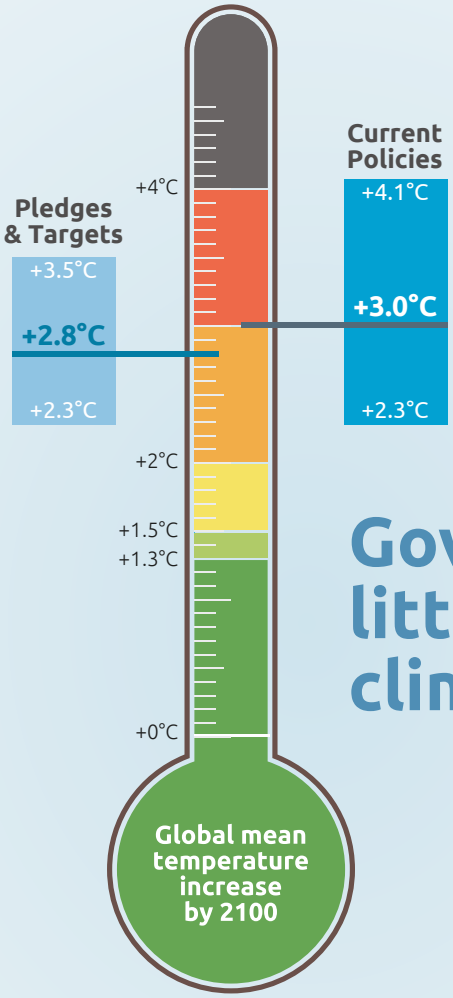
Climate Action Tracker



Governments still showing little sign of acting on climate crisis

Climate Action Tracker

WARMING PROJECTIONS GLOBAL UPDATE

December 2019

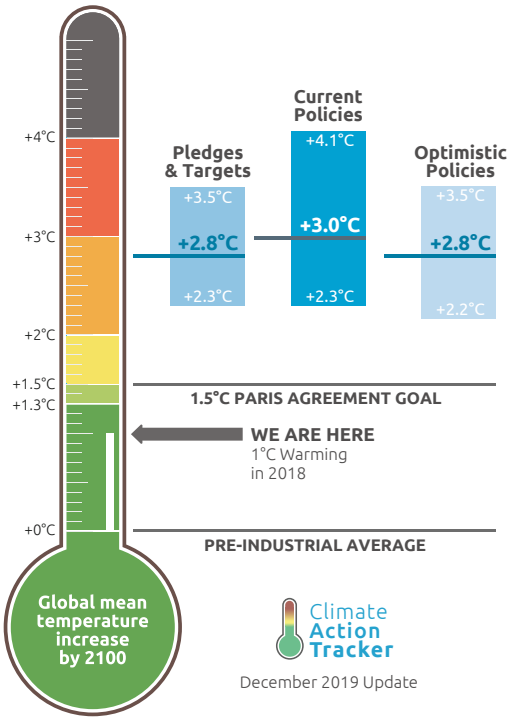
NEW CLIMATE INSTITUTE

CLIMATE ANALYTICS

Summary

Large gap remains for 1.5°C warming

- Under current pledges, the world will warm by 2.8°C by the end of the century, close to twice the limit they agreed in Paris. Governments are even further from the Paris temperature limit in terms of their real-world action, which would see the temperature rise by 3°C. An 'optimistic' take on real-world action including additional action that governments are planning still only limits warming to 2.8°C.
- Warming estimates have fallen by 0.1-0.2°C compared to the CAT's September 2019 update. However, the reason is largely methodological changes and data updates rather than any major scaling-up of climate action.



Governments need to enhance NDCs in 2020

- As of December 2019, very few governments have announced updated and strengthened Paris Agreement pledges: only the Marshall Islands has submitted an updated NDC, and Chile has published a draft, which is at least a clear step forward from its current target.
- In Paris, governments agreed their actions were not enough to meet the agreement's goals and that they would enhance their climate action plans by 2020. It is worrying that governments are not stepping up, and it is irresponsible for countries to announce that they will not update their NDC by 2020.
- The CAT has mapped and analysed these developments in our new "Climate Target Update Tracker", which we will update as announcements are made.

Global coal addiction remains an issue

- Many governments are still firmly embracing coal even if it is more expensive than renewables. It is especially problematic in Asia, where China, Japan and South Korea are all funding coal offshore, as well as building new plants themselves. An example of the expansion is the proposed Lamu coal-fired power station in Kenya, which would be both Chinese funded and built.
- The world is not tracking towards a Paris Agreement-compatible phase-out of coal. We observe a net increase of 63 GW of operating coal-fired capacity between 2015 and 2019. However, this was accompanied by a significant decrease in plans to expand the coal fleet. The coal pipeline has shrunk by nearly 75% between 2015 and 2019.

Growth of gas emerging as critical issue

- Global demand for natural gas is growing rapidly - 5% from 2017 to 2018 - and was responsible for the largest increase in CO_2 emissions from fossil fuel combustion in this period (nearly two thirds). To be compatible with the Paris Agreement natural gas in power generation, without deployment of CCS, needs to peak before 2030 and be halved by 2040 below 2010 levels, with demand for gas shrinking to only a tiny part of global electricity demand by 2050.

Growth in renewables expected to soar in the next half decade

- Renewable capacity growth was positive in 2018 with almost 2,400 GW installed worldwide, after doubling in the last ten years. The outlook for renewables is also positive in 2019, as renewable power capacity is projected to increase by approximately 50%, or 1,200 GW in the next five years. Most of the growth is from solar PV and onshore wind, which accounts for 60% and 25% of the additional installations respectively. Hydro will start to play a diminished but still significant role, while offshore wind capacity plans to triple.

Some positive policy developments

- South Africa's emissions are projected to decline for the first time; Switzerland is working to increase its already high carbon price to significantly accelerate emissions reductions. Norway, New Zealand and Germany have adopted zero emission targets for 2050; New Zealand's is now enshrined in national law, and in 2018 the EU's emissions decreased by around 2.1%, driven mainly by a decrease in the energy sector.

Deteriorations of climate policy

- Brazil's deforestation rates are at a ten-year record high. The USA has now officially given notice that it will withdraw from the Paris Agreement and continues its rollback of climate policies. The Australian government continues to support fossil fuel interests and its emissions from fossil fuels (excluding the LULUCF sector) have increased by around 1% per year, on average, since 2014, while almost all states and territories have adopted net-zero targets. In Mexico and Argentina, government changes endanger the continuation of previously promising mitigation efforts.

The CAT assessment to cover four new countries

- The CAT has added four new countries to our list of those for which we undertake detailed mitigation assessments and rate: Kenya (2°C compatible), Germany (Highly Insufficient), United Kingdom (Insufficient) and Viet Nam (Critically Insufficient).

The conclusions of the IPCC's Special Report on 1.5°C are clear and direct: Governments need to rapidly reduce CO_2 emissions to net zero by 2050 and of all greenhouse gases by 2070, and in order to get there reduce emissions globally by 45% by 2030 from 2010 levels. It is time for governments to deliver on their promises by announcing updated - and enhanced - 2030 emission reduction targets and releasing their mid-century plans.

In September 2019, UN Secretary General António Guterres invited governments to his Climate Action Summit to announce new and improved climate commitments. More than 65 nations communicated intentions to increase their climate action, but the largest economies in the world - and the biggest emitters - stayed silent.

In this briefing for COP25 in Madrid, Spain, hosted by Chile, the CAT introduces its new Climate Target Update Tracker, updates its estimates on where country commitments and real-world action get us in terms of global warming by the end of the century. Here, we highlight our country assessments for Australia, Brazil, Chile, China, the EU, Germany, India, Indonesia, Kenya, Saudi Arabia, South Africa, the United Kingdom, the United States, and Viet Nam. Below is a section of highlights (see from 14 for more details):

Country developments summary

AUSTRALIA

Catastrophic bushfires, soaring LNG exports, a secret review of climate policy

Climate policy is deteriorating, as the government focuses on liquified natural gas (LNG) exports, a potential new coal-fired power station, and fails to establish effective policies to reduce emissions. Fossil fuel and other emissions from energy, industry, transport and other sectors increase by 1% a year. More than two million hectares have burned in a record early bushfire season, but the government has downplayed or denied the connection between the wildfires and drought ravaging the continent, leading to water shortages and restrictions in town and cities.

BRAZIL

Continuous reversal of environmental policies as 2019 breaks records in deforestation, forest fires

At odds with the urgent need for climate action, Brazil's weakening of environmental institutions and budget cuts reduces its ability to regulate environmental crimes, including illegal deforestation in the Amazon region. Deforestation and resulting emissions increases have accelerated, with the 2019 dry season breaking records in both deforestation rates and forest fires.

CHILE
Mixed signals on climate action: a new draft target, but a new coal plant
Showing climate leadership by announcing a coal-phase out by 2040, hosting the UNFCCC COP25, and drafting a new NDC with improved ambition, but new coal development threatens decarbonisation plans.

CHINA
Third year of emissions growth as coal investments and increased industrial output continue
Continues as the world's largest consumer of coal and largest developer of renewable energy; but while fossil investments grow, renewable subsidies are being phased out. Increasing CO_2 emissions from China continue to raise concerns that the progress in recent years could be reversing.

EUROPEAN UNION
Cross-sectoral policies, emissions trend moving in right direction, but needs to be faster
"Clean Energy for all Europeans" package sets the framework for decarbonising energy and buildings sectors, but concerns arise over increasing support for natural gas development.

GERMANY
Likely to miss climate targets; adopted national climate law
The new Climate and Energy Package is not enough to reach medium-term climate and energy targets. New elements, such as a coal phase-out, a carbon price in specific sectors and an overarching climate law, are positive but insufficient steps.

INDIA
On track to become a global renewable energy leader
For three consecutive years, renewable energy investment topped that of fossil fuel-related power investments, and there are signs in 2019 of a marked slowdown in CO_2 emissions growth. Even so, significant coal-fired capacity is planned for development.

INDONESIA
Sets more ambitious plans but cannot let coal go
Developed plans to increase both its renewable capacity share and number of electric vehicles, but massive coal pipeline puts a question mark on the positive outcomes of such targets.

KENYA
On track to overachieve NDC through ambitious electricity sector plans
Energy future is at a crossroads, with strong political support for clean energy at odds with plans to build the first two coal-fired power plants in East Africa; at least one would be Chinese-funded and built.

SAUDI ARABIA
Ambitious new renewable energy target but progress yet to be seen
Development of non-fossil energy is a key component of the "Vision 2030" strategy to reform an oil-dependent economy, but building of renewable and nuclear capacity has stalled.

SOUTH AFRICA
Progress in one of the coal-heaviest economies
Updated electricity sector planning and economic slow-down has caused emissions to decrease. A shift in energy policy signals the decommissioning of the majority of coal plants by 2050.

UNITED KINGDOM
2050 net-zero emission legislation adopted in June 2019
Declared Climate Emergency, became first industrialised country to legislate a new net-zero emissions by 2050 target, is phasing out coal by 2023, but is in danger of missing medium-term targets including 2030. With the Presidency of COP26 in Glasgow in 2020, it's important for the government to ratchet up its climate policies to match need for ambitious reductions by 2030.

UNITED STATES
Trump Administration withdraws from the Paris Agreement and continues policy rollbacks
Despite decision to withdraw from the Paris Agreement and other rollbacks, the US power sector looks set to overachieve the emissions reduction goals of the repealed Clean Power Plan.

VIET NAM
Locking in coal, but NDC pledge update signals hope for ambition
Viet Nam is highly vulnerable to the impacts of climate change, yet its fast-growing economy is dominated by fossil fuels, a trend that if continued will result in emissions far outside Paris Agreement compatible levels. The nation has the potential to be a leader in renewable energy - but only if it drops coal expansion plans and implements an ambitious NDC update in 2020.

Contents

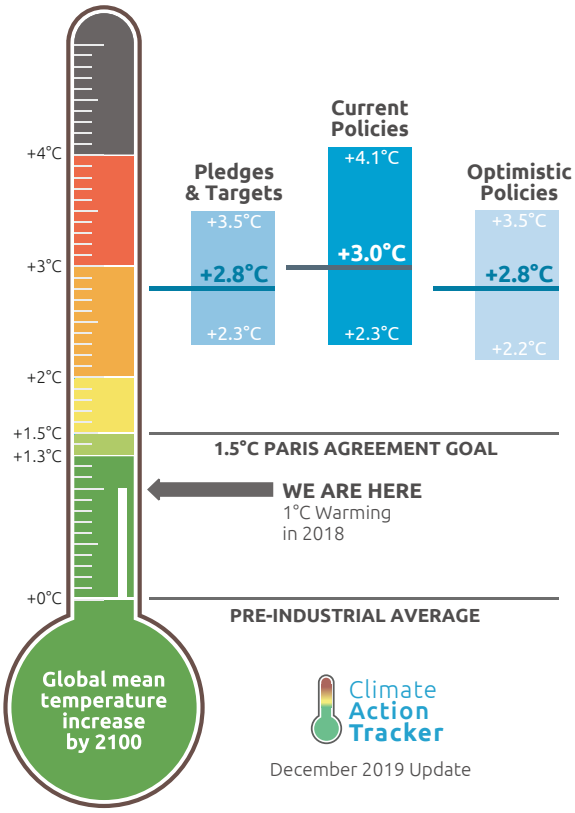
Current Paris pledges not enough to reach 1.5°C limit

Global warming update

The world will warm by 2.8°C by the end of the century, close to twice the limit agreed to in Paris, if governments stick to their current Nationally Determined Contributions (NDCs) - pledged under the Paris Agreement.[1]

Governments are even further from the Paris temperature limit in terms of their real-world action (current policies) that would see the temperature rise by 3°C. The necessity of strengthening pledges and scaling up climate action in 2020 cannot be overstated.

At 2.8˚C, the warming estimate for the Paris Agreement NDC pledges and targets is 0.1°C lower than our last update in September. The real-world action - the CAT's "current policy pathway" - 3˚C warming estimate is 0.2°C lower than our September 2019 analysis. However, these drops in estimated warming are largely due to methodological changes and data updates, rather than a major scaling up of government action.



China and Russia contributed the most to these changes:

- For China, most of the downward revision (~800 $MtCO_2e$ per year) is from updated non-CO_2 sector emission trends in the medium term, as well as the inclusion of recent policy updates in HFC and CH_4 management and phase out since 2015. Air quality regulations, fuel switching from coal to gas and electricity for buildings heating, and strong electric vehicle forecasts also made a minor contribution to the downward trend after 2020 (IEA, 2019e).
- In Russia's case, the change is driven because Russia has changed its CO_2 and methane emission factors for oil exploration and production and venting related to oil production, which reduced historical emissions by 450 $MtCO_2e$ per year. Russia had been using the default emission factors for developing countries and, in response to an international review of its GHG inventory, has switched to the default emission factors used for developed countries (Russian Federation, 2019; UNFCCC, 2019).

Other key points

The US emissions projections for 2030 increased by 2-3% compared to our September 2019 update. This increase was driven by updated projections of non-CO_2 emissions (mainly methane and N_2O) and policy rollbacks on energy efficiency measures and F-gases that increase projected emissions in 2030 in non-power sectors. The full extent of these increases has largely been offset by lower emissions in the electricity sector.

For the countries that we project will overachieve their NDC, we use this lower emissions level (their current policy pathway) as a basis for the CAT's global Paris Pledge pathway. This also applied to the USA, which we count as not having an NDC. For these countries, changes in our projections based on

1 The figure is the "central" (median) estimate of the projected temperature increase in 2100. It is likely (66% or greater change) of a global average temperature increase will be in the range of 2.3 – 3.5°C.

new national policies and methodological updates affect both the global CAT Paris pledge pathway and the global current policy pathway.

An 'optimistic' take on real-world action - including additional action that governments are planning - still only limits warming to 2.8°C and indicates that, along with strengthening their NDCs next year, governments must focus on planning and implementing additional measures to ensure those targets are met.

Recent global trends

Greenhouse gas emissions still continue to increase globally. Preliminary estimates for 2019 indicate that CO_2 emissions rose again by 0.6% reaching a new historic high (Global Carbon Project, 2019). After stalling in 2014 to 2015, CO_2 emissions rose again sharply in 2017 and in 2018 (IEA, 2019a).

This is particularly alarming, because with rising emissions, temperature rise will *accelerate*. The consequences of climate change are already being felt around the world and it is clear that climate change must be slowed down and stopped. But we are doing the exact opposite and continue to have our foot on the gas, instead of the brake. Only when emissions drop will temperature rise slow. On a positive note, emissions from coal, the largest source of CO_2 emissions, may again have decreased in 2019 according to two independent sources (Global Carbon Project, 2019; Myllyvirta, Jones, & Buckley, 2019), after having remained stable from 2015 to 2017 and increased in 2018. In many countries that we analyse, the main trend seems to be an uptake of renewable energy, but while the threat of coal is widely recognised, a whole new threat is the rise of gas.

While action in the coal sector still falls far short of the required reductions in coal-fired power generation under a Paris Agreement compatible scenario, which would require and 80% reduction of generation below 2010 levels leading to a phase-out by 2040 (Climate Analytics 2019), there are signs that a critical momentum is building around coal phase-out for electricity production.

These include a consistent decline in key indicators over the past three years, including construction starts, pre-construction activity, and plant completions (Shearer et al. 2019), accelerated closure of coal power plants in electricity markets traditionally dominated by coal, and declining global average capacity factors for operating coal power plants (Myllyvirta, Jones, and Buckley 2019). We observe a net increase of 63 GW of operating coal-fired capacity between 2015 and 2019. However, this was accompanied by a significant decrease in plans to expand the coal fleet. The coal pipeline has shrunk by nearly 75% between 2015 and 2019 (Climate Analytics, 2019).

Global emissions from gas again increased by 2.5% in 2019 (Global Carbon Project, 2019), continuing the fast growth over recent years. Emissions from natural gas by 5% between 2017 and 2018, accounting for half of the increase in emissions from fossil fuel combustion (Global Carbon Project, 2019).

It is a misconception that switching to natural gas is a solution to climate change. Natural gas is incompatible with the climate targets. Global CO_2 emissions (including those of natural gas) must fall to net zero by 2050, as envisaged by the Paris Agreement. As explained below, the use of gas in the electricity sector must be halved by 2040 compared to 2010. But the exact opposite is happening as more new gas fields are being developed, particularly from fracking, which can be as emissions-intensive as coal. Ports and pipelines are being massively expanded. If we are to take climate protection seriously, all these investments must be reconsidered.

An illustrative example of this misconception is the latest IEA World Energy Outlook (IEA, 2019e). In the IEA's latest "Current Policies Scenario", electricity generation from gas is projected to grow by 67% (over 2010 levels) in 2030 to more than double (over 2010 levels) in 2040 (IEA, 2019e). In addition to its "Current Policies Scenario", which is clearly not Paris Agreement compatible, the IEA has also published a Sustainable Development Scenario (SDS) (updated in 2019), and in 2016 a Beyond 2°C Scenario (B2DS). Natural gas demand for electricity in both these scenarios lie significantly above the median of Paris Agreement compatible scenario range: the IEA's 2019

'Sustainable Development Scenario' is 46% above 2010 levels in 2030 and 16% above in 2040, and the B2DS is 56% and 14% above 2020 levels in 2030 and 2040 respectively.

This is incompatible with Paris Agreement compatible benchmarks[2] for gas generation derived from mitigation pathways assessed in IPCC's Special Report on 1.5°C. These indicate that natural gas demand for electricity without CCS would need to peak before 2030 and drop to 53% below 2010 by 2040. On remaining use of gas by 2050, the IPCC found in its Special Report on 1.5°C that "the use of CCS would allow the electricity generation share of gas to be approximately 8% (3–11% interquartile range) of global electricity in 2050". By 2050 the use of natural gas without CCS in the power sector decreases to 85% below its peak use around 2020, its share in the global electricity demand decreases to a few percent, and by 2050 the use of gas would need to shrink to only a tiny part of the global electricity demand and market..

The continuing drop in the cost of renewables around the world is a cause for optimism, as it is likely to further spur the rapid uptake needed to achieve necessary steep emission cuts from the electricity sector (IRENA, 2019b). Renewable capacity growth has doubled in the last ten years, with total global installed capacity reaching almost 2,400 GW in 2018 (IRENA, 2019a).

By the start of 2019, electricity generated from new wind and solar PV was cheaper than that from new coal and gas sources across more than two thirds of the world (BloombergNEF, 2019). Further, new wind and solar PV is already more cost-effective in some places than running existing fossil fuel-fired plants. The drastic fall in the cost of auctioned offshore wind projects in the UK in 2019 bodes well for the future expansion of this sector there and elsewhere (IEA, 2019b).

The outlook for renewable capacity growth is positive in 2019 after strong growth since 2013 (IEA, 2019c). Renewable power capacity is projected to increase by approximately 50%, or 1,200 GW in the next five years. Most of the growth is from solar PV and onshore wind, which account for 60% and 25% of the additional installations respectively. Hydro will start to play a diminished but still significant role (10% of added capacity), while offshore wind capacity (4% of added capacity) is projected to triple. The lion's share of renewable capacity additions before 2024 is expected to occur in China (40%), with the EU, US, and India being other frontrunners (IEA, 2019c).

The CAT's Climate Target Update Tracker - assessing updated NDCs

As the CAT analysis shows, government Paris pledges - nationally determined contributions (NDCs) - to date are far from what's needed to keep global temperature increase to the Paris Agreement's 1.5˚C warming limit. It is the joint responsibility of all countries to "undertake and communicate ambitious efforts" (UNFCCC, 2015; Art 3).

In order to achieve the Paris Agreement's 1.5˚C goal, governments agreed to submit successive pledges every five years, with the first update expected by COP26 in 2020. The Paris Agreement states that any successive NDC needs to represent a progression beyond the previous contribution (UNFCCC, 2015; Art 4.3).

Further, developed countries should adopt economy-wide absolute emissions reduction targets and developing countries are encouraged to move towards this type of target over time (UNFCCC, 2015; Art 4.4). The Paris Agreement rulebook adopted in Katowice in 2018 also requests countries to provide specific information about their NDCs, with the objective of enhancing their comparability and transparency.

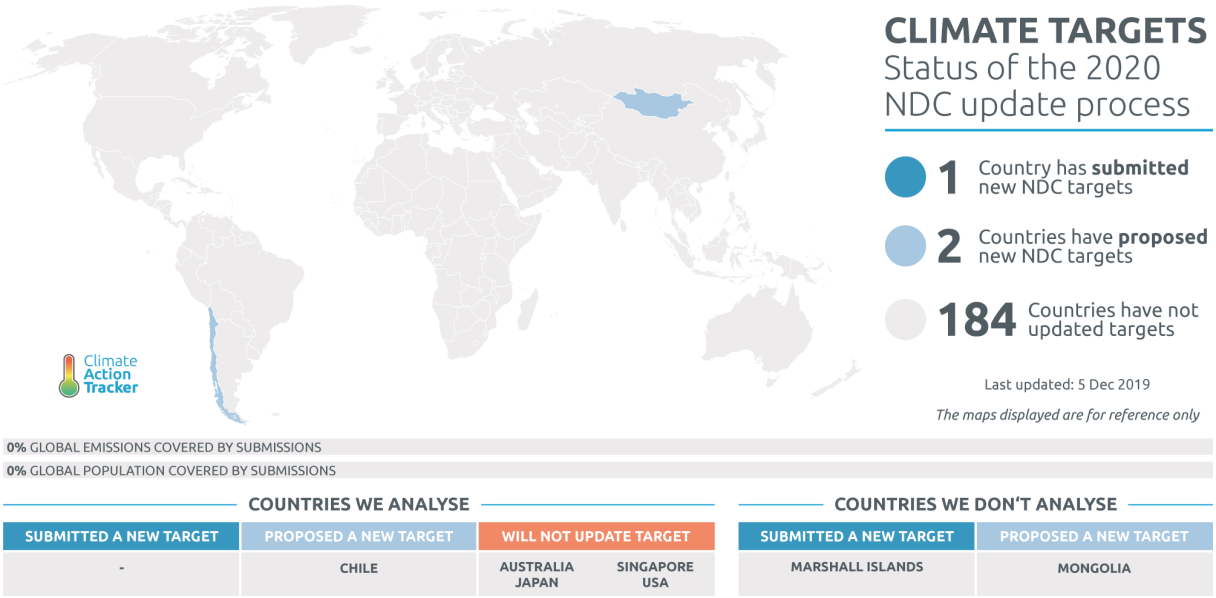
In the run-up to COP26, the CAT will track new government climate action plans, both proposed and submitted to the UNFCCC - for the 36 countries we cover, and evaluate the updated NDCs compared to previous targets to analyse to what extent the update has improved, and how it compares to the country's fair share of emissions reductions.

2 We apply a set of sustainability filters to the modelled mitigation pathways underlying the IPCC Special Report on 1.5°C to obtain a set of Paris Agreement compatible pathways. For further details, please refer to (Climate Analytics, 2019).

Paris Agreement NDC updates so far

To date, only one country has submitted a new NDC target: the Marshall Islands (UNFCCC, n.d.). One of the countries the CAT tracks - Chile - has released a draft of its updated NDC.

However, a few CAT countries have already announced they do not intend to update their NDC in the 2020 update cycle: Australia, Singapore, Japan, and the USA. Not updating the NDC in the cycle despite the looming and growing emissions gap could be considered a violation of the Paris Agreement, as well as a direct violation of the agreements the countries themselves committed to.



To assist in judging the quality and strength of government updated NDC announcements, the CAT will track, analyse and rate upcoming NDCs as they are announced. The following sections establish the framework of this assessment and illustrate it with Chile as an example.

Criteria for progress of mitigation pledges

The CAT will compare current and updated NDCs based on a set of criteria (also see Table on page 10). These criteria—partly based on the Katowice texts—include:

- **Target in absolute emissions:** we consider that emission levels in the target year is the most important mitigation element of updated NDCs, because this is "what the atmosphere sees" and what counts toward global temperature increase. To progress, an updated NDC must result in lower emission levels than the previous target. If the absolute emissions level is not provided in the NDC, the CAT will translate the target to this metric, and emissions above/below 1990 and 2010 levels. We will exclude emissions from the land use sector because the variety of accounting methods deployed by governments make this sector very difficult to compare.

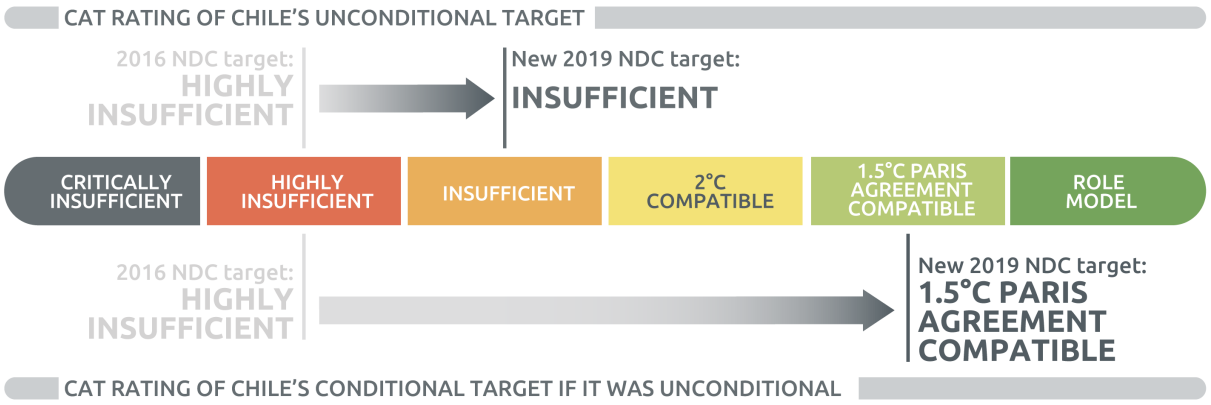
- **Linking to long-term target:** NDCs describe short-term (2030) steps that have to be informed by a trajectory consistent with the long-term goals of the Paris Agreement. According to the IPCC Special Report on Global Warming of 1.5°C, global CO_2 emissions need to reach net zero by around 2050 and all GHG emissions need to reach net zero by 2070. We therefore check the existence of a long-term zero-emissions target[3] and whether the NDC is guided by this target.

3 Countries use varying definitions for zero-emission targets. 'Net-zero CO_2 emissions' or 'carbon neutrality' refers only to CO_2. 'Net-zero greenhouse gas emissions' refers to all greenhouse gases. Climate neutrality can also include other climate forcers such as black carbon. Some allow offsetting their emissions with reductions or removals in other countries. Some include or exclude international aviation and shipping.

- **Full sector and gas coverage:** as global greenhouse gas emissions have to eventually reduce to net zero, national actions should cover all sectors, and governments should adopt economy-wide absolute emissions reduction targets covering all greenhouse gases. To increase transparency, governments should also provide separate targets for the land use sector. Governments vary in their approaches to land use, land-use change and forestry (LULUCF) in the NDCs, which adds significant uncertainty to where emissions will be in 2030 (Fyson & Jeffery, 2019). Greater transparency and separate LULUCF targets will assist in evaluating the scale of committed government action.
- **Measures to implement the NDC:** governments should clarify their implementation plans as to how they will meet their NDC target. This will provide confidence on the commitment to the target and increase the likelihood of its implementation.
- **Explanation as to why this is a fair contribution:** NDCs are meant to indicate a country's highest possible level of ambition amid national circumstances. For the previous NDC round, governments were asked to explain why their NDC was a fair contribution to the global goal, but only a few have done so (Winkler et al., 2018). Providing this information forces a government to consider this question in its national processes, in the best case not only considering what is fair for them, but what this would mean what others have to do.

Assessing Chile's draft updated NDC

Chile is the first country of those assessed by the CAT that has published a draft NDC (Ministerio del Medio Ambiente de Chile, 2019). We have taken this draft 2019 NDC - released for public consultation in October 2019 - as an example and analysed the mitigation component based on the criteria listed above, in comparison to Chile's current NDC. We conclude that Chile's draft NDC is clearly more ambitious than its current one.



The Climate Action Tracker rates countries based on their submitted NDC targets. We rate the current Chilean 2030 pledge "Highly insufficient." If Chile were to officially update its NDC based on the October 2019 proposal, we would upgrade its CAT rating to "Insufficient." While the draft NDC update is a step forward in climate action ambition, the new rating still indicates that Chile's proposed climate commitment in 2030 is not consistent with holding warming to below 2°C, let alone limiting it to 1.5°C as required under the Paris Agreement, and is instead consistent with warming between 2°C and 3°C. For a detailed comparison of Chile's draft NDC and current NDC, please see the table below.

CHILE Comparison of unconditional NDC pledges

		NDC 2016	Draft NDC 2019*	Change
2030 unconditional target(s)	**Country's formulation of the target**	30% below 2007 GHG intensity of GDP by 2030	Maximum emissions level in 2030 of 97MtCO2e excl. LULUCF in 2030. A GHG emissions budget between 1110 and 1175 MtCO2e excl. LULUCF between 2020 and 2030, with GHG emissions peaking in 2027.	
	Absolute emissions level [excl. LULUCF]	131 MtCO2e in 2030	97 MtCO2e in 2030 **[26% lower than 2016 NDC]**	+
	Emissions compared to 1990 and 2010 [excl. LULUCF]	[153% above 1990 emissions by 2030] [42% above 2010 emissions by 2030]	[86% above 1990 emissions by 2030] [6% above 2010 emissions by 2030]	+
	CAT rating	Highly insufficient	**Insufficient**	+
	Net zero-emissions target	Chile announced in June 2019 its aim towards carbon neutrality by 2050, no official target has been submitted to the UNFCCC. Chile has added this target to its draft Climate Change Framework Law.		
	Alignment of NDC to long term target		Alignment to 2050 target unclear, as 2050 Long Term Strategy is planned to be developed during 2020.	
	Sector coverage	Economy-wide, excl. LULUCF	Economy-wide, excl. LULUCF	
	Separate target for LULUCF	Yes Separate target from rest of emissions: management and recovery of 100,000 hectares and reforestation of 100,000 hectares of forest by 2030	Yes Separate target from rest of emissions: management and recovery of 200,000 hectares by 2030, reforestation of 200,000 hectares of forest by 2030, and reducing emissions from deforestation and land degradation by 20% by 2030 from the emissions average 2001-2013.	+
	Gas coverage	All greenhouse gases	All greenhouse gases and black carbon separately	
	Target type	Intensity target: GHG emissions/GDP	Absolute target, emissions budget, and peak year	+
	Clarity of implementation plan	Planning processes (development of strategies and policy measures)	Planning processes (development of strategies and policy measures) and governance measures (incl. ministry responsibilities)	+
	Explanation why the target is a fair contribution towards the global goal		Yes, based on a variety of studies assessing effort sharing	+

* Proposal, not yet submitted to the UNFCCC

Update on country actions

Are countries implementing enough policies to meet their NDCs?

Climate Action Tracker December 2019 update	CAT Paris commitment rating	Will policies meet the target?
The Gambia	1.5°C PARIS AGREEMENT COMPATIBLE	YES
Morocco	1.5°C PARIS AGREEMENT COMPATIBLE	CLOSE
India	2°C COMPATIBLE	YES
Kenya	2°C COMPATIBLE	YES
Bhutan	2°C COMPATIBLE	CLOSE
Ethiopia	2°C COMPATIBLE	CLOSE
Costa Rica	2°C COMPATIBLE	NO
Philippines	2°C COMPATIBLE	NO
Peru	INSUFFICIENT	YES
EU	INSUFFICIENT	CLOSE
Australia	INSUFFICIENT	NO
Brazil	INSUFFICIENT	NO
Canada	INSUFFICIENT	NO
Kazakhstan	INSUFFICIENT	NO
Mexico	INSUFFICIENT	NO
New Zealand	INSUFFICIENT	NO
Norway	INSUFFICIENT	NO
Switzerland	INSUFFICIENT	NO
UK	INSUFFICIENT	NO
Chile	HIGHLY INSUFFICIENT	YES
China	HIGHLY INSUFFICIENT	YES
Indonesia	HIGHLY INSUFFICIENT	YES
Singapore	HIGHLY INSUFFICIENT	YES
South Africa	HIGHLY INSUFFICIENT	YES
UAE	HIGHLY INSUFFICIENT	YES
Japan	HIGHLY INSUFFICIENT	CLOSE
Argentina	HIGHLY INSUFFICIENT	NO
Germany	HIGHLY INSUFFICIENT	NO
South Korea	HIGHLY INSUFFICIENT	NO
Russian Federation	CRITICALLY INSUFFICIENT	YES
Turkey	CRITICALLY INSUFFICIENT	YES
Ukraine	CRITICALLY INSUFFICIENT	YES
Viet Nam	CRITICALLY INSUFFICIENT	YES
Saudi Arabia	CRITICALLY INSUFFICIENT	CLOSE
USA	CRITICALLY INSUFFICIENT*	NO
Nepal	NOT RATED	

* The CAT's rating for the USA is "Critically Insufficient" based on the Trump administration's decision to withdraw from the Paris Agreement.

Recent progress and opportunities to update NDCs

As CAT projections on global warming show, there is little progress on the global level. This section goes into more detail and describes recent highlights and lowlights in climate policy making of various CAT countries. All in-depth country assessments are available on www.climateactiontracker.org/countries

In many countries, coal remains an issue:
Some countries are still investing in new coal power plants, even if they make no economic sense and may result in stranded assets.

- China has picked up plans for new coal-fired power plants within and outside its borders.
- Japan insists on continuing its reliance on coal, despite investors walking away from this fuel.
- In Kenya, despite the fact a planned new coal fired power plant is likely to only run at 8% of its capacity the government has still not stopped its plans to build two
- UAE will build its first ever coal power plant, despite rich renewable resources.
- Indonesia's and Turkey's coal pipeline is still huge despite declining projections for electricity demand.
- Even countries with phase out plans like Germany and Chile will probably have new coal-fired power plants going online next year as their construction has already begun.

Since our last update, **some improvements have taken place:**

- South Africa's emissions are projected to decline for the first time, as a combination of its revised electricity sector planning and a slower than expected economic development. According to current emissions estimates and projections, South Africa may have already peaked its emissions, although this may change if the economy picks up again.
- Switzerland is working on a higher carbon price to significantly accelerate emissions reductions. The already comparatively high price is not yet yielding the reductions necessary to meet the target, but its legislations requires it to increase the carbon price in case the achievement of its targets is in danger.
- Norway, New Zealand and Germany have adopted zero emission targets, New Zealand's is now enshrined in national law. Our assessments of the three countries provide more detail on those targets.

In other countries, however, we observe **a deterioration of climate policy:**

- In Brazil, deforestation rates are at a ten-year record high.
- Chinese CO_2 emissions are expected to be up significantly in 2019, the third year in a row after hopes that a peak may have had been reached 2014-2016.
- In Australia, the federal government continues to support fossil fuel interests above anything else, hasn't set a new renewable energy target, and refuses to update its NDC, while almost all states and territories have adopted net-zero targets. The USA has now officially given notice that it will withdraw from the Paris Agreement.
- In Mexico and Argentina, government changes endanger the continuation of previously promising mitigation efforts.

Even the frontrunners need help: Morocco, Kenya, the Philippines and India get a good CAT rating based on their historical responsibilities and capabilities, even though their emissions are set to increase. While their climate pledges are within the range of what is considered to be a fair share of global effort, they are largely still not consistent with the mitigation objectives of the Paris Agreement, which require a full decarbonisation of the power sector, i.e. no new coal fired power plants. As comparably poor countries with low historical GHG emissions, they should plan so that

emissions are no longer increasing and receive support from other countries to enable it to transition to a Paris-compatible pathway.

The CAT has added four new countries to our mitigation assessments: Kenya, Germany, UK, Viet Nam. Kenya is on track to overachieve NDC through electricity sector plans, if plans for coal power are not realised. Germany struggles with a new energy and climate package, that will fail to achieve national mitigation targets. The UK had implemented effective mitigation actions in the past, but now emissions are stalling due to lack of continuation. Viet Nam is locking in coal, but Paris 2030 pledge update signals hope for ambition.

Australia

CAT **Paris commitment rating**: INSUFFICIENT

Will policies **meet that target?**: NO

Catastrophic bushfires, soaring LNG exports, a secret review of climate policy

Climate policy is deteriorating, as government focuses on liquified natural gas (LNG) exports, a potential new coal fired power station, and fails to move forward with effective policies to reduce emissions, with fossil fuel and other emissions from energy, industry, transport and other sectors increasing by 1% per year. Meanwhile more than two million hectares have burned in a record early bushfire season, however the Government has downplayed or denied the connection between the wild fires and drought ravaging the continent, and that are leading to water shortages and restrictions in town and cities.

Australia is denying the need for more ambitious climate action amid increasing climate impacts such as the catastrophic bushfires that enveloped several states in November 2019. The Government has said it will not update its "Insufficient" 2030 NDC target in 2020.

Australia's emissions from LNG production for export, one of the country's fastest-growing sources of emissions, have soared, while the government engages the fossil fuel lobby to review its emissions reduction instrument without a transparent review process. Australia is expanding its LNG capacity, aiming to have ten plants in operation to export over 80 Million tonnes of LNG annually (Department of the Environment and Energy, 2018). From 2015 to 2018, natural gas production increased by 75% (IEA, 2019d).

The government appears to have recognised that its "centrepiece" climate policy, the Emissions Reduction Fund (ERF), is failing to achieve emission reductions, and has asked a panel involving fossil fuel industry stakeholders to review the instrument (Mazengarb, 2019; Morton & Murphy, 2019). Recent ERF auctions have seen fewer emission abatements contracted, projects have been dropped from the fund for failing to meet abatements, and the fund is dominated by land use sector abatements with a high risk of reversal, such as the recent widespread bushfires of November 2019. The Australia Government also continues to focus on propping up the coal industry considering to underwrite new coal-fired power generation (AFR, 2019; DEE, 2019). The National Hydrogen Strategy released in November 2019 has an explicitly technology-neutral approach (COAG Energy Council, 2019), and risks becoming a brown hydrogen strategy in favour of supporting coal and carbon capture and storage technology, rather than focusing on renewable energy and green hydrogen (RenewEconomy, 2019).

There is no renewable target beyond 2020, and investment in renewables is declining (McConnell, 2019). In stark contrast, all Australian states and mainland territories have committed to legislated or aspirational zero emissions targets, and some have strong renewable energy targets (Climate Action Tracker, 2019).

The Climate Solutions Package introduced in February 2019 is a failed attempt at climate policy as it shows the government intends using Kyoto carry over credits to make up over half the abatement task to meet its NDC, which it has no intention of updating.

Australia's current policies fall far short of the emissions reductions required to meet the NDC 2030 target. If all other countries were to follow Australia's "Highly Insufficient" current policy trajectory, warming could reach over 3°C and up to 4°C. Australia's domestic reductions should "reflect its highest possible ambition" to be in line with the Paris Agreement. To play its fair share Australia needs to make contributions to other developing countries reducing their emissions.

Full CAT Australia assessment here.

Brazil

CAT **Paris commitment rating** — INSUFFICIENT

Will policies **meet that target?** — NO

Continuous reversal of environmental policies as 2019 breaks records in deforestation and forest fires

At odds with the urgent need for climate action, Brazil's weakening of environmental institutions and budget cuts reduces its ability to regulate environmental crimes, including illegal deforestation in the Amazon region. Deforestation and resulting emissions increases have accelerated, with the 2019 dry season breaking records in both deforestation rates and forest fires.

The consequences of President Bolsonaro's policy changes were illustrated by the 2019 dry season, which broke records in deforestation and forest fires, despite weather conditions being milder than in previous years, pointing to an increase in anthropogenic causes, including illegal deforestation. Outside the land use sector, the Brazilian government has implemented no new policies to halt emissions growth. Current energy infrastructure planning foresees a very important role for fossil fuels in the decades to come, including substantial expansion of production coming from unconventional resources not yet exploited.

Despite government inaction, market trends for renewable energy are positive in Brazil, as illustrated by the results of the latest national energy auctions for new capacity, where renewables have been awarded the majority, with solar (allowed to participate for the first time) and wind providing the lowest prices.

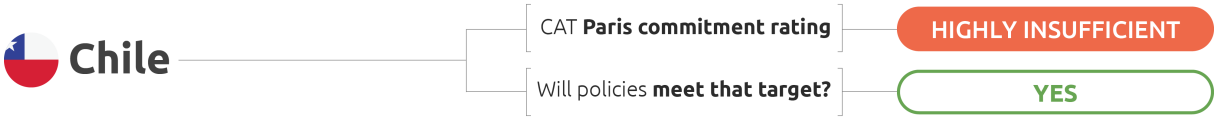
According to our most recent assessment, Brazil will need to implement additional policies to meet its economy-wide NDC targets and, with rising deforestation, is on track to miss its 2020 deforestation targets by a large margin. With current policies, emissions excluding LULUCF alone are expected to reach 1.06 $GtCO_2e$ in 2025 and 1.09 $GtCO_2e$ by 2030.

However, according to the draft Ten Year Plan, Brazil is well on track to meet its energy sector NDC targets - and looks set to overachieve its target of a 45% share of renewables. The government has not signalled any intention to update its NDC targets for 2020, nor has it made any statements about the strategies to close the remaining gap for the achievement of the LULUCF and economy-wide NDC targets.

The main policy instruments included in our current policy projections pathway are the energy efficiency national plans and the incentives for the uptake of renewables in the energy sector, including capacity auctions in the power sector, and the ethanol and biodiesel mandates in the transport sector, as well as the national biofuels policy RenovaBio.

To peak emissions and rapidly decrease levels afterward as required by the Paris Agreement, Brazil will need to reverse the current trend of weakening climate policy, by sustaining and strengthening policy implementation in the forestry sector and accelerating mitigation action in other sectors—including a reversal of present plans to expand fossil fuel energy sources.

Full CAT Brazil assessment here.



Mixed signals on climate action: a new draft target, but a new coal plant

Showing climate action leadership by announcing a coal-phase out by 2040, hosting the UNFCCC COP25, and drafting a new NDC with improved ambition, but new coal development threatens decarbonisation plans.

Despite the meeting moving to Madrid, Chile continues to hold the COP25 presidency, and has taken action towards scaling up climate action by working on a new Climate Change Framework Law, announcing details on coal phase-out plan, aiming for carbon neutrality in 2050, and proposing an updated NDC — with improved ambition, transparency, and governance—yet at the same time inaugurating a new coal-fired power plant.

In June 2019 Chile announced its aim to be carbon-neutral by 2050, together with a detailed plan for closing eight of its oldest coal-fired power plants—equivalent to 20% of its coal electricity capacity by 2024 (Ministerio de Energía, 2019). Chile closed two old coal plants with a total capacity of 170 MW around the time of this announcement, but a new 375 MW coal-fired power plant in Mejillones opened at the same time (Electricidad, 2016; Engie, 2019; Tomás Gonzalez, 2019), showing mixed signals about its climate commitments. It remains to be seen what the full decarbonisation plan between 2024 and 2040 will look like.

A full coal phase-out would be a remarkable step for a country with a 40% share of coal, however for Paris-compatibility, this needs to happen significantly sooner, namely by 2032 in the Latin America region (Climate Analytics, 2019), eight years ahead of the government's plan.

Our assessment shows Chile will meet its unconditional NDC target with currently implemented policies. Under a full implementation of all its planned policies, including the shutdown of all coal power plants and the electromobility strategy, Chile could even overachieve its conditional NDC target.

Chile is in the process of formulating a new Climate Change Framework Law with the objectives of a transition to a low emissions development towards achieving GHG neutrality in 2050, increasing resilience against climate change effects, and complying with international climate change commitments. The current draft bill (Gobierno de Chile, 2019), which has yet to be submitted to congress, includes governance, management instruments, financing measures and economic instruments. If approved, this bill would enshrine Chile's 2050 GHG emissions neutrality target into legislation.

Chile is also working on scaling up climate action nationally. In October 2019, Chile released a draft NDC update for public consultation (Ministerio del Medio Ambiente de Chile, 2019). Key elements include an absolute unconditional NDC target for 2030 that includes economy-wide emissions reductions, a carbon budget, and targets for the forestry sector. It also includes a conditional NDC, and links its 2030 target with the 2050 carbon neutrality goal, and embeds it all in the planning process.

Full CAT Chile assessment here.

China

CAT **Paris commitment rating** — HIGHLY INSUFFICIENT

Will policies **meet that target?** — YES

Third year of emissions growth as coal investments and increased industrial output continue

Continues as the world's largest consumer of coal and largest developer of renewable energy; but while fossil investments grow, renewable subsidies are being phased out. Increasing CO_2 emissions from China continue to raise concerns that the progress in recent years could be reversing.

China is the world's largest greenhouse gas emitter, and its policies and actions both at home and abroad have an enormous impact. In the last few years there had been hopeful signs that China's CO_2 emissions were flattening. However, discouragingly, China is continuing to increase its huge coal power plant fleet by 245 GW and is involved in another 102 GW of construction overseas. China's CO_2 emissions are estimated to have risen 2.3% in 2018 and as much as 4% over the first half of 2019 due to increased fossil fuel combustion and industrial production (Global Carbon Project, 2019; Korsbakken, Andrew, & Peters, 2019; Myllyvirta, 2019), marking a third year of growth after emissions had appeared to level out between 2014 and 2016.

China is implementing a range of policies in most sectors to limit coal use and increase renewable and low-carbon energy. Its new national emissions trading system, which will initially apply only to the power sector, will begin trading in 2020. However, the government has committed to removing domestic renewable subsidies by 2021, causing a slowdown in solar and wind projects in 2018 and 2019 after a record installation year in 2017. Cuts in subsidies for electric vehicles have also seen a slowdown in electric vehicle sales in 2019.

China has invested over five times more in developing coal-fired capacity than wind and solar capacity in foreign Belt and Road countries since 2014 (Reuters, 2019). While 2018 marked the first year in four decades coal capacity outside of China declined (by 8.1 GW) due to retirement and decommissioning, China increased its coal capacity by 42.9 GW over the same period, increasing the global coal fleet (Chrsitine Shearer, Yu, & Nace, 2019).

China's current policies is on track to potentially meet or overachieve its 2030 Nationally Determined Contribution (NDC), which the CAT rates as "Highly insufficient". China has indicated that it is working on updating its NDC (Darby, 2019), while its long-term strategy and 14th Five Year Plan is also likely to be elaborated in 2020. In November 2019, Chinese president Xi Jingping signed a pact recommitting to achieving the goals of the Paris Agreement.

According to the CAT, in order to be 1.5°C compatible, China's NDC emissions target would need to peak greenhouse gas emissions as soon as possible, lower the carbon intensity of GDP by more than 75% (from originally 60%–65%) below 2005 levels and increase the share of non-fossil energy carriers of the total primary energy supply to more than 40% (from originally 20%) by 2030, with further accelerated decarbonisation in key emitting sectors.

Full CAT China assessment here.

European Union

CAT **Paris commitment rating** — INSUFFICIENT

Will policies **meet that target?** — CLOSE

Cross-sectoral policies and emissions trend moving in the right direction but not as fast as necessary

"Clean Energy for all Europeans" package sets the framework for decarbonising energy and buildings sectors, but concerns arise over increasing support for natural gas development.

After three years of remaining constant, in 2018 the EU's emissions decreased by 2.1%, driven mainly by a decrease in the energy sector. Emissions in the transport, corresponding to a fifth of the overall emissions, increased slightly. This indicated that the EU's climate action needs to be accelerated and broadened to other sectors, which requires it adopting new measures and develop a clear long-term perspective to drive innovation on the continent.

The new pieces of legislation adopted over the last two years – if effectively implemented by the member states - will result in emissions reductions by up to 48% in 2030 below 1990. This doesn't include the plans of a number of member states to accelerate a coal phase-out. Should these plans be implemented, less than half of the installed capacity will still be online beyond 2030. However, the schedule is not fast enough to be compatible with a 1.5°C limit, which would require a coal phase-out by 2030 (Climate Analytics, 2018).

At the same time the EU seems to be replacing its addiction to coal by a different fossil fuel addiction: gas. On top of the 24 operating LNG terminals, 17 LNG terminals are currently being projected or planned, in addition to numerous pipelines, with many of these investments co-funded from EU funds, such as almost €380 million on the expansion of the LNG port in Świnoujście in Poland (Howell, 2019).

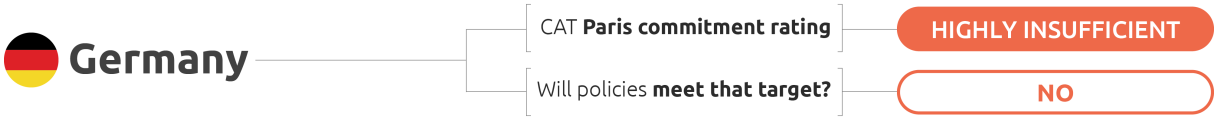
To avoid a carbon lock-in, a complete divestment from fossil fuels, including a commitment to refrain from new investment in natural gas infrastructure, is necessary. The decision of the European Investment bank to stop funding investments in natural gas infrastructure starting in 2021 is a step in the right direction.

The EU's current policies will allow it to reach its NDC goal of reducing emissions by "at least 40%" below 1990 levels by 2030, so this goal itself needs to be radically ramped up. The European Parliament, the new head of the European Commission, and a number of EU member states have already called for the EU to increase the 2030 target to a 55% reduction, which would be a significant improvement but still not enough to reach the boundary of a 2°C compatible reduction range, let alone 1.5˚C. Due to the opposition of some member states, in its position for COP25 the European Council could only agree that the EU will update its NDC in 2020 (Council of the European Union, 2019).

During the meeting of the European Council in June 2019, some of the same countries opposing enhancement of the EU's NDC for 2030 – notably Poland, supported by Czechia, Hungary, and Estonia –also opposed the adoption of the emissions neutrality goal for 2050. Since then, the chances of this goal being adopted EU-wide moved a little closer after Estonia reversed its position (European Council, 2019; Morgan, 2019; Teffer, 2019).

The creation of the Ministry of Climate in Poland led by the preceding COP President, Michał Kurtyka, created a hope that also Poland will start to play a more constructive role in regaining EU leadership in fight against climate change.

Full CAT EU assessment here.



Germany is a new country in the Climate Action Tracker (CAT) and is assessed for the first time for the COP25 update of the CAT.

Likely to miss climate targets; adopted national climate law

The new Climate and Energy Package is not enough to reach medium-term climate and energy targets. New elements, such as a coal phase-out, a carbon price in specific sectors and an overarching climate law, are positive but insufficient steps.

The government's new Climate and Energy Package, agreed in September 2019, does not contain enough policy to meet emissions reduction targets for 2020 and 2030, which themselves are outdated and insufficient. The CAT rates Germany's 55% emissions reduction target for 2030 as "Highly Insufficient" – it needs to be strengthened to be compatible with the Paris Agreement (Höhne, Emmrich, Fekete, & Kuramochi, 2019).

Earlier changes in regulation have almost completely stopped expansion of wind power in 2019 and the new Climate and Energy Package will not reverse this trend (WindEurope, 2019). The package also lacks a clear long-term vision to reach its envisaged goal of climate neutrality by 2050. The new, positive structural elements to German policy - a coal phase-out, a carbon price on fuels in buildings and transport, and an overarching climate law - lack sufficient quantitative ambition to meet the government's targets, let alone the Paris Agreement's mitigation challenge.

On coal, the proposed phase-out schedule of 2038 is almost a decade too slow to meet the objectives of the Paris Agreement, and there is even a hint that a new coal-fired power station may go online in the short term (Climate Analytics, 2018; Flauger, Fockenbrock, & Stratmann, 2019). The phase-out schedule was proposed by a multi-stakeholder commission in combination with compensation to local people and companies of up to €50 bln EUR to compensate for the 20,000 jobs that will be lost in the coal industry (Kommission „Wachstum Strukturwandel und Beschäftigung", 2019).

The government has already acknowledged it will not meet its 40% reduction target below 1990 levels, for 2020. The CAT's current projections only indicate emissions reductions of 33-36%. The failure to meet the 2020 target will result in a cumulative 1 $GtCO_2e$ of additional emissions compared to the original target path, adding significantly to the mitigation task (Höhne et al., 2019). After previously leading in providing new renewable energy capacity in electricity, additions of wind and solar have slowed down significantly, putting the whole industry at risk. Less than half the amount of PV is being built today compared to the peak years of 2010-2012; onshore wind is down to a tenth of its 2017 peak (AGEE, 2019). More jobs were lost in the last decade in both sectors individually than people currently employed in the coal sector (Bundesministerium für Wirtschaft und Energie, 2018). Further, the measures in the new Climate and Energy Package are not enough to accelerate development to meet the government's 2030 renewable electricity target of 65%.

On the basis of the Climate and Energy Package, in November 2019, the first chamber of the German parliament adopted a national climate law and associated regulations, which has only been partly confirmed by the second chamber (Süddeutsche Zeitung, 2019). It includes only the national 2030 climate target and the "commitment to pursue greenhouse gas neutrality by 2050 as a long-term goal"(German Government, 2019). The national climate law distributes the 55% reduction by 2030 target to sectors and gives implementation responsibility to sector ministries. While this improves accountability, the associated measures are not ambitious enough and have been heavily criticised by German environmental organisations and opposition parties (Enkhardt, 2019).

The package includes a new carbon price for the building and transport sectors. The impact of this new system is difficult to predict, but the effect of the initial price of 10 EUR/tCO_2 will be minimal.

Full CAT Germany Assessment here.

India

CAT **Paris commitment rating**: 2°C COMPATIBLE

Will policies **meet that target?**: YES

On track to become a global renewable energy leader

For three consecutive years, renewable energy investment topped that of fossil fuel-related power investments, and there are signs in 2019 of a marked slowdown in CO_2 emissions growth. Even so, significant coal-fired capacity is planned for development.

India is on track to becoming a global leader in the field of renewables. While India's NDC is currently rated "2°C compatible" by the CAT, an updated NDC that reflects India's current policy projections would be rated "1.5°C Paris Agreement compatible". For this to be feasible, the incoming government should continue to signal its strong commitment to renewable energy deployment and enshrine similar commitments in other sectors such as the transport sector.

India is likely to achieve the more ambitious part of its NDC goals—a 40% non-fossil-based power capacity by 2030 more than a decade earlier than targeted. At the Secretary General's summit in New York, India announced its intention to reach a target of 450 GW of renewables by 2030. The emissions reduction potential of this target is within the range of the CAT's current policy projections. The ramp-up of renewables in India can provide access to affordable power at scale, and quickly. For three consecutive years, renewable energy investment topped that of fossil fuel-related power investments and in 2018, solar investments exceeded those in coal (McKenna, 2019).

Despite the fact that current policies in place will lead to an overachievement of targets laid out in India's NDC, there is significant uncertainty over the future of coal power capacity in India. The National Electricity Plan foresees coal-fired power capacity additions of 46 GW between 2022 and 2027 (CEA, 2018), and these risk becoming stranded assets. This expansion is not only inconsistent with the goals of the Paris Agreement, but also inconsistent with demand projections from independent studies (Christine Shearer, Fofrich, & Davis, 2017). Abandoning these plans is more than feasible when we consider recent developments such as a 50% decrease in the cost of solar power in just two years and several utilities shelving plans to build coal plants. Right now, the nation has over 200 GW of coal-fired capacity in operation; if all the planned capacity is built, this could increase to over 300 GW over the next few years. Addressing concerns over the grid integration of renewables and cancelling the planned coal expansion plans are pivotal steps in the short term for India to meet the goals of the Paris Agreement.

While interventions in the electricity sector have largely been driven by strong policy commitments, action in the transport sector is governed by uncertainty over the targeted penetration of electric vehicles. Despite this, recent policy announcements indicate that the government is prioritising charging and manufacturing infrastructure development to facilitate a transition to a low carbon transport system.

Full CAT India Assessment here.

Indonesia

CAT **Paris commitment rating** — HIGHLY INSUFFICIENT

Will policies **meet that target?** — YES

Sets more ambitious plans but cannot let coal go

Developed plans to increase both its renewable capacity share and number of electric vehicles, but massive coal pipeline puts a question mark on the positive outcomes of such targets.

Indonesia is one of the most populous countries in the world, with substantial emissions from forestry, increasing emissions in all sectors, and a massive coal-fired power generation pipeline; it is also highly vulnerable to climate change. Indonesia's 2030 NDC target is rated as "Highly Insufficient", however its current policy projections, if rated, would be better ("Insufficient"" and show modest signs of improvement).

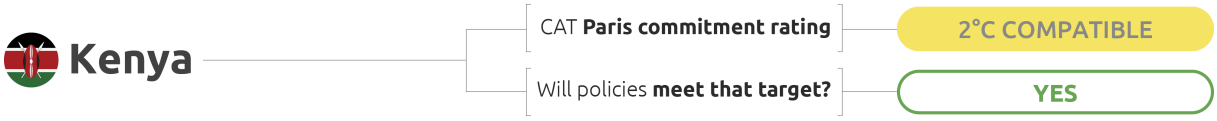
As with many countries, coal remains a serious and growing issue in Indonesia with the plans to install over 6 GW of coal-fired power generation by 2020 and about 27 GW by 2028 (Republic of Indonesia, 2019). Shifting the investments in coal planned for the next five years towards renewable, zero-carbon solutions is crucial to get Indonesia onto a pathway compatible with the Paris Agreement and sustainable development.

Indonesia has published its medium term development plan (RPJMN) covering the period between 2020 and 2024 (Ministry of National Development Planning (Bappenas), 2019). The RPJMN sets a more ambitious renewable electricity target which projects an increase in renewable capacity over three times higher between 2020 and 2024 than anticipated in the electricity supply plan published early in January (Republic of Indonesia, 2019). If fully implemented, the RPJMN could result in emissions reductions beyond current policies and even beyond the National Energy Policy, which sets a renewable target of 23% in total primary energy supply by 2025. But there are no policies in place to support such targets and it is uncertain to what extent Indonesia will adjust existing plans to reach them.

In the past, the government has implemented some policies to support reaching its renewables targets, e.g. by regulating the installation of rooftop solar (MEMR Indonesia, 2018). However, various design elements of these policies and the general investment environment still favour large-scale fossil-fuelled power and prevent a swift and large-scale expansion of renewables (Suharsono et al., 2019).

In light of the increasing concerns about air pollution, Indonesia is shifting its attention towards electric vehicles (EVs). In 2019, the government implemented supportive policies that aim to not only increase the number of EVs and charging stations but also to develop the country's local EV manufacturing industry (President of the Republic of Indonesia, 2019). But, to harness the benefits of EVs for climate, the uptake of vehicles needs to be coupled with decarbonising the electricity sector.

Full CAT Indonesia Assessment here.



Kenya is a new country in the Climate Action Tracker (CAT) and is assessed for the first time for the COP25 update of the CAT.

On track to overachieve NDC through ambitious electricity sector plans

Energy future is at a crossroads, with strong political support for clean energy at odds with proposed plans to build the first coal-fired power plants in East Africa, part of which are Chinese funded and built.

While renewable energy makes up 85% of its installed electricity capacity (ABiQ, 2019; IRENA, 2019a) and the government has stated aims to be powered entirely by green energy by 2020 (Capital FM Kenya, 2018), these goals are in stark contrast with the two coal-fired power plant proposals in the pipeline – the controversial 981 MW Lamu coal-fired power plant, due to be commissioned in 2024, and a 960 MW coal-fired power plant in Kitui, scheduled for 2034. If built, these two plants would be the first coal-fired plants in East Africa (Mpungu, 2019).

According to the most recent electricity sector plan, the proposed coal-based power plants would be grossly underutilised, due to much lower demand projections and its economic disadvantages compared to other planned generation options (Republic of Kenya, 2018). Utilisation of these plants would translate into a significant downward adjustment in emissions from the electricity supply sector.

However, when excluding developments in the electricity supply sector, projected emissions under current policies even rise slightly by 2030, compared to the original NDC baseline (MENR, 2017a). This increases pressure on the other sectors to successfully and rapidly implement all planned mitigation actions if the expected developments in the electricity sector change, e.g. by a politically motivated decision to bring Kenya's planned coal-fired power plants online faster than recommended in recent electricity sector plans.

According to current policies, Kenya is already on track to meet or overachieve its Paris Agreement pledge but plans to improve it in 2020, along with submitting a long-term low carbon development strategy. Kenya could meet its climate change mitigation targets at the electricity supply sector level simply by deciding not to proceed with the two coal-fired power plants and with only moderate further reductions from other sectors. Conversely, if it proceeds with plans for coal-fired power generation, this would put the target in jeopardy.

Considering that a bottom-up sectoral analysis, prepared as part of developing Kenya's NDC, identified the potential to reduce projected emissions by 60% by 2030 (MENR, 2017b), i.e. twice as high as the current conditional target, there is significant scope for Kenya to adopt an unconditional target as well as scale up its conditional target with international support.

Full CAT Kenya Assessment here.

Saudi Arabia

CAT **Paris commitment rating** — CRITICALLY INSUFFICIENT

Will policies **meet that target?** — CLOSE

Ambitious new renewable energy target but progress yet to be seen

Development of non-fossil energy is a key component of the "Vision 2030" strategy to reform an oil-dependent economy, but building of renewable and nuclear capacity has stalled.

In early 2019, Saudi Arabia announced a new renewable energy target aiming to achieve close to 30 GW by 2023 and nearly 60 GW by 2030 (Ministry of Energy of Saudi Arabia, 2019b). These new targets are higher than the previous one issued in 2016, which aimed for 9.5 GW of renewable energy by 2023.

Another important measure is the plan to list a small share of the national oil company Saudi Aramco on the stock market. This has opened the state-owned company to international scrutiny—including on climate-related risks. Recent research by the Climate Accountability Institute shows Saudi Aramco is the company that has contributed by far the most to global carbon dioxide emissions since the 1960s (Heede, 2019). The stock market launch has been complicated by the September 2019 missile attacks on Saudi Arabia's oil facilities that temporarily cut its oil production in half.

Despite having an ambitious renewable energy target, progress on the ground has been slow. At the end of 2018 Saudi Arabia had only 0.1 GW of installed renewable energy capacity (IRENA, 2019a). Recent tenders could add 2 GW of wind and solar capacity in the near future (Ministry of Energy of Saudi Arabia, 2019a; National Renewable Energy Program, 2018), but they need to pick up the pace if they are to meet their 2023 and 2030 capacity targets.

In 2018, the Saudi government also signed an agreement with a major investor to build 200 GW of solar energy (Beetz, 2018). It is however not clear whether this project would focus on manufacturing solar panels for export or whether this capacity would be used to build solar energy in Saudi Arabia (Ministry of Energy of Saudi Arabia, 2019b). The plans regarding nuclear energy are also still uncertain. Saudi Arabia previously had a target to build 17 GW of nuclear energy—it now seems less than 3 GW could be built by 2030 (MEES, 2019).

Our analysis shows that Saudi Arabia can reach the upper (i.e. less ambitious) end of its "Critically Insufficient" NDC pledge with current policies. If the 200 GW megaproject were used to build solar power plants generating electricity domestically, Saudi Arabia could overachieve its NDC pledge. While there are still major uncertainties regarding the project's feasibility, it is clear that any NDC and climate policy updates from Saudi Arabia will need to meet and go beyond this level of ambition in order to progress in scaling up climate action.

Full CAT Saudi Arabia Assessment here.

South Africa

CAT **Paris commitment rating** — HIGHLY INSUFFICIENT

Will policies **meet that target?** — YES

Progress in one of the coal-heaviest economies

Updated electricity sector planning and economic slow-down has caused emissions to decrease. A shift in energy policy signals the decommissioning of the majority of coal plants by 2050.

The South African government finally approved its Integrated Resource Plan (IRP2019) in October 2019 (Department of Energy, 2019), confirming the previous trend change in power sector planning indicated in the draft it released for comment in August 2018. The plan reduces the role of coal compared to previous planning and increases the adoption of renewables and gas. Unlike earlier drafts, the IRP2019 proposes extending the operational lifetime of South Africa's sole nuclear power plant by 20 years, up to 2044.

The final IRP marks a major shift in energy policy, which is remarkable for a coal-dominated country like South Africa. It aims to decommission over 35 GW (of 42 GW currently operating) of coal-fired power capacity from state-owned coal and utility giant Eskom by 2050.

However, it would still see South Africa complete nearly 6 GW of costly coal capacity currently under construction and commission another 1.5 GW by 2030. IRP2019 includes a detailed phase-out plan for coal-fired power plants, which, despite improvements to earlier plans, still shows that substantial amounts of coal capacity will run beyond the year 2050. For Paris-compatibility, coal must be phased out at the very latest by 2040 (Yanguas Parra et al., 2019).

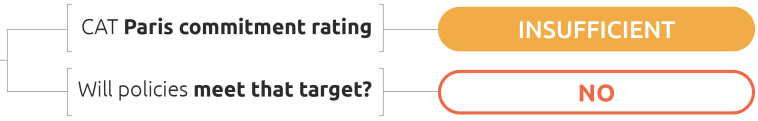
South Africa has been experiencing an economic slow-down that has led to lower than expected emissions in recent years and decreases in projected energy demand, reflecting the overall decreasing role of coal in South Africa's energy planning. If South Africa's economy were to grow at a higher rate, emissions until 2030 may end up higher than currently expected. If the current trends continue, however, South Africa has already reached a peak in GHG emissions.

In September 2019, President Ramaphosa announced the government would finalise a 'Just Transition Plan', "including defining a vision compatible with the 1.5-degree Paris temperature goal". He also confirmed South Africa will update its adaptation NDC and enhance its mitigation NDC by 2020 (Ramaphosa, 2019).

According to the CAT's updated assessment, South Africa's projected emissions fall within the target range of the NDC. The CAT's analysis on scaling up climate action suggests that South Africa could overachieve its NDC target range if it implemented Paris-compatible actions in only three sectors (electricity supply, residential buildings, passenger transport) (CAT, 2018), indicating that South Africa should reduce the targeted emissions levels under their NDC.

Full CAT South Africa Assessment here.

United Kingdom



The UK is a new country in the Climate Action Tracker (CAT) and is assessed for the first time for the COP25 update of the CAT.

2050 net-zero emission legislation adopted in June 2019

Declared a Climate Emergency and became the first industrialised country to legislate a new net-zero emissions by 2050 target, is phasing out coal by 2023, but is in danger of missing its medium-term targets including through to 2030. With the UK having the presidency for COP26 in Glasgow for 2020 it is important for the government to ratchet up its climate policies to match the need for ambitious reductions by 2030.

The UK is not expected to achieve its medium term climate targets, with the latest government projections showing it will not achieve the emission reductions required to comply with its fourth (2023-2027) and fifth (2028-2032) carbon budgets (UK Government, 2019).

The government has made significant progress in the decade since the passage of the UK's landmark 2008 Climate Change Act, with coal-fired power projected to be phased out by 2023, ahead of its 2025 target. However, this progress is expected to stall in the 2020s, meaning the government must ratchet up its climate policies now to ensure a continuation of rapid emission reductions over this period.

The new net-zero target was a recommendation from the UK's Committee on Climate Change (CCC) in May. The CCC pointed out that replication of this target across the world, coupled with ambitious near-term emissions reductions, would deliver a greater than 50% chance of limiting increase in global temperature to 1.5°C (Committee on Climate Change, 2019a). The new legislation has strengthened the previous target of 80% emissions reduction adopted in 2008 (UK Government, 2008). The CCC also recommended targets for Scotland and Wales of net zero in 2045 and 95% reduction below 1990 levels by 2050, respectively.

The UK is the first G20 country to legislate a net-zero target. While the legislation of the 2050 target was a significant milestone, the government has so far not outlined its plans to achieve it. In order to reach net-zero emissions by 2050, the UK will need to reduce emissions each year by 50% more than was required under its previous long-term target, demonstrating the scale of the task ahead (Committee on Climate Change, 2019b).

The CCC pointed out in July 2019 that the policy gap had widened over the previous year, as an increase in projected future emissions absorbed the impact of new policies. Of 24 indicators of climate policy progress monitored by the CCC, only seven were on track in 2018.

With an election scheduled for December 12, now is an ideal time for the government to ratchet up its climate policies, but at the time of writing, it has failed to announce any significant measures to increase the rate of emission reductions. In contrast, the Labour Party has unveiled a suite of climate policies including £250 billion to drive its plans for a "green industrial revolution", a £3.4 billion national network of electric vehicle charging points and a 2030 ban on the sale of fossil fuel vehicles, ten years earlier than the current ban and in line with the CCC's recommended timeline (Committee on Climate Change, 2019c; UK Labour Party, 2019).

It is clear that the UK must ratchet up its climate policies in order to achieve both its medium- and long-term climate targets. With an exit from the EU set for early 2020, the UK will also need to formalise its own NDC under the Paris Agreement. As it is hosting COP26 next year in Scotland, it is the perfect time for the UK to show leadership now and commit to both deep emission cuts in the formulation of its NDC, and the necessary policies to achieve them.

Full CAT UK assessment here.

United States

CAT **Paris commitment rating**: CRITICALLY INSUFFICIENT*

Will policies **meet that target?**: NO

Trump Administration withdraws from the Paris Agreement and continues policy rollbacks

Despite decision to withdraw from the Paris Agreement and other rollbacks, the US power sector looks set to overachieve the emissions reduction goals of the repealed Clean Power Plan.

On 4 November 2019, the US government formally notified the United Nations that the US would withdraw from the Paris Agreement (U.S. Department of State, 2019).

Domestically, the Trump Administration has continued with its campaign to systematically roll back US federal climate policy, including the following actions:

- Put forward a weak replacement for the Clean Power Plan called the Affordable Clean Energy Rule (U.S. Environmental Protection Agency, 2018a)
- Repealed energy efficiency requirements for lightbulbs after 2020 (U.S. Department of Energy, 2019)
- Removed enforcement regulations to limit HFC emissions (U.S. Environmental Protection Agency, 2018d)
- Proposed freezing vehicle efficiency standards after 2020 instead of requiring more stringent standards over time (U.S. Environmental Protection Agency, Administration, & U.S. National Highway Safety Administration, 2018)
- Proposed raising emissions standards for coal-fired power plants (U.S. Environmental Protection Agency, 2018c)
- Proposed to allow methane leaks from oil and gas production to continue for longer before they are found and fixed (U.S. Environmental Protection Agency, 2018b)

The government also adopted a rule that would revoke California's authority to set its own emissions standards for cars and trucks that exceed federal ones. This rule also blocks 13 other states that followed California's standards to adopt plans to decarbonise the transport sector, including its Zero Emission Vehicle (ZEV) Program. A total of 23 states have filed lawsuits to stop this rule.

Despite the Trump Administration's intentions to revive the coal industry, market forces of cheaper renewables and gas are leading to a fast decline of coal-fired power and the rise of renewables. Indeed, despite the weakening of the Clean Power Plan (CPP), the US power sector looks set to overachieve the Plan's emissions reduction goal of 32% below 2005 levels by 2030.

In 2018, the US overtook Russia and Saudi Arabia to become the world's largest producer of crude oil (U.S. Energy Information Administration, 2018a). It is also the world's largest producer of natural gas (U.S. Energy Information Administration, 2018b), and has increased LNG exports significantly in 2018 and 2019 (Lester, 2019). With this significant increase, in 2019 the US became the world's third-largest LNG exporter, behind Australia and Qatar (U.S. Energy Information Administration, 2019).

Based on the Trump Administration's decision to withdraw from the Paris Agreement, we rate the US "Critically insufficient." The existing US target under the Paris Agreement would be rated "Insufficient", as it is not stringent enough to limit warming to 2°C, let alone 1.5˚C. In line with the decision to withdraw from the Paris Agreement, there are no plans to update its NDC.

Full CAT US Assessment here.

* The CAT's rating for the USA is "Critically Insufficient" based on the Trump administration's decision to withdraw from the Paris Agreement.

Viet Nam

CAT **Paris commitment rating** — CRITICALLY INSUFFICIENT

Will policies **meet that target?** — YES

Viet Nam is a new country in the Climate Action Tracker (CAT) and is assessed for the first time for the COP25 update of the CAT.

Locking in coal, but NDC pledge update signals hope for ambition

Viet Nam is highly vulnerable to the impacts of climate change, yet its fast-growing economy is dominated by fossil fuels, a trend that if continued will result in emissions far outside Paris Agreement compatible levels. The country has the potential to be a leader in renewable energy if it drops coal expansion plans and implements an ambitious NDC update in 2020.

We rate Viet Nam's Paris Agreement NDC target as "Critically insufficient". Its current policies, while on track to overachieve its conditional NDC target, are "Highly insufficient" in reaching a "fair" approach to climate policy in line with the Paris Agreement 1.5˚C limit that is of critical importance for the nation.

If it were to abandon plans for substantial coal-fired power generation in favour of a shift to renewable energy, Viet Nam could become a leader in South East Asia. This would also bring it into line with the objectives of the Climate Vulnerable Forum, of which it is a member. It could achieve significant benefits for sustainable development, in particular through transitioning to renewable energy while addressing the increase in energy demand through industrialisation and urbanisation. It could build on successfully delivering universal electrification for a growing population as well as on a range of policies to support expansion of renewable energy.

Viet Nam's increasing electricity demand has resulted in its huge coal expansion plans. Coal currently represents 34% of electricity generation, but by 2030 coal is targeted to take up over a 50% share. These plans are at odds with the Paris Agreement. If they go ahead, they will lock Viet Nam into a fossil fuel intensive future. Its planned share of having two thirds of power generation from fossil fuels by 2030 are likely to result in stranded assets, especially given the need for the global phase-out of coal by 2040, including in Viet Nam and to reach a share of decarbonised electricity generation of 50% by 2030 in the ASEAN region.

Agriculture contributes a large share of more than a quarter (28%) of Viet Nam's greenhouse gas (GHG) emissions and there are several programmes in place to reduce emissions in this sector.

The industry sector has the largest energy demand, accounting for 55% of energy consumption. The policies for this sector include green growth plans, energy efficiency and reducing cement emissions. However, emissions from industrial processes (mainly cement but also steel and ammonia production) are not yet included in the country's NDC target, even though they represent a 13% of share of its 2014 emissions (excluding LULUCF), and are growing faster than energy-related emissions. This creates uncertainty when assessing the NDC.

Viet Nam's unconditional target is to reduce its GHG emissions by 8% by 2030 and its conditional NDC target is to reduce GHG emission by 25% by 2030 below a business as usual scenario of 787 $MtCO_2e$ incl. emissions from LULUCF and excluding industrial process emissions. This is equivalent to 234% (unconditional) and 200% (conditional) above 2010 levels (excluding LULUCF, including industrial processes).

Viet Nam also has an unconditional target to reduce its greenhouse gas emissions intensity by 20% and a conditional target of 30% by 2030 below 2010. This is equivalent to 217% (unconditional) and 196% (conditional) above 2010 levels (excluding LULUCF, and including industrial processes).

Viet Nam's Paris Agreement commitment has a specific forestry target to achieve a 45% forest cover by 2030 - and government sources indicate its forests already cover 41%.

Viet Nam is currently revising its NDC, and plans to improve it by 2020, including covering all emissions. It has significant potential to increase its ambition, not just of its targets but for its current policy pathway.

If we were to recalculate Viet Nam's unconditional emissions reduction pledge based on current policies, it would be an increase in ambition from 919 $MtCO_2e/yr$ to 542 $MtCO_2e/yr$ by 2030 (excluding LULUCF, including industry). This would be rated 'Highly insufficient". If we were to translate these emission levels to the language of Vietnam's pledge (and include industrial processes, as planned in the update), this would be a reduction of 46% below business as usual levels by 2030 (including LULUCF and industry). In updating its NDC, Viet Nam will need to go beyond this level in order for it to be a true progression in scaling up climate action.

Full CAT Viet Nam assessment here.

References

ABiQ. (2019). Kenya Power Sector Report Q2 2019. Retrieved November 15, 2019, from https://www.abiq.io/kenya-power-sector-q2-2019/

AFR. (2019). PM concedes to Nats, pledges to consider new coal plant in Qld. Retrieved November 28, 2019, from Australia Financial Review website: https://www.afr.com/politics/federal/pm-pledges-to-consider-a-new-coal-plant-in-queensland-20190326-p517j8

AGEE. (2019). Zeitreihen zur Entwicklung der erneuerbaren Energien in Deutschland. Stand: Februar 2015. Retrieved from https://www.erneuerbare-energien.de/EE/Redaktion/DE/Downloads/zeitreihen-zur-entwicklung-der-erneuerbaren-energien-in-deutschland-1990-2018.pdf;jsessionid=B7DFDD64FF68428F62DECB1D9F16A7C6?__blob=publicationFile&v=22

Beetz, B. (2018, October 5). Saudi Government refutes claims 200 GW solar project has been scrapped. PV Magazine. Retrieved from https://www.pv-magazine.com/2018/10/05/saudi-government-refutes-claims-that-200-gw-solar-project-has-been-scrapped/

BloombergNEF. (2019). New Energy Outlook 2019: Executive Summary. Retrieved from Bloomberg New Energy Outlook website: https://bnef.turtl.co/story/neo2019?teaser=true

Bundesministerium für Wirtschaft und Energie. (2018). Bruttobeschäftigung durch erneuerbare Energien 2000 bis 2017. Retrieved from https://www.erneuerbare-energien.de/EE/Redaktion/DE/Downloads/zeitreihe-der-beschaeftigungszahlen-seit-2000.html

Capital FM Kenya. (2018). Kenya targets green energy sufficiency by 2020, President Kenyatta says - Capital Business.

CAT. (2018). Scaling up climate action: South Africa - Full Report. (November), 97.

CEA. (2018). National Electricity Plan.

Climate Action Tracker. (2019). Australia . Retrieved November 15, 2019, from https://climateactiontracker.org/countries/australia/

Climate Analytics. (2018). Science based coal phase-out pathway for Germany in line with the Paris Agreement 1.5°C warming limit. (October). Retrieved from https://climateanalytics.org/media/germany_coalphaseout_report_climateanalytics_final.pdf

Climate Analytics. (2019). Global and regional coal phase-out requirements of the Paris Agreement: Insights from the IPCC Special Report on 1.5°C. Retrieved from https://climateanalytics.org/media/report_coal_phase_out_2019.pdf

COAG Energy Council. (2019). Australia's National Hydrogen Strategy.

Committee on Climate Change. (2019a). Net Zero: The UK's contribution to stopping global warming. Retrieved from https://www.theccc.org.uk/wp-content/uploads/2019/05/Net-Zero-The-UKs-contribution-to-stopping-global-warming.pdf

Committee on Climate Change. (2019b). Reducing UK emissions - 2019 Progress Report to Parliament. (July), 93. Retrieved from https://www.theccc.org.uk/publication/reducing-uk-emissions-2019-progress-report-to-parliament/%0Awww.theccc.org.uk/publications

Committee on Climate Change. (2019c). Reducing UK emissions - 2019 Progress Report to Parliament. (July), 93.

Council of the European Union. (2019). Preparations for the United Nations Framework Convention on Climate Change (UNFCCC) meetings (Santiago de Chile, 2-13 December 2019) – Council conclusions. Retrieved from http://data.consilium.europa.eu/doc/document/ST-12796-2019-REV-1/en/pdf

Darby, M. (2019, April 10). EU, China agree to work together on clean energy. Climate Home News. Retrieved from https://www.climatechangenews.com/2019/04/10/eu-china-agree-work-together-clean-energy/

DEE. (2019). Underwriting New Generation Investments program. Retrieved October 2, 2019, from Department of Environment and Energy website: https://www.energy.gov.au/government-priorities/energy-supply/underwriting-new-generation-investments-program

Department of Energy. (2019). Integrated Resource Plan (IRP2019). Retrieved from https://www.gov.za/sites/default/files/gcis_document/201910/42778gon1359.pdf

Department of the Environment and Energy. (2018). Australia's emissions projections 2018. Retrieved from https://www.environment.gov.au/system/files/resources/128ae060-ac07-4874-857e-dced2ca22347/files/australias-emissions-projections-2018.pdf

Electricidad. (2016). Infraestructura Energética Mejillones: El proyecto termoeléctrico de E-CL que usará la línea de interconexión SIC-SING. Retrieved November 14, 2019, from Electricidad. La revista energética de Chile website: http://www.revistaei.cl/informes-tecnicos/infraestructura-energetica-mejillones-el-proyecto-termoelectrico-de-e-cl-que-usara-la-linea-de-interconexion-sic-sing/#

Engie. (2019). ENGIE Energía Chile firma acuerdo de retiro de centrales termoeléctricas a carbón con ministerio de energía. Retrieved November 14, 2019, from https://engie-energia.cl/engie-energia-chile-firma-acuerdo-de-retiro-de-centrales-termoelectricas-a-carbon-con-ministerio-de-energia/

Enkhardt, S. (2019). Reaktionen zum Klimapaket: Große Enttäuschung und viel Kritik. Pv Magazine. Retrieved from https://www.pv-magazine.de/2019/09/20/reaktionen-zum-klimapaket-grosse-enttaeuschung-und-viel-kritik/

European Council. (2019). EUCO 9/19. Retrieved from https://www.consilium.europa.eu/media/39922/20-21-euco-final-conclusions-en.pdf

Flauger, J., Fockenbrock, D., & Stratmann, K. (2019). Pannenkraftwerk Datteln 4 soll doch noch ans Netz gehen. Handelsblatt. Retrieved from https://www.handelsblatt.com/unternehmen/energie/kohleausstieg-pannenkraftwerk-datteln-4-soll-doch-noch-ans-netz-gehen/25218166.html?ticket=ST-16910510-HWWsCCaC96NVdxIQunaR-ap5

Fyson, C. L., & Jeffery, M. L. (2019). Ambiguity in the Land Use Component of Mitigation Contributions Toward the Paris Agreement Goals. Earth's Future, 7, 873–891. https://doi.org/10.1029/2019EF001190

German Government. (2019). Entwurf eines Gesetzes zur Einführung eines Bundes-Klimaschutzgesetzes und zur Änderung weiterer Vorschriften. Retrieved from https://www.bmu.de/fileadmin/Daten_BMU/Download_PDF/Gesetze/gesetzesentwurf_bundesklimaschutzgesetz_bf.pdf

Global Carbon Project. (2019). Global Carbon Budget.

Gobierno de Chile. (2019). Anteproyecto de Ley Marco de Cambio Climático. Retrieved from http://consultasciudadanas.mma.gob.cl/mma-epac/app/obtenerDocumentoAntecedente?ruta=%2Fconsulta%2Fantecedentes%2F45f7ed38-1179-4297-bac3-e2b50d088fef.pdf

Heede, R. (2019). Carbon Majors: Update of Top Twenty companies 1965-2017. Retrieved from http://climateaccountability.org/pdf/CAI PressRelease Top20 Oct19.pdf

Höhne, N., Emmrich, J., Fekete, H., & Kuramochi, T. (2019). 1,5°C: Was Deutschland tun muss. Retrieved from https://newclimate.org/2019/03/14/15c-what-germany-needs-to-do/

Howell, N. (2019). LNG Tanker LNG in Europe: Current Trends, the European LNG Landscape and Country Focus. JDSUPRA.

IEA. (2019a). CO2 Emissions Statistics. Retrieved May 20, 2019, from https://www.iea.org/statistics/co2emissions/

IEA. (2019b). Offshore Wind Outlook 2019.

IEA. (2019c). Renewables 2019.

IEA. (2019d). Statistics data browser. Retrieved November 2, 2019, from https://www.iea.org/statistics/?country=VNM&isISO=true
IEA. (2019e). World Energy Outlook. Retrieved from https://www.iea.org/weo2019/
IRENA. (2019a). Renewable Electricity Capacity and Generation Statistics. Retrieved from http://resourceirena.irena.org/gateway/dashboard/?topic=4&subTopic=54
IRENA. (2019b). Renewable Power Generation Costs in 2018. Retrieved from www.irena.org
Kommission „Wachstum Strukturwandel und Beschäftigung". (2019). Kommission "Wachstum, Strukturwandel und Beschäftigung" - Abschlussbericht. Retrieved from https://www.bmwi.de/Redaktion/DE/Downloads/A/abschlussbericht-kommission-wachstum-strukturwandel-und-beschaeftigung.pdf?__blob=publicationFile
Korsbakken, J. I., Andrew, R., & Peters, G. (2019, March 5). Guest post: China's CO2 emissions grew slower than expected in 2018. Carbon Brief. Retrieved from https://www.carbonbrief.org/guest-post-chinas-co2-emissions-grew-slower-than-expected-in-2018?utm_campaign=Carbon Brief Daily Briefing&utm_medium=email&utm_source=Revue newsletter
Lester, P. (2019). U.S. Liquefied Natural Gas Exports Breaking Records. Retrieved October 23, 2019, from https://www.energy.gov/articles/interactive-map-us-liquefied-natural-gas-exports-breaking-records
Mazengarb, M. (2019). Coalition turns to fossil fuel lobby to lead "secret" review of climate policy. RenewEconomy. Retrieved from https://reneweconomy.com.au/coalition-turns-to-fossil-fuel-lobby-to-lead-secret-review-of-climate-policy-46242/
McConnell, D. (2019). Australia has met its renewable energy target. But don't pop the champagne. Retrieved October 2, 2019, from The Conversation website: https://theconversation.com/australia-has-met-its-renewable-energy-target-but-dont-pop-the-champagne-122939
McKenna, P. (2019). India Is Now Investing More in Solar than Coal, but Will Its Energy Shift Continue? | InsideClimate News. Retrieved May 24, 2019, from https://insideclimatenews.org/news/20052019/india-solar-investment-coal-modi-election-renewable-energy-future
MEES. (2019). Saudi To Push On With 'Full Cycle' Nuclear, Probably. MEES, 62(37). Retrieved from https://www.mees.com/2019/9/13/power-water/saudi-to-push-on-with-full-cycle-nuclear-probably/a4c0bbb0-d63b-11e9-b2a3-af7a4b586e92
MEMR Indonesia. (2018). Regulation of Rooftop PV. Regulation No. 49/2018. Retrieved from https://jdih.esdm.go.id/peraturan/Permen ESDM Nomor 49 Tahun 2018.pdf
MENR. (2017a). Kenya's Nationally Determined Contribution (NDC) Update of Kenya's Emission Baseline Projections and Impact on NDC Target. Retrieved from Ministry of Environment and Natural Resources website: http://www.starckplus.com/documents/ta/ndc/UpdateofKenyasEmissionBaselineProjectionsandImpactonNDCTarget.pdf
MENR. (2017b). Nationally Determined Contribution Sector Analysis Report 2017. Retrieved from Ministry of Environment and Natural Resources website: http://www.starckplus.com/documents/ta/ndc/NDC Sector Analysis Report 2017.pdf
Ministerio de Energía. (2019). Gobierno anuncia la salida ocho centrales a carbón en 5 años y la meta de retiro total al 2040. Retrieved June 5, 2019, from Energía.gob.cl | Ministerio de Energía website: http://www.valgesta.com/wp-content/uploads/2018/09/Análisis-de-Impacto-de-un-Plan-de-Cierre-Centrales-Carboneras-en-el-SEN-Valgesta.pdf
Ministerio del Medio Ambiente de Chile. (2019). Primer proceso de Actualización de la Contribución Determinada a Nivel Nacional (NDC). Retrieved from http://consultasciudadanas.mma.gob.cl/mma-epac/app/obtenerDocumentoAntecedente?ruta=%2Fconsulta%2Fantecedentes%2F9bb8ebd7-f2cc-464b-9dc7-bd39062d059b.pdf
Ministry of Energy of Saudi Arabia. (2019a). Saudi Arabia invites bids for Round Two of the National Renewable Energy Program. Retrieved from https://www.theguardian.com/environment/2019/oct/09/revealed-20-firms-third-carbon-emissions
Ministry of Energy of Saudi Arabia. (2019b). The Ministry of Energy, Industry and Mineral Resources launches the second round of the renewable energy program [translated from Arabic]. Retrieved from https://www.meim.gov.sa/arabic/mediacenter/press-releases/Pages/meim-launches-second-round-of-renewable-energy-program.aspx
Ministry of National Development Planning (Bappenas). (2019). Rancangan Teknokratik: Rencana Pembangunan Jangka Menengah Nasional 2020-2024. Retrieved from https://www.bappenas.go.id/files/rpjmn/Narasi RPJMN IV 2020-2024_Revisi 14 Agustus 2019.pdf
Morgan, S. (2019). Estonia joins EU's climate-neutral club. Euractiv.
Morton, A., & Murphy, K. (2019). Coalition quietly appoints expert panel to salvage emissions policy. The Guardian. Retrieved from https://www.theguardian.com/environment/2019/oct/29/coalition-scrambles-for-carbon-cutting-solutions-as-paris-targets-move-further-out-of-reach
Mpungu, P. (2019). Kenyan court blocks coal project near world heritage site. Retrieved November 15, 2019, from Al jazeera website: https://www.aljazeera.com/ajimpact/kenyan-court-blocks-coal-project-world-heritage-site-190626175050468.html
Myllyvirta, L. (2019). Guest post: Why China's CO2 emissions grew 4% during first half of 2019. Retrieved from Carbon Brief website: https://www.carbonbrief.org/guest-post-why-chinas-co2-emissions-grew-4-during-first-half-of-2019?utm_campaign=Carbon Brief Daily Briefing&utm_medium=email&utm_source=Revue newsletter
Myllyvirta, L., Jones, D., & Buckley, T. (2019). Analysis: Global coal power set for record fall in 2019. Retrieved November 29, 2019, from CarbonBrief website: https://www.carbonbrief.org/analysis-global-coal-power-set-for-record-fall-in-2019
National Renewable Energy Program. (2018). Saudi Arabia Renewable Energy Targets and Long Term Visibility. Retrieved from https://www.powersaudiarabia.com.sa/web/attach/media/Saudi-Arabia-Renewable-Energy-Targets-and-Long-Term-Visibility.pdf
President of the Republic of Indonesia. (2019). The electric vehicle acceleration program for road transport. In Regulation No. 55/2019. Retrieved from https://jdih.esdm.go.id/peraturan/Perpres Nomor 55 Tahun 2019 - Salinan (1).pdf
Ramaphosa, C. (2019). Statement by H.E. President Cyril Ramaphosa of South Africa to the United Nations Secretary-General's Climate Summit. Retrieved October 30, 2019, from http://www.dirco.gov.za/docs/speeches/2019/cram0923.htm
RenewEconomy. (2019). Finkel's national hydrogen strategy gets green light, but could be lifeline for coal. Retrieved December 3, 2019, from https://reneweconomy.com.au/finkels-national-hydrogen-strategy-gets-green-light-but-could-be-lifeline-for-coal-69939/
Republic of Indonesia. (2019). Rencana Usaha Penyediaan Tenaga Listrik (RUPTL) 2019-2028. Retrieved from https://jdih.esdm.go.id/peraturan/Kepmen ESDM No. 39 K-20-MEM-2019 tentang Pengesahan RUPTL PT PLN 2019-2028.pdf
Republic of Kenya. (2018). Updated Least Cost Power Development Plan: Study Period 2017-2037. Retrieved from http://www.decoalonize.org/2017-2037-least-cost-power-development-plans-lcpdp/
Reuters. (2019). Chinese Belt and Road plan 'may result in 2.7C warming.' Retrieved October 21, 2019, from Climate Home News website: https://www.climatechangenews.com/2019/09/02/chinese-belt-road-plan-may-result-2-7c-warming/

Russian Federation. (2019). Russian National Inventory Report 2019. Retrieved from https://unfccc.int/documents/194838
Shearer, Christine, Fofrich, R., & Davis, S. J. (2017). Future CO2 emissions and electricity generation from proposed coal-fired power plants in India. Earth's Future, 5(4), 408–416. https://doi.org/10.1002/2017EF000542
Shearer, Chrsitine, Yu, A., & Nace, T. (2019). Out of Step: China is driving the continued growth of the global coal fleet. Retrieved from https://endcoal.org/wp-content/uploads/2019/11/Out-of-Step-English-final.pdf
Süddeutsche Zeitung. (2019). Bundesrat stoppt Teile des Klimaschutzpakets. Süddeutsche Zeitung. Retrieved from https://www.sueddeutsche.de/politik/klimapaket-bundesrat-1.4702904
Suharsono, A., McCulloch, N., Mostafa, M., Bridle, R., Lontoh, L., & Gass, P. (2019). Getting to 23 Per Cent: Strategies to scale up renewables in Indonesia.
Teffer, P. (2019). Four states block EU 2050 carbon neutral target. Euobserver.
Tomás Gonzalez. (2019). Pese a su prohibición, empresa inaugura termoeléctrica a carbón en Mejillones «Diario y Radio U Chile. Radio Universidad de Chile. Retrieved from https://radio.uchile.cl/2019/06/02/pese-a-su-prohibicion-empresa-inaugura-termoelectrica-a-carbon-en-mejillones/
U.S. Department of Energy. (2019). Energy Conservation Program: Definition for General Service Lamps. In Federal Register (Vol. 84). Retrieved from Federal Register website: https://www.govinfo.gov/content/pkg/FR-2019-09-05/pdf/2019-18940.pdf
U.S. Department of State. (2019). On the U.S. Withdrawal from the Paris Agreement. Retrieved November 18, 2019, from https://www.state.gov/on-the-u-s-withdrawal-from-the-paris-agreement/
U.S. Energy Information Administration. (2018a). The United States is now the largest global crude oil producer. Retrieved October 23, 2019, from https://www.eia.gov/todayinenergy/detail.php?id=37053
U.S. Energy Information Administration. (2018b). United States remains the world's top producer of petroleum and natural gas hydrocarbons. Retrieved October 23, 2019, from https://www.eia.gov/todayinenergy/detail.php?id=36292
U.S. Energy Information Administration. (2019). U.S. LNG exports to Europe increase amid declining demand and spot LNG prices in Asia. Retrieved November 14, 2019, from https://www.eia.gov/todayinenergy/detail.php?id=40213
U.S. Environmental Protection Agency. (2018a). Emission Guidelines for Greenhouse Gas Emissions from Existing Electric Utility Generating Units; Revisions to Emission Guideline Implementing Regulations; Revisions to New Source Review Program Emission Guidelines for Greenhouse Gas Emissions f rom Exist. Retrieved from https://www.epa.gov/sites/production/files/2018-08/documents/frn-ace-proposal_8.20.2018.pdf
U.S. Environmental Protection Agency. (2018b). Oil and Natural Gas Sector: Emission Standards for New, Reconstructed, and Modified Sources Reconsideration. Retrieved from Federal Register website: https://www.epa.gov/sites/production/files/2018-09/documents/frnoilgasreconsideration2060-at54nprm20180910.pdf
U.S. Environmental Protection Agency. (2018c). Proposed Rule - Review of Standards of Performance for Greenhouse Gas Emissions From New, Modified, and Reconstructed Stationary Sources: Electric Utility Generating Units. Retrieved from Federal Register website: https://www.federalregister.gov/documents/2018/12/20/2018-27052/review-of-standards-of-performance-for-greenhouse-gas-emissions-from-new-modified-and-reconstructed
U.S. Environmental Protection Agency. (2018d). Protection of Stratospheric Ozone: Notification of Guidance and a Stakeholder Meeting Concerning the Significant New Alternatives Policy (SNAP) Program. Retrieved from Federal Register website: https://www.epa.gov/sites/production/files/2018-04/documents/snap-guidance-notice_as-signed-4-13-18-with-disclaimer.pdf
U.S. Environmental Protection Agency, Administration, & U.S. National Highway Safety Administration. (2018). The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks. Retrieved from Federal Register website: https://www.govinfo.gov/content/pkg/FR-2018-08-24/pdf/2018-16820.pdf
UK Government. Climate Change Act 2008. , (2008).
UK Government. (2019). Updated Energy and Emissions Projections: 2018 (Annex A: Greenhouse Gas Emissions by Source).
UK Labour Party. (2019). Thirty Recommendations by 2030: Expert Briefing for the UK Labour Party. Retrieved from https://labour.org.uk/wp-content/uploads/2019/10/ThirtyBy2030report.pdf
UNFCCC. (n.d.). NDC Registry (interim). Retrieved October 12, 2017, from http://www4.unfccc.int/ndcregistry/Pages/Home.aspx
UNFCCC. (2015). FCCC/CP/2015/10/Add.1: Adoption of the Paris Agreement.
UNFCCC. (2019). Report on the individual review of the annual submission of the Russian Federation submitted in 2018. https://doi.org/10.1080/00344898008459299
WindEurope. (2019). Europe installs 4.9 GW of new wind energy capacity in first half of 2019.
Winkler, H., Höhne, N., Cunliffe, G., Kuramochi, T., April, A., & de Villafranca Casas, M. J. (2018). Countries start to explain how their climate contributions are fair: more rigour needed. International Environmental Agreements: Politics, Law and Economics, 18(1), 99–115. https://doi.org/10.1007/s10784-017-9381-x
Yanguas Parra, P. A., Ganti, G., Brecha, R., Hare, B., Schaeffer, M., & Fuentes, U. (2019). Global and regional coal phase-out requirements of the Paris Agreement: Insights from the IPCC Special Report on 1.5°C. Retrieved from https://climateanalytics.org/media/report_coal_phase_out_2019.pdf

The Climate Action Tracker (CAT) is an independent scientific analysis produced by two research organisations tracking climate action since 2009. We track progress towards the globally agreed aim of holding warming well below 2°C, and pursuing efforts to limit warming to 1.5°C.

climateactiontracker.org

The Consortium

Climate Analytics is a non-profit climate science and policy institute based in Berlin, Germany with offices in New York, USA, Lomé, Togo and Perth, Australia, which brings together interdisciplinary expertise in the scientific and policy aspects of climate change. 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.

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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.

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