% compared with 2015 (UNEP & Bloomberg 2017).

Together, the positive developments in India and China have a significant impact on the projected growth global of greenhouse gas emissions—on the order of a roughly 2–3 GtCO<sub>2</sub> reduction in 2030 compared to projections made just last year. They significantly outweigh the potentially negative effects on emissions from the Trump Administration's proposed rollbacks in the USA of around 0.4 GtCO<sub>2</sub> in 2030.

The short-term positive improvement of around 1 GtCO<sub>2</sub> in the next five years for China and India are also larger than the last year-to-year increase of global energy-related greenhouse gas emissions.<sup>1</sup>

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<sup>1</sup> Less than 100 MtCO<sub>2</sub> from 2014–2015 and from 2015–2016 compared to a total of 36 GtCO<sub>2</sub> according to preliminary estimates by the [Global Carbon Project](#), November 2016.

It remains unclear whether the US will stay in the Paris Agreement; if it does, it appears clear that the Trump Administration will seek to reduce the level of ambition of the US NDC. This would contradict the spirit and the need of the Paris Agreement to increase ambition. If the CAT were to rate the current policies of the Trump Administration as an NDC, it would move it from “Medium” to “Inadequate” on its rating scale.

## Background

Current government actions are not yet consistent with what would be needed to keep within the temperature limit set by the Paris Agreement (“well below 2°C” and “towards 1.5°C”). The Climate Action Tracker calculated [last year in Marrakesh](#) that, in aggregate, temperature will rise to around 2.8°C above pre-industrial levels in 2100 if all governments implement their national contributions under the Paris Agreement.

To stay within the temperature limit set by the Paris Agreement, net global greenhouse gas emissions need to decline to zero by the middle of the century (Rogelj et al. 2015). This would mean that no new coal-fired power plants (unless equipped with carbon capture and storage) should be built as of today, since, given typical lifetimes, they would still be operating and emitting in 2050.

The following sections provide an overview of recent developments in India, China, and the USA.

### India: renewables outperform coal, will overachieve Paris contribution by wide margin

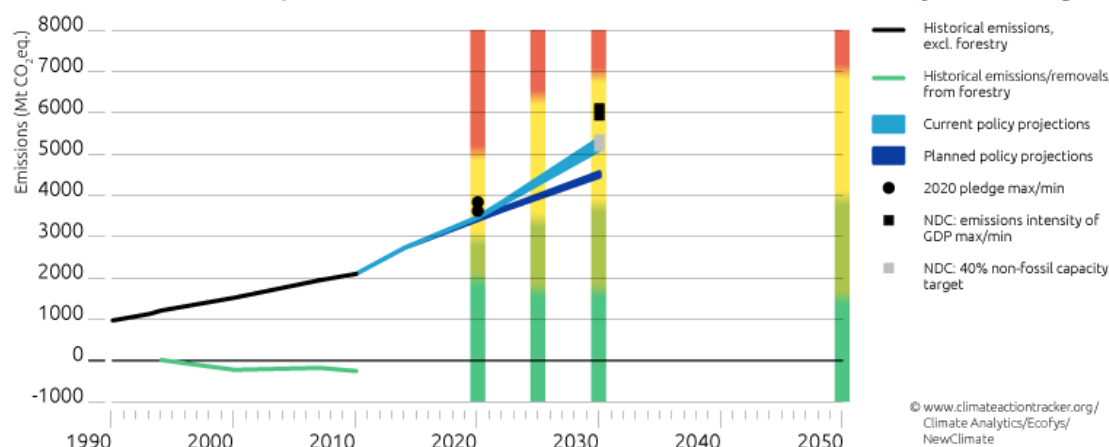


Figure 1 CAT India assessment

Only two years ago it would have been unimaginable that the Indian government would consider an end to the construction of new coal-fired power plants. It was common understanding that the longstanding objective of providing electricity to a growing population could only be reached with coal.

Now the new Draft Energy Plan—issued in December 2016—projects that despite the increasing electricity demand, no new coal-fired power plants, apart from those that are already under construction, would be needed after 2022 (Government of India 2016). 50 GW of coal capacity is under construction, emitting roughly 0.3 GtCO<sub>2</sub>e a year—if built.<sup>2</sup>

What happened? To satisfy the growing demand for electricity, the Indian government had planned large numbers of new coal-fired power plants. These plants take around ten years from initial planning to realisation. But in the last ten years the energy market has changed completely: the price of renewable energy from wind and solar has dropped drastically. Renewables are now cost-competitive and being built at a much faster rate than coal fired power plants. This rapid renewables deployment combined with slower than expected demand growth is expected to increasingly contribute to overcapacities in India’s electricity system.

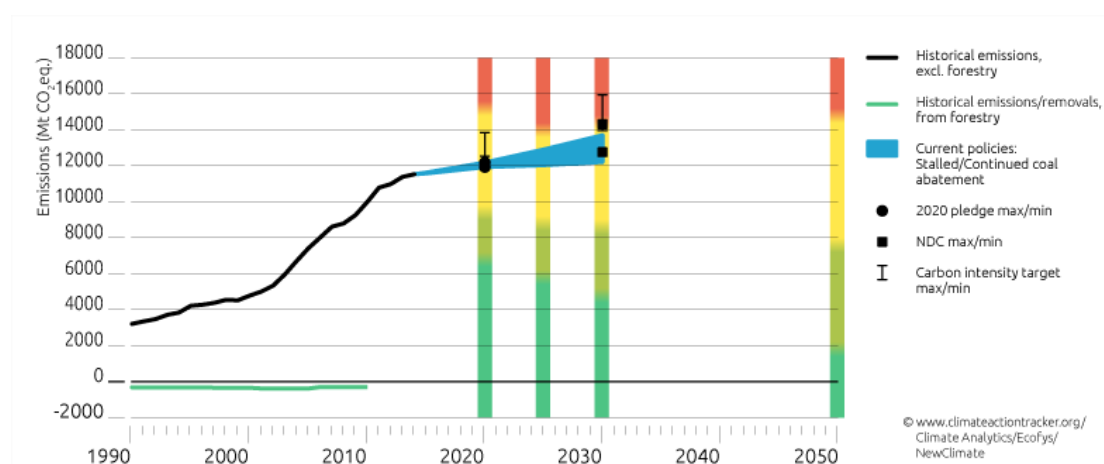
<sup>2</sup> Assuming 80% load and 900 gCO<sub>2</sub>/kWh

As a result, the Draft Energy Plan predicts an electricity capacity from renewables by 2027 as high as 57%, which is much higher than the 40% by 2030 stated in the Indian Nationally Determined Contribution (NDC) to the Paris Agreement.

If the Draft Energy Plan is implemented, we estimate that emissions in 2030 in India would be around 1.0 GtCO<sub>2</sub>e lower than our estimate of currently implemented policies. This moves India closer to what is necessary to achieve the long-term temperature goal of the Paris Agreement. A further positive step could be upgrading the NDC to match planned policies.

[See our full, updated analysis of India here.](#)

## China: Reducing coal consumption – have CO<sub>2</sub> emissions peaked?



**Figure 2 CAT China assessment**

Renewable energy is widely supported in China and is beginning to crowd out coal. The government recently cancelled plans for just over 100 coal-fired power plants totalling 120 GW capacity (Boren 2017), which would have emitted roughly 0.75 GtCO<sub>2</sub> annually.<sup>3</sup> Some of these plants were already under construction. The fast growth of renewable energy—and slowing energy demand—made these new plants obsolete.

Total Chinese CO<sub>2</sub> emissions from energy use (coal, oil and gas) are reported to have declined between 2014 and 2015 (Global Carbon Project 2016). Coal consumption in China has declined from 2013 to 2016 (National Bureau of Statistics of China 2017).

If China continues its activities to curb coal, it may have already peaked its CO<sub>2</sub> emissions from energy use in 2014, much earlier than the “before 2030” stated in its NDC to the Paris Agreement.<sup>4</sup> However, total greenhouse gas emissions will still rise, because there are still no similar measures for the other greenhouse gases—methane, nitrous oxide and fluorinated gases.

China is set to overachieve its contribution to the Paris Agreement by a wide margin. With continued coal abatement, total GHG emissions are likely to be around 1 to 2 GtCO<sub>2</sub> lower in 2030 compared to our previous estimate from November 2016. China is accelerating its pace of limiting and reducing greenhouse gas emissions, and moving closer to what is necessary to achieve the Paris long-term temperature limit although a gap still remains.

[See our full analysis of China here.](#)

<sup>3</sup> Assuming 80% load and 900 gCO<sub>2</sub>/kWh

<sup>4</sup> The contribution for the Paris Agreement states the aim to peak CO<sub>2</sub> emissions, i.e. energy related, but also process and land-use CO<sub>2</sub>. The downward trend holds also for all CO<sub>2</sub> emissions, because process emissions are already on a downward trend and land use CO<sub>2</sub> is small compared to others.

## USA: rollback of federal climate policies – change in emissions trend unclear

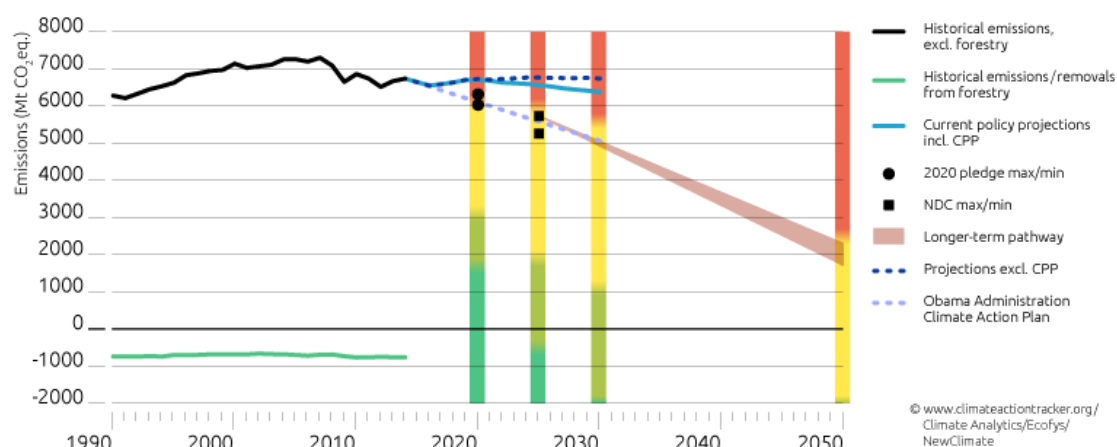


Figure 3 CAT United States assessment

The positive developments in India and China stand in contrast to recent events in the USA. Since President Donald Trump took office in the White House, objectives for climate policy at the federal level have drastically changed. In his “America First Energy Plan,” President Trump stated that he would eliminate “burdensome regulations on our energy industry,” and committed to reviving America’s coal industry (The White House 2017a).

With his “Executive Order on Energy Independence,” President Trump began the process of “suspending, revising, and rescinding” a number of existing policies, including the Clean Power Plan (The White House 2017b; Climate Action Tracker 2017). He also rescinded the Obama Administration’s Climate Action Plan.

Whether—and how—these policies will impact future US greenhouse gas emissions is unclear for two reasons:

- It is uncertain whether, and if so, how fast, already implemented policies can be changed. The US Environmental Protection Agency (EPA) has begun reviewing the Clean Power Plan, light duty vehicle emissions standards, and methane standards for the oil and gas industry. Fully rescinding these policies may be fraught with legal battles, and it is unclear what the EPA will replace them with.
- If federal policies are revised or rescinded, other actors could compensate for this loss. For example, California has already decided to uphold President Obama’s vehicle emissions standard that the EPA is reviewing at a federal level.

Due to this uncertainty, our analysis focuses on the orders of magnitude that different policy initiatives at the federal level could have (Figure 4 and paragraphs below) and discusses the likelihood of them materialising. We assess their impact on the projected US GHG emissions in 2025.

### Electricity generation:

Our base case starts with all currently implemented US policies, including the Clean Power Plan (although its implementation was held up in the courts). Should it be implemented, emissions would be 10% below 2005 levels by 2025 (5% above 1990 levels).

In response to President Trump’s Executive Order, the EPA has given notice that it is reviewing the Clean Power Plan and, if appropriate, will take steps to revise or rescind it (U.S. Environmental Protection Agency 2017b). If the Clean Power Plan is indeed permanently stopped and not compensated by actions from others, emissions in 2025 are likely to be higher than would be the case if it were implemented. We estimate the maximum effect of Clean Power Plan rejection (and no compensation by others) to be around 202 MtCO<sub>2</sub>e in 2025 (3% of 2005 levels) and 365 MtCO<sub>2</sub>e in 2030 (5% of 2005 levels). This would halt the downward trend in US emissions of the last decade. Emissions in 2025 and 2030 would then be similar to 2014 level.

Individual states, regions, cities and companies may step in to provide similar or even stronger incentives for energy efficiency, renewable energy and other low carbon energy as the Clean Power Plan. Some states—and utilities—have already promised to continue with the CPP measures, independent of developments at the federal level. Renewable energy deployment continues, with over 82 GW of wind capacity installed by the end of 2016 across 40 states—enough to power about 24 million American homes (Global Wind Energy Council 2016).

This means that another stated objective of President Trump’s energy plan, of “reviving America’s coal industry” may be difficult to achieve (Houser, Bordoff, and Marsters 2017), something even the coal industry is warning him about (Egan 2016). External market forces, including China’s slowing growth, the rise of renewables, and the “dash for gas” have been the primary drivers for the collapse of the US coal industry. As of March 2017, 250 coal plants had retired or committed to retire since 2010, leaving only 273 coal plants operating in the United States (Sierra Club 2017). Currently, only three coal-fired power plants are in pre-permitting to construction phase (Coalswarm 2017). Together, they would emit less than 10 MtCO<sub>2</sub>/year if built (not included in Figure 4).

## THE TRUMP ADMINISTRATION’S EFFECT ON THE CLIMATE

### 2025 US emissions scenarios based on the policy packages in play

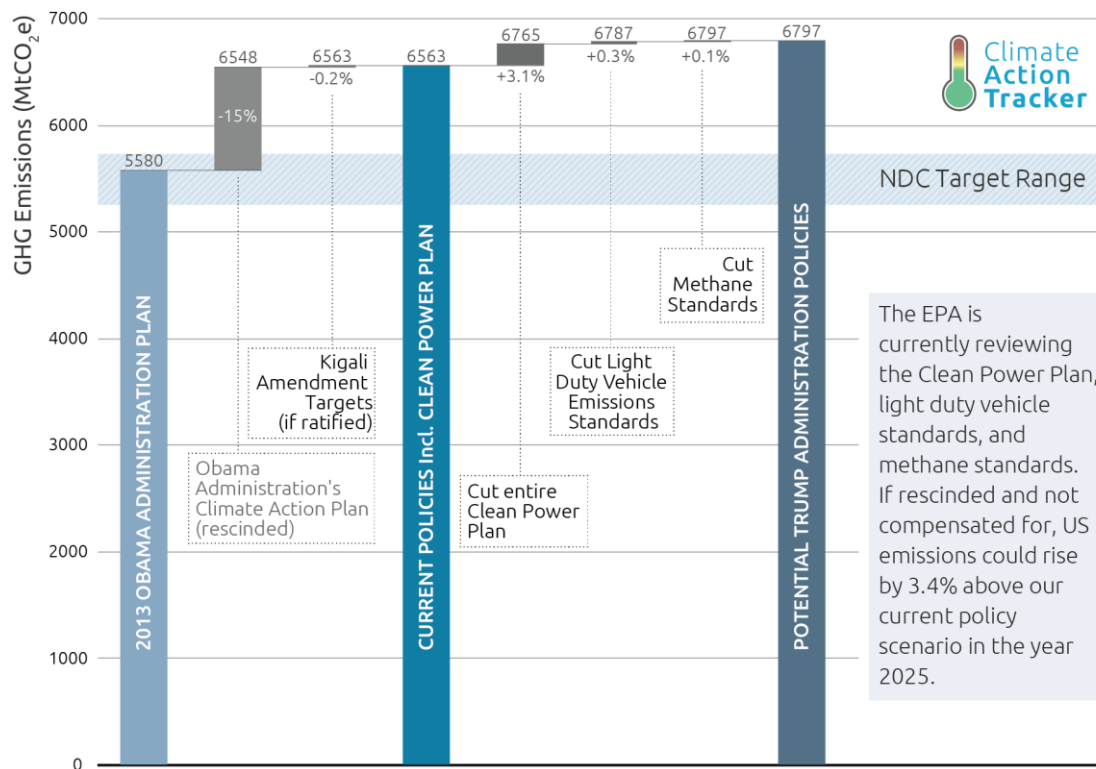


Figure 4 Possible impact of removing or adding additional policies on the greenhouse gas emissions of the USA in 2025 (excl. LULUCF). For a full description of the projected effects of Trump Administration policy changes, see our [overview table](#).

### **Vehicle efficiency standards:**

The Environmental Protection Agency (EPA) and National Highway Traffic Safety Administration (NHTSA) will reconsider federal standards for light duty vehicle emissions, which the Obama Administration expanded and extended until 2025 (U.S. Department of Transportation 2017). Current standards are finalised until 2021.

CAT calculations show that if industry fleet-wide standards of 123 gCO<sub>2</sub>/km<sup>5</sup> in 2021 are reached, and the fleet efficiency stays at that level, total GHG emissions from light duty vehicles in 2025 will be 22 MtCO<sub>2</sub> higher than they would have been if Obama's 2025 standards (planned to be set at 101 gCO<sub>2</sub>/km) had been implemented. This is only 0.3% of total 2005 US GHG emissions. By 2030, this difference increases to 76 MtCO<sub>2</sub>, or 1.0% of 2005 emissions.

For historical reasons, rooted in concerns over hazardous air pollution levels, California has the right to set its own standards, and the State Government has now voted to maintain their standards until 2025, aligned with the Obama era federal standards that the Trump Administration is reviewing (Megerian 2017).

Other states may follow California, and other market players such as China and the EU also continue to put forward stronger regulations. Since cars are sold on a global market, automakers would have to comply with those standards to stay competitive, while still being able to sell more inefficient cars in states where relaxed standards apply. It is therefore likely that relaxation of the federal standard could—to some extent, but not completely—slow down efficiency improvements of vehicles in the USA and beyond.

### **Methane standards**

Based on President Trump's Executive Order, the EPA is reviewing President Obama's methane emissions standards for new and modified oil and gas facilities (U.S. Environmental Protection Agency 2017a), implemented in May 2016. The EPA estimates Obama's policy would have reduced emissions by 9.2 MtCO<sub>2</sub>e in 2025<sup>6</sup> (U.S. Environmental Protection Agency 2016). This is 0.1% of 2005 emissions levels. Separately, the EPA has withdrawn its request for the oil and gas industry to submit data on methane emissions, making it more difficult to introduce future policies that would limit emissions from existing facilities. The House of Representatives passed a bill in early February 2017 to repeal a final Bureau of Land Management rule to reduce methane waste on federal lands, but the Senate voted against the bill in early May. The rule is expected to reduce emissions by ~4.5 MtCO<sub>2</sub>e/yr (U.S. Bureau of Land Management 2016) (not included in Figure 4)<sup>7</sup>.

In sharp contrast, in April, California finalised even stricter methane standards for the oil and gas industry, with which the California Air Resources Board expects to mitigate 1.4 MtCO<sub>2</sub>e annually (California Air Resources Board 2017). This policy supports California's target of reducing methane emissions by 40% from 2013 levels by 2030 (Kahn 2017).

### **Kigali Amendment**

The US has not yet ratified the Kigali Amendment to the Montreal Protocol, which lays out a plan to phase down (but not out) hydrofluorocarbons (HFCs). According to CAT calculations, if the US were to meet its phase down targets in the plan, this would result in at least an additional 5.5 to 15.5 MtCO<sub>2</sub>e reduction in emissions in 2025 from the current policy scenario (0.07–0.2% of 2005 emissions). The current policy scenario already includes reductions expected from the Significant New Alternatives Program (54–64 MtCO<sub>2</sub>e) (U.S. Environmental Protection Agency 2015). The Trump Administration is likely to keep these standards in place, as they have support from industrial producers of HFC alternatives (Lavelle 2017).

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<sup>5</sup> The original targets are measured in gCO<sub>2</sub>/mile, which we translated into gCO<sub>2</sub>/km

<sup>6</sup> Recalculated using Global Warming Potentials from the IPCC Second Annual Report

<sup>7</sup> Policy is not yet included in current policies scenario

## **Obama Administration's Climate Action Plan**

Having already put forth his own "America First Energy Plan" in January (The White House 2017a), President Trump's Executive Order (The White House 2017b) rescinds President Obama's Climate Action Plan (CAP). The CAP provided overarching guidance for the direction of US climate policy under Obama (The White House 2013), and a number of elements have already been implemented, including fuel efficiency standards for vehicles, efficiency improvements in the building sector, and HFC reductions. These elements are included in our base case, which will fail to meet the targets that were set out under the CAP.

If additional policies were implemented to meet all of the CAP targets, for example more stringent energy efficiency and methane standards, emissions in 2025 would have been low enough to meet the US NDC commitment (Figures 3 and 4). However, without additional policies to meet these targets, the US is likely to miss its commitment by a wide margin.

## **US summary**

With the activities set in motion by the Trump Administration, the USA is likely to fail to meet its NDC by a wide margin. However, this is not because existing emissions trends will be completely reversed, but more because this new paradigm will prevent the implementation of new policies that would have been necessary to meet the NDC.

We also note the US NDC to the Paris Agreement itself is not yet consistent with limiting warming to below 2°C, let alone with the Paris Agreement's stronger 1.5°C limit. If the current policy trajectory under the Trump Administration were codified as an NDC, the CAT would downgrade the US to "Inadequate" (Climate Action Tracker 2017) from its current rating of "medium."

Finally, at the time of writing it was unclear whether the USA would pull out of the Paris Agreement altogether.

[See our full, updated analysis of the USA here.](#)

## References

- Boren, Zachary Davies. 2017. "China Suspends 104 Planned Coal Power Plants." *Energy Desk, Greenpeace*. <http://energydesk.greenpeace.org/2017/01/16/china-coal-power-overcapacity-crackdown/>.
- California Air Resources Board. 2017. "Final Environmental Analysis for the Regulation for Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities." <https://www.arb.ca.gov/regact/2016/oilandgas2016/oilgasfea.pdf>.
- Climate Action Tracker. 2017. "Trump's Climate Policies Would See US Climate Action Rating Drop From 'medium' to 'inadequate.'" [http://climateactiontracker.org/assets/publications/briefing\\_papers/CAT\\_2017-03-31\\_US\\_Briefing\\_Trump\\_Executive\\_Order.pdf](http://climateactiontracker.org/assets/publications/briefing_papers/CAT_2017-03-31_US_Briefing_Trump_Executive_Order.pdf).
- Coalswarm. 2017. "Global Coal Plant Tracker."
- Egan, Matt. 2016. "Top Coal Exec to Trump: 'Temper' Your Coal Job Promises." *CNN*, December 17. <http://money.cnn.com/2016/12/16/investing/trump-coal-jobs-murray-energy/>.
- Global Carbon Project. 2016. "Global Carbon Budget 2016."
- Global Wind Energy Council. 2016. "Global Wind Report 2016." <http://files.gwec.net/files/GWR2016.pdf>.
- Government of India. 2016. "Draft National Electricity Plan."
- Houser, Trevor, Jason Bordoff, and Peter Marsters. 2017. "Can Coal Make a Comeback?" [http://energypolicy.columbia.edu/sites/default/files/energy/Center on Global Energy Policy Can Coal Make a Comeback April 2017.pdf](http://energypolicy.columbia.edu/sites/default/files/energy/Center%20on%20Global%20Energy%20Policy%20Can%20Coal%20Make%20a%20Comeback%20April%202017.pdf).
- IEA. 2016. "Renewable Energy. Medium-Term Market Report 2016." <http://www.iea.org/Textbase/npsum/MTrenew2016sum.pdf>.
- Kahn, Debra. 2017. "California Adopts Strict Rules for Methane Emissions." *E&E News*, March 24. <https://www.scientificamerican.com/article/california-adopts-strict-rules-for-methane-emissions/>.
- Lavelle, Marianne. 2017. "Trump Repeal of Climate Rules Means U.S. Paris Target Out of Reach." *Inside Climate News*, March 20. <https://insideclimatenews.org/news/20032017/paris-climate-agreement-donald-trump-global-warming-clean-power-plan>.
- Megerian, Chris. 2017. "California's Vow to Reduce Auto Pollution May Be Setting up a Full-out War with Trump." *Los Angeles Times*, March 24. <http://www.latimes.com/politics/la-pol-sac-california-vehicle-emissions-20170324-htmstory.html>.
- National Bureau of Statistics of China. 2017. "Statistical Communiqué of the People's Republic of China on the 2016 National Economic and Social Development." [http://www.stats.gov.cn/english/PressRelease/201702/t20170228\\_1467503.html](http://www.stats.gov.cn/english/PressRelease/201702/t20170228_1467503.html).
- Rogelj, Joeri, Gunnar Luderer, Robert C. Pietzcker, Elmar Kriegler, Michiel Schaeffer, Volker Krey, and Keywan Riahi. 2015. "Energy System Transformations for Limiting End-of-Century Warming to below 1.5 °C." *Nature Climate Change* 5 (6). Nature Publishing Group: 519–27. doi:10.1038/nclimate2572.
- Sierra Club. 2017. "Milestone 250th and 251st American Coal Plants Announce Retirement." <http://content.sierraclub.org/press-releases/2017/03/milestone-250th-and-251st-american-coal-plants-announce-retirement>.
- The White House. 2013. "The President's Climate Action Plan." Washington D.C. <https://obamawhitehouse.archives.gov/sites/default/files/image/president27sclimateactionplan.pdf>.
- . 2017a. "An America First Energy Plan." Washington, D.C. <https://www.whitehouse.gov/america-first-energy>.
- . 2017b. "Presidential Executive Order on Promoting Energy Independence and Economic Growth." Washington, D.C. <https://www.whitehouse.gov/the-press-office/2017/03/28/presidential-executive-order-promoting-energy-independence-and-economy-1>.
- U.S. Bureau of Land Management. 2016. "Fact Sheet - Methane Waste Prevention Rule."
- U.S. Department of Transportation. 2017. "Notice of Intention To Reconsider the Final Determination of the Mid-Term Evaluation of Greenhouse Gas Emissions Standards for Model Year 2022–2025 Light Duty Vehicles." <https://www.gpo.gov/fdsys/pkg/FR-2017-03-22/pdf/2017-05316.pdf>.
- U.S. Environmental Protection Agency. 2015. "Protection of Stratospheric Ozone: Change of Listing



Status for Certain Substitutes under the Significant New Alternative Policy Program.”  
<https://www.gpo.gov/fdsys/pkg/FR-2015-07-20/pdf/2015-17066.pdf>.

———. 2016. “Oil and Natural Gas Sector: Emission Standards for New, Reconstructed, and Modified Sources.” Washington D.C. <https://www.gpo.gov/fdsys/pkg/FR-2016-06-03/pdf/2016-11971.pdf>.

———. 2017a. “Review of the 2016 Oil and Gas New Source Performance Standards for New, Reconstructed, and Modified Sources.” *Federal Register*. doi:10.2105/AJPH.65.9.986.

———. 2017b. “Review of the Clean Power Plan.” <https://www.gpo.gov/fdsys/pkg/FR-2017-04-04/pdf/2017-06522.pdf>.

UNEP & Bloomberg. 2017. “Global Trends in Renewable Energy Investment 2017.”

The Climate Action Tracker is an independent science-based assessment that tracks the emission commitments and actions of countries. It is a joint project of the following organisations:

#### **Climate Analytics**

Climate Analytics is a non-profit institute based in Berlin, Germany, with offices in Lomé, Togo and New York, USA, that brings together inter-disciplinary expertise in the scientific and policy aspects of climate change with the vision of supporting science-based policy to prevent dangerous climate change, enabling sustainable development. Climate Analytics aims to synthesise and advance scientific knowledge in the area of climate, and by linking scientific and policy analysis provide state-of-the-art solutions to global and national climate change policy challenges. Contact: Dr. h.c. Bill Hare, +49 160 908 62463

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#### **NewClimate Institute**

NewClimate Institute is a non-profit institute established in 2014. NewClimate Institute supports research and implementation of action against climate change around the globe, covering the topics international climate negotiations, tracking climate action, climate and development, climate finance and carbon market mechanisms. NewClimate Institute aims at connecting up-to-date research with the real world decision making processes. Contact: Prof. Dr. Niklas Höhne, +49 173 715 2279

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