



E3G



**SCORECARD REPORT** SEPTEMBER 2018

## **G7 COAL SCORECARD – FOURTH EDITION** DECISION TIME FOR COAL IN GERMANY

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## About E3G

E3G is an independent climate change think tank operating to accelerate the global transition to a low carbon economy. E3G builds cross-sectoral coalitions to achieve carefully defined outcomes, chosen for their capacity to leverage change. E3G works closely with like-minded partners in government, politics, business, civil society, science, the media, public interest foundations and elsewhere. In February 2018, E3G was ranked the fifth top global environmental policy think tank for the second year running. [www.e3g.org](http://www.e3g.org)

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## SUMMARY

Germany is performing worse on coal phase out than the USA, despite the pro-coal rhetoric of the Trump Administration, and is falling further behind its peers in Canada, France, Italy and the UK.

This fourth edition of the G7 coal scorecard report looks in depth at the situation in Germany and the importance of the 'Coal Commission' process currently underway. In a striking contrast to its leadership on renewables, we find that Germany lies in sixth place out of seven in our ranking, with no substantial change in its overall performance since our 2017 report.

Our review of the coal phase out debate in Germany highlights that it scores poorly due to entrenched opposition from major utility companies and coal sector interests. Following years of denial and delay they are now seeking to dilute pollution regulations and disrupt the context of the new Coal Commission.

Germany's self-image as a climate leader is contradicted by its slowness to act on coal. The German Federal Government needs to grasp the nettle of the coal transition and move away from its passive approach. It can draw on the policy insights and industry experience of its more proactive peers as it determines its own way forward:

- > As the largest user of coal power generation in Europe, Germany's decisions on its domestic coal phase out will have broader significance. Germany's actions on coal can unlock action by its near neighbours in central and eastern Europe and enable enhanced EU emissions reductions. Internationally, Germany can provide a positive example that heavily industrialised economies can successfully transition away from coal.
- > Canada's co-creation and leadership of the Powering Past Coal Alliance with the UK has been a substantial initiative that has enabled it to cultivate positive cooperation with sub-national actors in the USA and advance the international debate on coal phase out. Germany will need to consider how it can align its domestic coal phase out efforts with the Alliance's recognition of the need for an exit from coal by 2030 by OECD member countries.
- > Over the past year Germany played a positive leading role by advocating for restrictions on coal finance from Asian Infrastructure Investment Bank (AIIB). If it can align its domestic actions with its international advocacy Germany will increase its influence and help catalyse an accelerated global coal transition.
- > 2019 will see the G7 Presidency held by France and the G20 led by Japan. Germany has important economic and political relationships with both countries and can help secure an effective approach to climate action and economic growth that draws on its own G20 Presidency in 2017. But to do so it must decide if it will walk the walk on coal: this decision will be Chancellor Merkel's climate legacy.

Figure 1 below presents the 2018 G7 coal scorecard ranking, which reviews the status of market drivers and government policies in each country to provide a comparable assessment of performance. We consider whether there is a risk of new coal power plants being constructed; whether existing coal power plants are being retired; and whether a country's actions have a positive international impact.<sup>1</sup>

Figure 1: G7 Coal scorecard assessment



Source: E3G analysis

Compared to May 2017, our G7 coal scorecard assessment finds that:

- > **Canada** has moved into joint first position alongside **France**, with significant progress on the international stage through commitments to increased climate finance for the coal-to-clean transition and its co-leadership with the **UK** of the Powering Past Coal Alliance, discussed below in Box 1.
- > **Italy** has moved up a place to fourth (overtaking the USA) thanks to its commitment to phase out coal power generation by 2025 and its membership of the Powering Past Coal Alliance.
- > All four of these G7 members are now committed to delivering a domestic coal phase out and are in the process of developing legislative and / or regulatory approaches to implementation.
- > The **USA** drops from fourth to fifth position in the G7 scorecard ranking due to Italy's improved performance. Positively, the structural transition away from coal in the US electricity sector continues at pace with continued retirements of existing coal power plants and no new coal plants under development.



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- > **Germany** remains in sixth place in the scorecard ranking with no substantial change in performance overall. Germany is performing more poorly than the USA, and is falling further behind the four leading G7 members. Some initial progress has been made in the private sector where major German insurance companies have taken important steps to begin limiting finance and insurance coverage to coal miners and utility companies dependent on coal power generation.
  - > **Japan** remains in last place in the scorecard, in an unwelcome position as the sole G7 country actively seeking to build new coal power plants at home and abroad. Japan has however also seen positive signs of progress with changes in policy by banks, insurance companies, and project developers. Politicians are beginning to recognise that there is a need to move from coal to clean energy, but this is yet to translate into government policy. As holder of the G20 presidency next year, Japan can start to regain its coveted climate leadership reputation by committing to a moratorium on new coal power generation at home and abroad.

Investment trends across the G7 confirm the continuing transition away from coal. Our data analysis finds that:

- > **Cancelled:** An additional 6.5 gigawatt (GW) of proposed new coal plant capacity has been cancelled, totalling 71GW since 2010. Japan remains the only G7 country pursuing investment in new coal-fired electricity generation, with 3.5GW having recently entered operation. But even Japan is seeing a growing number of delays and cancellations of proposed new coal plants, now totalling 7GW.
- > **Already retired:** Overall, 131GW of coal capacity has already closed since 2010. Coal power plant retirements are the dominant structural dynamic in the electricity sector, a trend shared by the rest of the G7 beyond Japan.
- > **Planned retirements:** A total of 86GW of coal capacity is set to close, of which half is a result of political commitments by national and regional governments.

Our review of progress over the past year has found that the underlying structural transition away from coal remains strong, with increased political commitments and diplomatic cooperation by national and regional governments across the G7, including through the new Powering Past Coal Alliance.

Progressive G7 members can continue to accelerate the transition away from coal power generation, with immediate opportunities including:

- > The Energy Policy reviews of the European Investment Bank (EIB) and European Bank for Reconstruction and Development (EBRD) can be used to tighten restrictions on coal lending. Collectively, members of the Powering Past Coal Alliance hold 68% of the shareholding of EIB and 45% of EBRD.
  - > France holds the G7 presidency in 2019, presenting an opportunity to align private sector restrictions on coal finance with government support for the coal-to-clean transition. President Macron has made positive statements on the necessity of the transition away from coal, including highlighting the risk of investment in coal by China's One Belt One Road Initiative.<sup>2</sup> French private sector actors are similarly taking a leadership position on coal finance and utility strategy.
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## ABOUT THE G7 COAL SCORECARD

E3G developed the G7 coal scorecard format in 2015 to provide a framework for tracking how G7 countries are meeting the challenge of phasing out coal use for electricity generation.<sup>3 4</sup>

On 8<sup>th</sup> June 2015, G7 members agreed that the decarbonisation of the global economy should be completed by the end of this century; that this requires deep cuts in CO<sub>2</sub> emissions; and that it must include a transformation of their own energy sectors by 2050.

Subsequently, all G7 members participated in the negotiation of the Paris Agreement in December 2015, and the New York signing ceremony in March 2016.<sup>5</sup>

The Paris Agreement and the 2015 G7 communiqué do not mention any particular fossil fuel, but the implication is clear: there is no future for unabated<sup>6</sup> coal power generation in a world that is acting to avoid dangerous climate change. Indeed, analyses point to the need for all OECD countries to have completed a coal phase out by 2030 if emissions reductions are to be on track.<sup>7</sup>

The G7 coal scorecard assesses country performance across three categories of action:

1. Is there a risk of new coal power plants being constructed?
2. Are existing coal power plants being retired?
3. Do country actions have a positive international impact?

The first two domestic issues are analysed in respect to market drivers and government policies. The international impact of each country is then assessed by considering how private sector investments and government finance impact on coal power plants abroad. For this fourth edition of the scorecard we have added a third sub-category of Diplomatic Leadership, recognising real world developments in this space over the past year.

There are significant differences between the G7 countries in respect to the scale and relative importance of coal-fired electricity generation. This reflects the overall size of each economy and historical investment trends. The G7 coal scorecard tracks country performance across the three categories of action outlined above to enable meaningful comparisons of market dynamics and government policies irrespective of the significant differences in the scale of coal use in each country.

In May 2016, the second edition of the scorecard reviewed the overall trends and looked at each country in detail. The third edition in 2017 considered the situation in the USA and the initial impact of the new Trump Administration. This fourth edition looks in depth at the current status of the coal transition in Germany.



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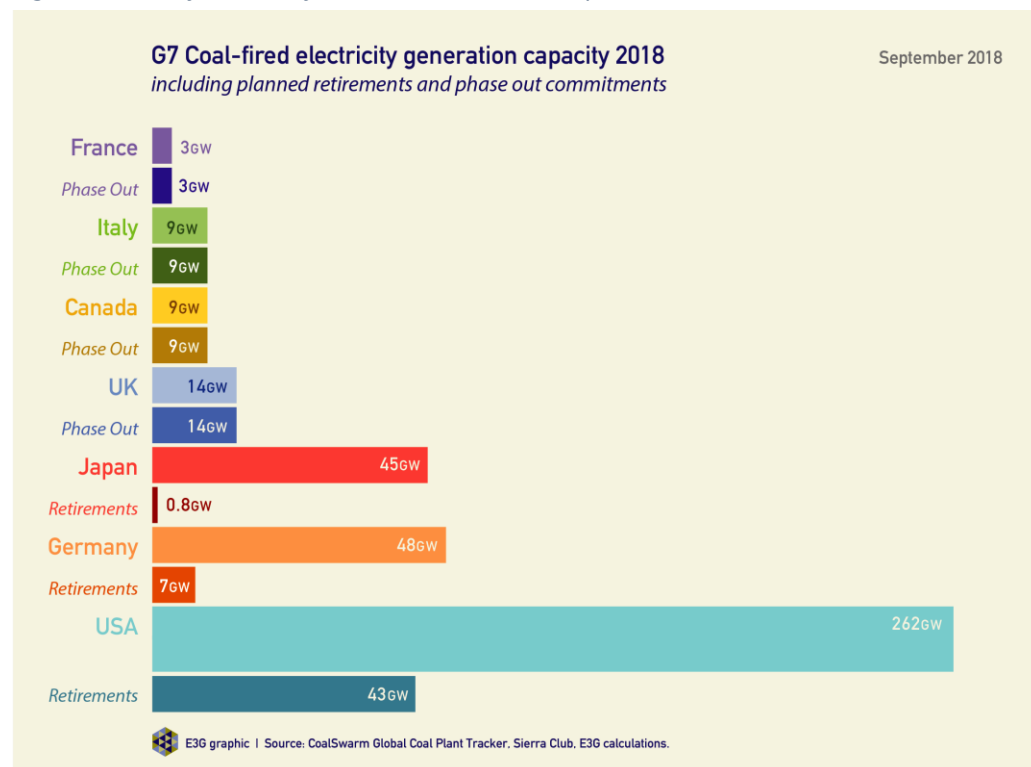
# INTRODUCTION TO G7 COAL USE

## Capacity

The differences in the scale of coal power plant capacity across G7 countries are illustrated in Figure 2. Four countries have relatively small amounts of coal capacity: France (3GW), Canada (9GW), Italy (9GW), and UK (14GW). Both Canada and the UK have seen recent small reductions in capacity, with further coal plant closures and conversions expected over the coming months.

Since May 2017 Japan has increased capacity by 1GW to a total of 45GW, while Germany has seen a reduction of 2GW to a total of 48GW. The USA has by far the largest coal power plant capacity, with its 262GW currently more than twice the size of the rest of the G7 combined. However, the USA has seen 14.5GW of coal plant capacity close since May 2017, continuing the firm trend away from coal across US electricity markets.

*Figure 2: Size of the coal fleet in G7 countries, September 2018*



**Source:** CoalSwarm Global Coal Plant Tracker, Sierra Club, E3G calculations

Figure 2 also highlights the extent to which the current coal-fired capacity in each country is already scheduled for closure. Since last year, Italy has joined the UK, France and Canada in making a national political commitment to phase out all remaining coal power plants, committing itself to the date of 2025.

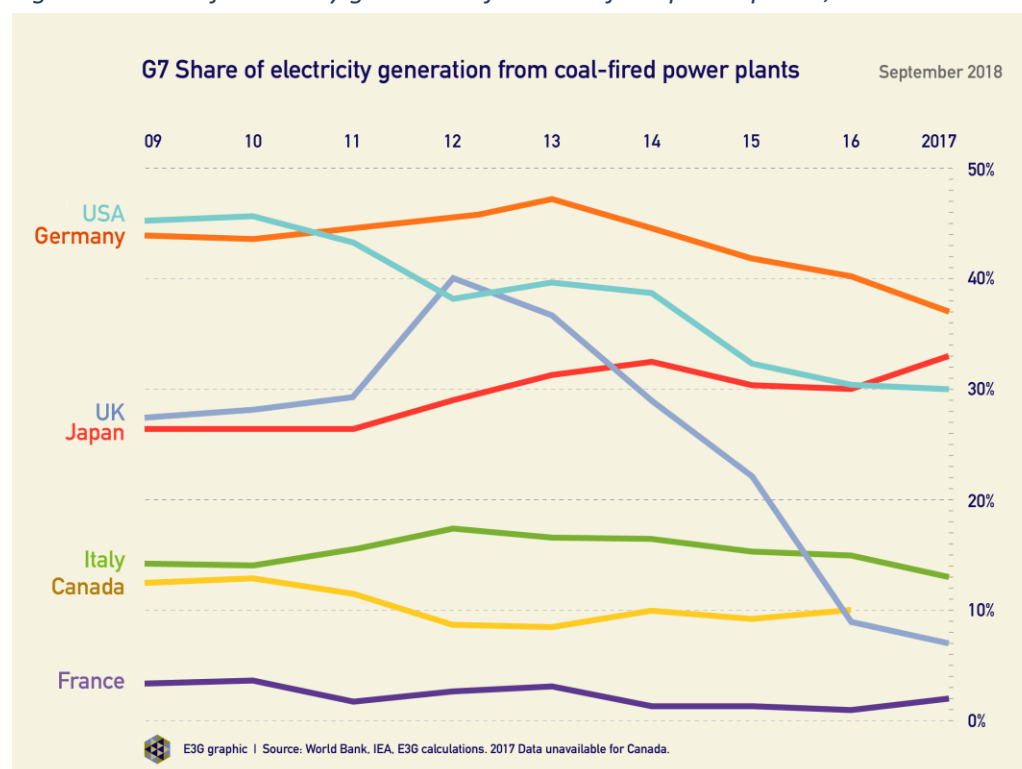
In the remaining G7 countries, national policy makers have yet to fully grasp the coal phase out challenge, although individual sub-national states and regions are starting to take the lead as market trends gather pace. In Germany, 15% of current capacity is scheduled for closure, with 3.3GW already retired since May 2017. Figure 2 highlights that a further 43GW of capacity is already scheduled to retire in the USA, equivalent to 17% of current US coal capacity.

Japan is the odd one out among the G7, in that it is still pursuing coal power both domestically and overseas. Just 0.8GW of coal plants are set to close in the next decade, however some ministry and business positions are starting to shift away from supporting coal and suggesting that there should be a closure of older, less efficient power plants. We discuss the emerging shifts in Japan further below.

## Generation

Figure 3 below illustrates the shifting role of coal power generation in each of the G7 countries. Germany saw a fall in the share of electricity from coal in 2017 as renewables grew by a record amount. Italy and USA also saw a further small fall in coal use, continuing the trend of recent years. Japan saw an increase from 30% to 33% of generation from 2016-2017.

*Figure 3: Share of electricity generation from coal-fired power plants, 2009-17*



**Source:** World Bank, IEA, E3G Calculations.

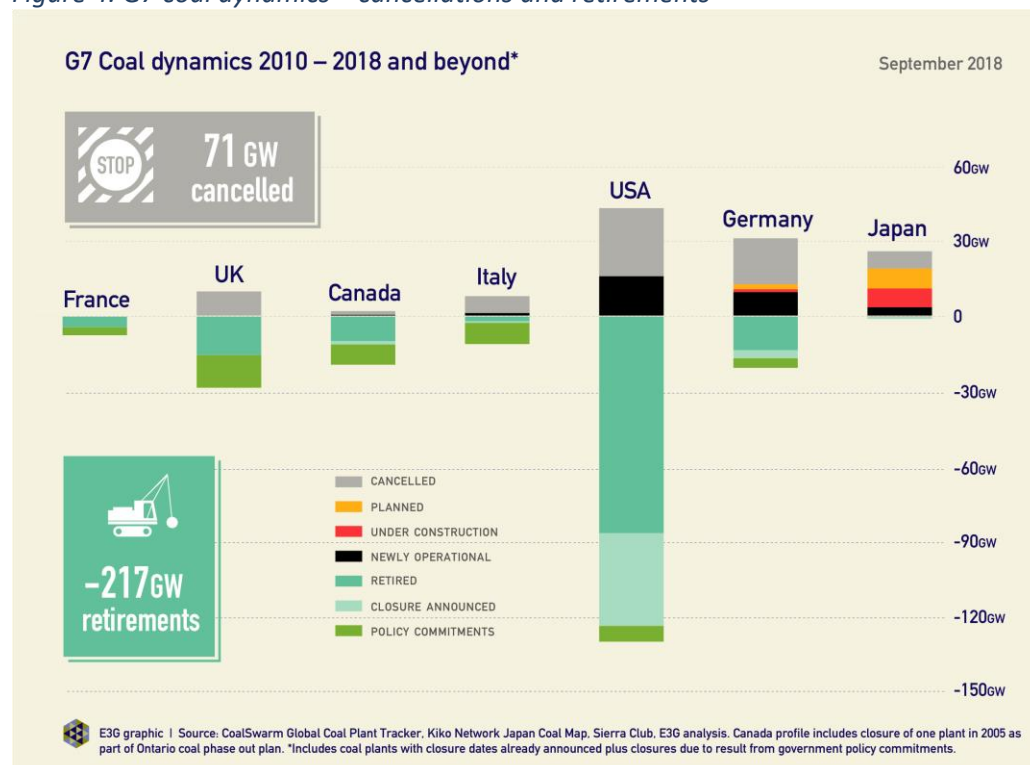
The UK has set repeated new records for low levels of electricity generation from coal over the past year. This has continued the rapid shift away from coal power

generation from the recent peak of 40% of UK electricity in 2012. Across 2017, just 6% of total UK electricity production came from coal, including the first 24-hour period without coal power generation in April 2017. In 2017 there were 624 coal-free hours, up from 210 hours in 2016. In 2018 the record period without coal generation has grown to over 3 days (78 hours),<sup>8</sup> with more than 1000 hours of coal-free generation achieved in the first half of 2018 alone.<sup>9</sup>

## G7 coal dynamics – cancellations and retirements dominate

Figure 4 below illustrates the swing away from coal power plants in G7 countries since 2010. Improvements in the analysis of historical data by the Global Coal Plant Tracker has resulted in a recalibration of totals reported here compared with previous editions of the scorecard. Greater clarity on the cancellation date of previously proposed power plants means that we can now identify that 121GW of coal power plants have been under development across G7 countries since 2010.<sup>10</sup> Of these, just 31GW has entered operation, including 761MW in Japan during 2017-18.<sup>11</sup>

Figure 4: G7 coal dynamics – cancellations and retirements



**Source:** CoalSwarm Global Coal Plant Tracker, Kiko Network Japan Coal Map, Sierra Club, E3G analysis.

More than double this amount of capacity has been cancelled by project developers, totalling 71GW (an increase of 6.5GW since May 2017). These cancellations include the last handful of previously proposed coal power projects integrating carbon capture and storage technology. In the USA the Kemper County project was abandoned after huge cost overruns associated with its coal gasifier,<sup>12</sup> while in the UK the Caledonia Clean Energy project announced it would change feedstock from coal to

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gas.<sup>13</sup> There are now no active coal power projects under development in Canada, France, Italy, UK or the USA.

In Germany, a 1.1GW coal plant is under construction which marks the last of an ill-fated wave of investments initiated prior to 2010.<sup>14</sup> Two further coal plants supposedly remain in the development pipeline, but these are not expected to enter construction. We discuss this dynamic further in our in depth look at Germany later in this paper.

In Japan, 7.5GW of coal plant capacity is currently under construction (an increase of 2GW since May 2017), with a further 8GW in the development pipeline. But Japan's pipeline of proposed coal power plant projects has also decreased at the same time, with 7GW of projects now cancelled or shelved, most recently including two J-Power Takasago coal fired generation units and the Sendai plant switching to biomass, totalling 1.3GW. This represents a continuing shift from market actors away from coal, with positive prospects that this could accelerate following recent changes to the policies of major insurers and banks. The door has now been opened to the possibility that the Japanese government could declare a moratorium on further coal plant construction.

As Figure 4 shows, the dominant trend across the G7 since 2010 continues to be the retirement of existing coal plants. The total of completed and planned retirements now totals 217GW, an increase of 27GW since May 2017. The USA alone now has retirements exceeding 130GW, of which 87GW have already closed.

The 'Policy commitments' category incorporates coal plant retirements that will result from the implementation of intended policy measures by national and regional governments. This category has now grown to total 43GW (an increase of 13GW over the past year), encompassing additional policy commitments by Italy and sub-national actors in the USA.

As additional countries and regions also attend to the challenge of defining a managed transition out of coal power generation in the face of strong market trends we expect that the retirement pipeline will continue to grow over the coming years. The key question for Germany and Japan is how quickly they will grasp the nettle of enabling a pathway for the phase out of coal power generation.

These trends will continue to provide a positive foundation for the development of domestic policy frameworks across the G7 that confirm and assist the phase out of coal power generation. The similarities of the policy challenges being faced will also be a motivating force for deepened international cooperation on coal.

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### Box 1: The Powering Past Coal Alliance

The Canadian and UK governments launched the Powering Past Coal Alliance<sup>15</sup> (PPCA) at the United Nations Framework Convention on Climate Change 23rd session of the Conference of the Parties (COP23) in Bonn in November 2017. The stated purpose of the Alliance is to bring together a diverse range of governments, businesses and organisations who are committed to accelerate clean growth and climate protection through the phase-out of unabated coal power:

*“Together, we recognise that shifting away from coal power generation is essential for clean air; healthy communities; sustainable economic growth; and a safe climate. A timely transition is necessary to meet the international climate change commitment to keep global temperature increases well below 2°C and pursue efforts to limit it to 1.5°C.*

*Our commitment to working together is informed by science-based benchmarks that show that EU and OECD countries must phase out unabated coal-fired electricity generation no later than 2030, with the rest of the world no later than 2050 to limit global warming and the impacts of climate change.”*<sup>16</sup>

The Alliance’s Declaration commits its government members to put in place a moratorium on new coal power stations without carbon capture and storage; phase out existing coal power generation; and restrict finance for coal power generation. Private sector members commit to taking similar steps appropriate to their sector.<sup>17</sup>

At the launch of the PPCA, 27 national, provincial, state and city governments joined the Alliance. At the December 2017 One Planet Summit, the Alliance expanded further, adding 24 international organisations, investors, major consumer brands and generators of electricity. The PPCA has since grown to a total of 74 members, recently gaining new 10 subnational joiners at the Global Climate Action Summit (GCAS) in September 2018.<sup>18</sup>

The Alliance is open to sub-national government members, which has provided an opportunity for positive engagement with US states and cities. California, Oregon and Washington joined the Alliance at its launch in 2017, with Connecticut, Hawaii, Minnesota, New York State and the cities of Honolulu and Los Angeles becoming members at GCAS.<sup>19</sup>

The Alliance is a positive example of governments using diplomatic leadership and practical cooperation to unite a diverse range of actors around a difficult, real economy issue. It has begun building positive relationships and sharing real world examples and best practices to support the phase-out of unabated coal, including through a partnership with Bloomberg Philanthropies.<sup>20</sup>

# 2018 G7 COAL SCORECARD ASSESSMENT

Figure 5 sets out our assessment of G7 countries' performance and their relative ranking in this September 2018 edition of the G7 coal scorecard.

Figure 5: G7 coal scorecard assessment



Source: E3G analysis

Compared to May 2017, we assess that there have been changes to country performance and ranking:

- > **Canada** has moved into joint first position alongside **France**, with significant progress on the international stage through commitments to increase climate finance for the coal-to-clean transition<sup>21</sup> and its co-leadership with the **UK** of the Powering Past Coal Alliance, which we discuss further in Box 1 above.
- > **Italy** has moved up to fourth place (overtaking the USA) thanks to its commitment to phase out coal power generation by 2025<sup>22</sup> and its membership of the Powering Past Coal Alliance.
- > All four of these G7 members are now committed to delivering a domestic coal phase out and are in the process of developing legislative and / or regulatory approaches to implementation.
- > The **USA** drops from fourth to fifth position in the G7 scorecard ranking.
  - > We continue to find that most of the pro-coal policy changes proposed by the Trump Administration are currently primarily statements of intent which will be subject to lengthy implementation timelines and legal challenge. Domestic

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federal government policy in the USA therefore retains a mid-ranking score in this edition of the scorecard. Meanwhile, the continued structural transition away from coal in the US electricity sector continues at pace with positive scores for market driver categories and increased efforts by state and city actors.

- > The USA's performance has however worsened in respect to its international impact, with GE actively promoting coal power plant construction abroad<sup>23</sup> and the US government pursuing pro-coal positions through its international relations.<sup>24</sup>
- > **Germany** remains in sixth place in the scorecard ranking with no substantial change in performance overall. Germany remains firmly behind the USA, despite the pro-coal rhetoric of the Trump Administration, and is falling further behind the continued progress of the four leading G7 members.
  - > Germany scores marginally better in two areas where private sector companies are moving away from coal. Domestically, utility company leaders have recognised that previously proposed new coal power plant proposals are unlikely to enter construction, however these have not yet been formally cancelled. Internationally, major German insurance companies have taken important steps to begin limiting finance and insurance coverage to coal miners and utility companies dependent on coal power generation. The German government played a leading role in advocating for restrictions on finance for coal from the Asian Infrastructure Investment Bank (AIIB).
  - > However, Germany scores more poorly in respect to the phase out of domestic coal power generation due to the entrenched opposition from major utility companies that have sought to delay and dilute pollution regulations and disrupt the context of the new Federal Coal Commission. The German Federal Government itself is passively positioned on coal compared with the proactive approach of G7 peers. We discuss these Germany dynamics in depth below.
- > **Japan** remains in last place in the scorecard, in an unwelcome position as the sole G7 country actively seeking to build new coal power plants at home and abroad. However even Japan has seen positive signs of progress with changes in policy by banks, insurance companies, and project developers. Politicians are beginning to recognise that there is a need to move from coal to clean energy, but this is yet to translate into government policy. We discuss Japan in more detail in Box 2 below.

More broadly, in tracking progress since May 2017 we have found that:

- > Coal has emerged onto the international diplomatic scene, most notably through the creation of the Powering Past Coal Alliance by Canada and the UK (discussed in Box 1 above). To reflect this real-world development, we have incorporated a new sub-category of 'Diplomatic Leadership' as part of our review of each country's International Impact.



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- > Positive progress continues to be made in respect to the reduced risk of new coal power plants and the retirement of existing capacity. There are now no new coal power plants under development in five of the G7 members. Government policies are increasingly recognising this reality and planning for alternatives to coal. Even in Japan, coal power projects are being delayed, cancelled, and opposed.
  - > The international influence of private sector actors has seen improvement across most countries, with positive steps being taken by substantial banking and insurance actors in Germany and Japan as well as France and the UK. However, this area remains relatively weak compared to other elements of the scorecard assessment, pointing to the need for further improvements from private sector actors, particularly regarding coal finance and project development activities. This is noticeably the case in Canada, where private sector actors are continuing to invest in coal power generation and coal infrastructure assets.<sup>25</sup>

### Box 2: Japan – Light at the end of the tunnel?

Japan continues in last place in the G7 coal scorecard, as the worst performer across all categories for the past three years. It remains an outlier among the G7 as the only member government actively pushing to develop new coal power both overseas and domestically. Being last in the ranking is an unwelcome position for Japan, reflecting its increasingly poor international reputation on coal and climate change.

There are however three promising areas of change, which have resulted in a slight improvement in Japan's scores in this fourth edition of the scorecard:

1. Coal power plant proposals continue to be cancelled
2. Private sector actors are pulling back from coal finance
3. Political leaders are recognising that Japan must move from coal to clean energy

Further progress in these areas could result in significant improvements in Japan's performance and position in the G7 scorecard ranking. Indeed, the international spotlight will be firmly on the Japanese government as it heads into its Presidency of the G20 in 2019 and then hosts the Olympic Games in Tokyo in 2020.

#### 1. Coal power cancellations

Since May 2017, two J-Power Takasago coal fired generation units were cancelled and the Sendai plant announced that it will switch to biomass, totalling 1.3GW.<sup>26 27</sup> Additionally, civil society pressure on coal continues to increase, with the launch of legal action by concerned citizens against the proposed coal power project in Kobe City.<sup>28</sup>

Since Japan's 2012 drive to develop 50 new coal plants (an estimated 26GW development pipeline), 7GW of these have either been cancelled or changed fuel, as shown in Figure 4 above. Just 3.6GW has entered into operation, but

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more negatively 7.5GW are under construction. The remainder of the pipeline (8GW) are now facing increased recognition by utility companies and investors of the financial risks to new coal plants.

We have therefore found that private sector dynamics continue to run ahead of government policy. We maintain our assessment from 2017 that Japan's private sector positioning still ranks as needing improvement, but there have been visible signs of progress and positive indications of further change.

Additionally, Japan's powerful Ministry of Economy, Trade and Industry (METI) has at last begun to recognise that the deployment pathway for coal is far from secure and has quietly signalled to power plant project developers that new coal power plants may not achieve high load factors and may need to be accompanied by the withdrawal of older plants from the grid. Media reports have suggested that the government may withdraw its support for small scale coal projects (those under 112.5MW) but this has not yet been confirmed.<sup>29</sup>

However, in a continuation of Japan's domestic push for coal, the government has recently approved the nation's fifth Strategic Energy Plan. This policy continues to place an emphasis on coal as a "base-load" energy source for electricity. This was a missed opportunity by the Japanese government to shift towards renewable energy and halt the impulse towards new coal plant construction, resulting in it continuing to be ranked as a poor performer in this category. The government has a chance to revise its promotion of coal as it considers its low carbon development strategy, to be submitted to the UNFCCC in June 2019.

## **2. Private sector restrictions on coal finance**

Since May 2017, Japan's three oldest life insurance companies<sup>30</sup> and its three largest banks<sup>31</sup> have all adopted policies that introduce stricter financing guidelines for coal, particularly for international projects. In a significant step forward, in September 2018 the major coal power plant developer Marubeni has adopted a business policy that restricts its support for new coal power projects and announced an intention to substantially reduce the amount of coal power generation in its portfolio.<sup>32</sup> These restrictions are a positive first step, however exemptions and loopholes still need to be addressed to increase coherence and truly secure a shift away from coal.<sup>33</sup>

This initial set of financial actors are serving as pathfinders for the rest of the Japanese business community, which largely still follows the pro-coal position of business lobby group Keidanren. Their willingness to explicitly grasp the coal challenge is however a visible change since 2017. We have therefore awarded a split score in recognition that elements of Japan's private sector community are moving away from the poor performance that typified the sector in the past.

Once again, Japan's leading businesses are ahead of government policy. The Japanese government continues to promote power plant projects and finance

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coal technology exports. The most recent example is a decision by the Japan Bank for International Cooperation (JBIC) to fund the Vietnamese Nghi Son II coal plant. This is despite its apparent breach of the 2015 OECD sector guidelines. JBIC and NEXI are also considering nine other projects for a total of over 6.6 GW, mainly in Southeast Asia. Japan's public finance institutions need to step up with their own restrictions on coal finance. A first opportunity to do this would be ahead of October 2018 when Japan is expected to sign bilateral finance deals with Vietnam to support the construction of two coal power plant projects.<sup>34</sup>

### **3. Political leaders sense the shift from coal to clean**

The positions of the Ministry of Environment (MoE) and Ministry of Foreign Affairs (MoFA) are both shifting towards a more openly sceptical view of coal. This is because of growing international criticism of Japan's coal use, along with changing economic and social dynamics that are placing pressure on the country to phase out coal. Foreign Minister Kono has been highly critical of Japan's weak renewables target and its investment in coal internationally<sup>35</sup> and convened an expert working group which advised the MoFA to prioritise renewable energy and restrict finance for coal power plants.<sup>36</sup> Similarly, successive Ministers of the Environment have been opposed to new domestic coal power generation project while only having a limited role in the permitting process.

The Japanese government recently convened the first meeting of an expert panel on strategies for reducing greenhouse gas emissions. Prime Minister Abe asked the panel to present a vision on how to prevent global warming and encouragingly stated "Global warming countermeasures are no longer a cost for businesses, but sources of their competitiveness. I'd like you to show a vision that can lead international trends".<sup>37</sup>

Although these positive changes are welcome, Japan's position on coal is still at odds with actions required from OECD economies to achieve global climate goals. This summer Japan experienced extreme floods and fatal heat waves that are widely believed to be the result of climate change. Its continued domestic and international support for coal will only see these extreme events become more frequent, resulting in damaging social and economic impacts. As holder of the G20 presidency next year, Japan has a significant opportunity to drive climate ambition and regain its lost reputation as an international leader on climate change. Acting to halt its continued pursuit of coal would be the single biggest step it could take to reclaiming the positive international role it took two decades ago to secure the Kyoto Protocol.

With promising developments over the last year and ministry positions shifting, Japan can raise its climate ambition through committing to a moratorium on new coal power generation at home and abroad. Japan needs to hit the pause button on coal to give itself time to define an alternative investment path that will maximise opportunities to deploy clean technologies at home and abroad.

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## IN DEPTH:

# DECISION TIME FOR COAL IN GERMANY

### Summary

- > Germany is the largest emitter of coal-related CO<sub>2</sub> in Europe. Coal contributed 37% to German gross power production in 2017. Seven of the top 10 most polluting coal plants in Europe are German lignite (brown coal) plants.
- > Germany is not yet on track to reach its 2020 and 2030 climate-related goals. Emissions from energy industries would need to drop below 170 Mt CO<sub>2</sub> equivalent by 2030 (currently 318 Mt CO<sub>2</sub>) to achieve the sector emissions target based on the 2050 Climate Action Plan. Economy Minister Peter Altmaier has recognised that coal capacity would roughly need to be halved by 2030 to reach this goal. However, a Paris-compatible phase out pathway would require an earlier completion of a coal exit by around 2030.
- > The last underground mines for hard coal in Germany will close in 2018, resulting from a planned phase out of subsidies. But the future of power generation from both hard coal and lignite are contested issues in the political debate – especially in relation to the role of lignite mining in three German regions.
- > For this reason, the German government has set up a multi-stakeholder “Commission for Growth, Structural Change, and Employment” to agree on a coal exit date, a phase out pathway, and accompanying social and economic transition measures. Germany has a long history of consensus-oriented fora for political decisions of major societal importance. Final results of this ‘Coal Commission’ are expected by end of December 2018.
- > Despite a stable economy and very low unemployment, the German coalition government is perceived as unstable, and upcoming elections as well as the rise of far-right movements are of great concern for both the Conservatives (CDU/CSU) and the Social Democrats (SPD). Both party blocs are hesitant to feature climate ambition as a key policy objective on the federal agenda, citing concerns over job losses in coal regions, security of electricity supply, and overall energy prices. However, several recent studies show the feasibility of an accelerated phase out and the growing importance of renewable jobs which outnumber coal jobs more than tenfold.
- > In sharp contrast to Germany’s self-perception as champion of the “Energiewende” and former leadership role on climate overall, Germany is being left behind its peers when it comes to coal. Influential stakeholders including high-carbon businesses, trade unions, energy-intensive industry, and the Economy Ministry have spoken out against Paris-compatible climate ambition in the coal sector, and recent policy decisions have slowed the growth of renewables. Political guidance for the low-carbon transition and early planning are however key to enabling the long-term economic stability and competitiveness of affected

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regions. A delayed transition away from lignite would ultimately be more abrupt, expensive, and disruptive for regions compared with a proactive managed transition pathway.

- > In parallel to the Coal Commission, various political processes, including the 2019 Climate Law, the EU's National Energy and Climate Plans, and the new EU 'BREF' pollution control standards for large combustion plants provide opportunities to enable an earlier coal phase out. The ambition of all those processes is at risk of being watered down and delayed by coal sector interests.
- > Despite some initial steps to close older hard coal generating units, utility companies succeeded in their efforts to secure compensation for shutdowns through the creation of a 'lignite reserve' instrument in 2016 instead of the proposed additional carbon tax policy. At the same time, however, rising EU ETS prices and accelerated moves towards green finance question the profitability of coal plants and increase expectations of future economic losses. Utility companies are still trying to secure pay offs for shutdowns that should otherwise happen anyway under market conditions.
- > One utility in particular, RWE, has sought to escalate the debate by insisting on the destruction of the Hambach Forest for the expansion of its Hambach lignite mine. The move has led to widespread protests by environmental groups and local activists, with investors (e.g. DEKA) and the Union for Police having come out against the logging operations. Public opinion is strongly in favour of protecting the forest and for Germany to move out of coal by 2030.
- > Despite all of these complexities and the challenging stakeholder constellation, the Coal Commission is a unique opportunity for Germany to link a Paris-compatible climate ambition with a just transition for regions. This could include long-term investments in low-carbon energy generation, industrial employment, education hubs, clean infrastructure and an active civil society in coal regions. Germany would thereby regain its role as a frontrunner on climate and renewable energy, through proactively grasping the challenge of phasing out both nuclear power and coal by 2030. To do this, the Federal government will need to take a proactive leadership role; rather than continuing to sweep up behind the deliberate inertia of incumbent coal industry interest groups.

## Context: The Role of Coal in Germany

Coal fuelled German economic growth after World War II and coal mining and its combustion for power generation is of high economic, cultural and social relevance for the German coal regions. Coal has been central to Germany's rise as a major manufacturing nation and to this day plays a major role in power generation, in particular for Germany's energy-intensive industries, but also for district heating systems in some areas. Open cast lignite (brown coal) mining plays an important role in both the coal regions in Eastern Germany (Lusatia, Central German coal district) and Western Germany (Rhenish district).

While the German “Energiewende” is renowned for driving an exceptional growth of renewables, accounting for more than 40% of the power mix in the first half of 2018, this transition did not result in a major decrease of coal in the German power mix.<sup>38</sup> Germany is the largest emitter of coal-related CO<sub>2</sub> in Europe, accounting for more than half of CO<sub>2</sub> emissions in the German sectors included in the EU emission trading system (ETS).<sup>39</sup> Coal contributed 37% to German gross power production and 22% to primary energy consumption in 2017, despite some initial steps to close older units which has seen capacity fall to 48GW.<sup>40</sup>

Putting this in a European perspective, seven of the top ten most polluting coal plants are German lignite plants, as shown in Figure 6. Germany’s coal fleet constitutes close to a third of the total coal capacity present across all EU member states, while Germany and Poland combine to represent half of EU coal capacity. There is no escaping the conclusion that the timely exit from coal in Germany is essential for the broader European pursuit of climate goals.<sup>41</sup>

Figure 6: Top 10 European Polluters

TOP 10 EUROPEAN POLLUTERS					
Lignite, Hard coal power plants					
RANK	PLANT	OWNER	2017 CO <sub>2</sub> EMISSIONS (Mt)	YEAR ON YEAR CHANGE	
1	Belchatow	PGE	37.6	8%	
2	Neurath	RWE	29.9	-5%	
3	Niederaußem	RWE	27.2	9%	
4	Jänschwalde	LEAG	23.6	-1%	
5	Weisweiler	RWE	18.9	1%	
6	Schwarze Pumpe	LEAG	11.4	-7%	
7	Lippendorf	EPH	11.4	6%	
8	Kozienice	ENEA	11.2	-7%	
9	Boxberg	LEAG	10.6	9%	
10	Maritsa East 2	TPP	10.5	9%	
11	Torrevaldaliga N.	ENEL	9.7	-4%	

Source: Sandbag<sup>42</sup>

## New coal risk

There is a small remaining risk that new coal plants will be opened in Germany as Uniper’s Datteln IV (1.1 GW) “the only coal-fired power station in construction in Western Europe”<sup>43</sup> remains under construction after a decade of delays and technical problems despite already having seen its value massively reduced.<sup>44</sup> Beyond this plant, only RWE’s Niederaussem L (1.1 GW),<sup>45</sup> and Dow Chemical’s Stade unit (1.0 GW) remain in the new coal development pipeline. Recently, RWE Roger Miesen acknowledged that Niederaussem L is unlikely to ever be built, but as yet it has not been withdrawn from the planning process.<sup>46</sup>

In this discussion, it should be noted that both RWE and Uniper have undergone disruptive reorganisations and de-mergers over recent years following the loss of corporate value that resulted from their failure to anticipate shifts in electricity markets and the growth of renewables.<sup>47</sup> Their engrained adherence to business as

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usual operations persists through their continued clinging to coal until the bitter end, as we shall discuss further below.

### **The emergence of the coal phase out debate**

Until the last few years, the question of a national coal phase-out had not taken centre stage in the political debate in Germany. To the contrary, discussions about the transformation of the energy sector were largely focused on the phase out of nuclear power and its replacement with renewables, an effort which will be finalised in 2022.<sup>48</sup>

More positively, the last underground mines for hard coal in Germany will close in 2018, resulting from a planned phase out of subsidies and public pressure. This closure pathway is perceived as a relatively good example of a just transition, mainly in coal regions in the western part of Germany.<sup>49 50</sup> As a consequence, starting in 2019, German hard coal power plants will be entirely powered by imported coal. Germany is now by far the biggest coal importer in the EU with 51 Mt in 2017 including coking coal.<sup>51</sup> Currently, 4 GW of Germany's older hard coal plants are announced to be retired.

More controversially, the future of hard coal and lignite power generation (and associated lignite mining) in three German coal regions are contested issues in the political debate. In 2015 and 2016 the Federal Government sought to introduce a climate levy which would relatively penalise older coal plants, particularly the most CO<sub>2</sub>-intensive lignite power plants. However this was abandoned and replaced by a 'lignite reserve' policy after an effective lobby by the miners' union and coal industry.<sup>52</sup> This resulted in payments of €1.6bn to plant operators to gradually withdraw 2.7GW of lignite capacity from the electricity market ahead of final closure – resulting in a very expensive price tag in particular if they were to successfully secure additional compensations in the context of the Coal Commission.

### **Finding a pathway forward? Creation of the Coal Commission**

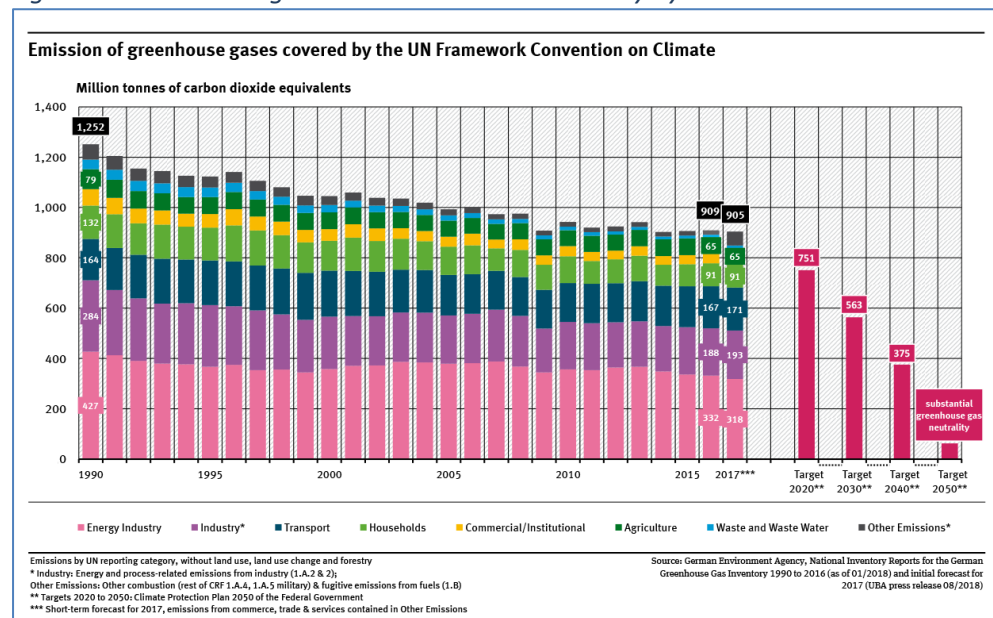
To address the challenges of this broader transition away from coal, the German government has set up a "Commission for Growth, Structural Change, and Employment", consisting of stakeholders from government, business, unions, academia and civil society. This 'Coal Commission' has been tasked with agreeing on an exit date plus a phase out pathway and accompanying social and economic transition measures.<sup>53</sup> The results will feed into an action plan to implement the 2030 energy sector goals of the domestic Climate Action Plan. In 2019, sectoral climate goals are planned to be anchored in a legally-binding Climate Law.

Emissions from energy industries would need to drop below 175 Mt CO<sub>2</sub> equivalents by 2030 (currently 318 MtCO<sub>2</sub>) to achieve the sector emissions target based on the 2050 Climate Action Plan,<sup>54</sup> as illustrated by Figure 7 below. Economy Minister Peter Altmaier has stated that coal capacity would roughly need to be halved by 2030.<sup>55</sup> However Germany is not on track yet to reach its 2020 and 2030 climate-related goals, neither its domestic nor EU targets. A Paris-compatible phase out path would



go beyond current targets and would require an earlier coal exit by 2030 at the latest.<sup>56</sup>

Figure 7: Greenhouse gas emission trends in Germany by sector 1990-2017



Source: UBA<sup>57</sup>

Many key actors including the governing coalition parties (CDU/CSU and SPD), high-carbon businesses, regional governments, and trade unions are hesitant to agree on an ambitious phase-out. They argue that coal regions would need more time to reduce their economic dependence on lignite and ensure the creation of alternative jobs and additional infrastructure. Arguments regarding security of electricity supply are also thrown into the mix. However, several recent studies show the feasibility of an accelerated phase out and the growing importance of renewable jobs which outnumber coal jobs more than tenfold.<sup>58</sup> Various organisations have presented concepts for a just transition, including reskilling programs, investment programs, utilisation of existing and new infrastructure, innovation roadmaps or additional social support mechanisms.<sup>59</sup>

## Opportunities and Challenges of a Coal Phase-out in Germany

### Opportunities

Germany has a lot to gain from an accelerated coal phase-out. Germany's frontrunner position on the clean energy transition and the decreasing overall costs for renewables has resulted in an innovative and decentralised eco-system of SMEs, bottom-up energy cooperatives and small-scale investors with high expertise. Together, these stakeholders provide a sound foundation for an energy system moving away from coal and towards 100% renewables.

One of the benefits of this approach to Energy Democracy<sup>60</sup> has been that it spreads the benefits of the transformation across wider parts of the German population,

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resulting in continuously high public backing for both the Energiewende<sup>61</sup> and a rapid coal phase out<sup>62</sup> across supporters of all major political parties. In addition, Germany's phase out of hard coal mining and its planned phase out of nuclear power created valuable lessons learnt for energy transitions elsewhere and in the future.

Further, the excellent performance of the German economy and its highly skilled workforce combine with its strong industrial base and renowned public education system all contribute to the unique opportunity that Germany has on the international stage. If there is political will for change, Germany has the capabilities to be a role model for how a well-planned, industrial transformation from high- to low-carbon industries can be managed by a large OECD nation around an existing industrial core.

Indeed, a proactive and deep decarbonisation, for example by investing in systemic solutions for smart grids, digitalisation in the energy sector, and storage technology, could be a key element for the success of the German economy in the coming decades. As the realities of climate change start to bite and the opportunities from low-carbon industry become visible, the German government and businesses must ask to what extent "Made in Germany" can reap the benefits of a global low-carbon transition.

## Challenges

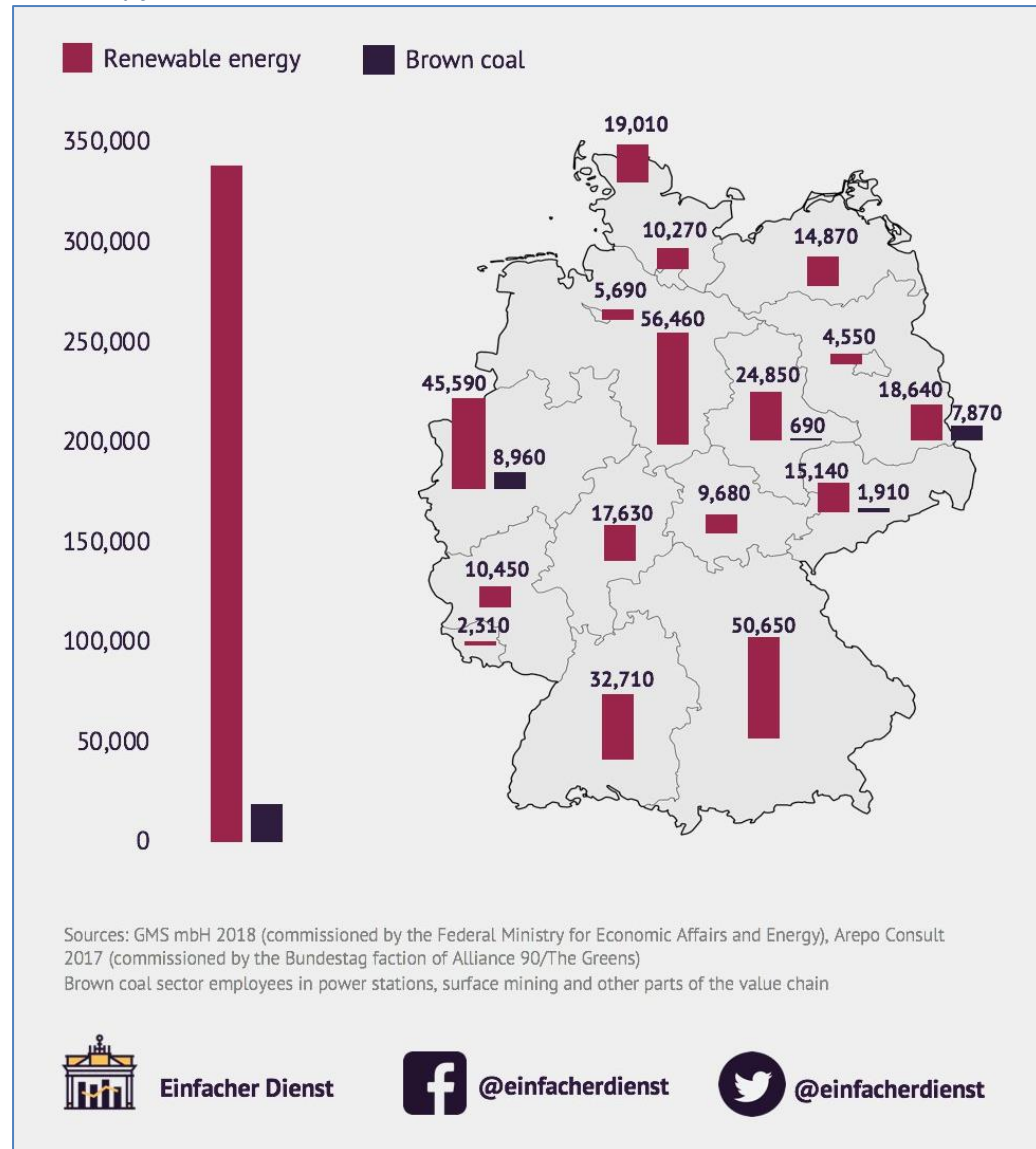
Over recent years, decarbonisation has become more politically difficult as it started to require deeper structural shifts, such as that away from coal and the combustion engine. This has resulted in insufficient progress on CO<sub>2</sub> emission reductions in the face of inertia and opposition from incumbent actors and a subsequent failure to reach existing targets or raise ambition in line with the Paris Agreement. The current government has expressed on various occasions that it would not be keen to raise headline goals while failing to reach existing targets.

Hesitation is further fuelled by fears in both governing party blocs that ambitious climate policy could negatively impact results in upcoming elections in Bavaria and the Eastern states of Germany. The phase-out of lignite is perceived as particularly difficult, given the regionally-concentrated reliance on its mining and use.<sup>63</sup> Overall, there is far-reaching political consensus that the transition away from coal towards a low-carbon economy needs to be fair and orderly to ensure political, economic, social, and cultural stability in the coal mining regions of Lusatia, Central Germany and North Rhine-Westphalia.

Historically, economic and social transitions in Germany were not easy, including after reunification in Eastern German states. Clear roadmaps are expected by affected communities to create realistic perspectives for securing well-paying jobs and good living standards. About 31,000 highly organised coal workers<sup>64</sup> care about their well-paid jobs which tend to be above the regional average salaries, clustered in regions with poorer employment and salary prospects. Direct employment in lignite mining, power plants and related supply chains totals just under 20,000 workers. The

renewable sector, in comparison, employs more than 330,000 people, as illustrated by Figure 8 below.

*Figure 8: Comparison of employees in the German brown coal and renewable energy sectors. By federal state, 2016.*



Source: *Einfacher Dienst* <sup>65</sup>

However, coal jobs are highly unionised and there is a strong alignment between the coal industry and trade unions, who are jointly calling for a slow phase-out and high compensation. This is fuelling debates about rising energy prices and unemployment, including through indirect effects on other industries.<sup>66</sup>

Interestingly, the focus of employment arguments has switched away from the impact on direct employment in the coal sector towards the claimed risk to all energy-intensive industrial jobs in Germany's manufacturing sector if energy prices were to

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increase. This shift seems to have resulted from a recognition that a head-to-head comparison with jobs in the renewable sector was reinforcing the arguments for those advocating for a continued transition from coal to clean energy.<sup>67</sup>

Addressing these concerns, various studies, including by federal agencies, show pathways for how a coal phase out could be achieved without major risks for employment and security of electricity supply.<sup>68</sup> These approaches model further investments in the expansion of the grid and deployment of renewables. In parallel, they recognise that it will be crucial that other real economy sectors, such as transport and the buildings sector, come up with credible decarbonisation strategies to ensure the necessary systemic approach to cut 95% of emissions by 2050.

Amongst the heated arguments for and against an accelerated coal phase out pathway, it is remarkable that climate change features only as a marginal issue in the current political debate. Most climate policy measures are seen through the lens of job losses or gains,<sup>69</sup> for instance in coal or transport, despite many of Germany's regions being close to full employment.

In part this reflects that the governing "Grand Coalition" is instable and polarised.<sup>70</sup> Angela Merkel is serving her fourth term as Chancellor, though her support has weakened both within her party bloc and beyond.<sup>71</sup> Migration dominates the political debate, despite polls suggesting that citizens are more concerned about poverty, education and healthcare.<sup>72</sup> A narrative around increasing ambition to reach the Paris Agreement is quasi-non-existent in the public debate and even considered risky among progressives.

At the same time, the far-right party Alternative für Deutschland (AfD) and the broader rise of mainly right-wing extremists, focused on migration and asylum issues, puts pressure on the German government. Although the AfD's recent success has been the result of migration being high on the agenda and the stirring of anti-immigrant sentiments, their views on climate change are coordinated with US right wing think tanks which deny the existence of human-induced climate change. It has also provided some local politicians with a further excuse to argue for a slow phase out date, arguing that a fast process would strengthen the AfD.

Most members of the Coal Commission and the government however largely agree that early planning and political guidance are necessary to ensure stability and competitiveness in affected regions.<sup>73</sup>

## Will the Coal Commission provide a Just Coal Phase Out?

In its coalition treaty, the current government has agreed to set up a Commission on "Growth, Structural Change, and Employment". According to the agreement and the Commission's mandate, it aims at developing an action plan with concrete measures by the end of 2018 to:

1. Close the gap to reaching the 2020 emissions reduction goal (-40% compared to 1990) to the extent possible;

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2. Reach the domestic 2030 targets for the energy sector, including a robust impact assessment;
  3. Gradually reduce and end power production from coal, including a phase-out date and accompanying legal, structural, economic, and social measures; and
  4. Ensure financial support for the transition in the affected regions and make funds available for the necessary structural adaptation.

Outcomes on transition and structural change policies will be developed and prioritised by October 2018, while first proposals on how to close the gap to Germany's domestic 2020 climate target are expected just before COP24 in Katowice. A final report will be delivered by the end of the year, an ambitious timeline which would allow the results to feed into the upcoming Climate Law process. In the coalition treaty, a total of €1.5bn is already earmarked for structural change and transition in coal regions.

The 28-person strong Commission is led by former high-level politicians of the three regions most affected by a phase-out of coal – Stanislaw Tillich (Saxony), Matthias Platzeck (Brandenburg) and Ronald Pofalla (North Rhine-Westphalia) – as well as the climate economist Barbara Praetorius. The Commission is composed of stakeholders from government, industry, trade unions, academia, regions, and civil society. Decisions require a two-thirds majority in the Commission.<sup>74</sup>

Four ministries form a Steering Group of the Commission (Economy and Energy which hosts the Commission Secretariat, Environment, Labour, Interior Affairs). Representatives of those four ministries, government representatives of affected states ('Länder') and the Chancellery attend meetings of the Commission but do not hold voting rights.<sup>75</sup>

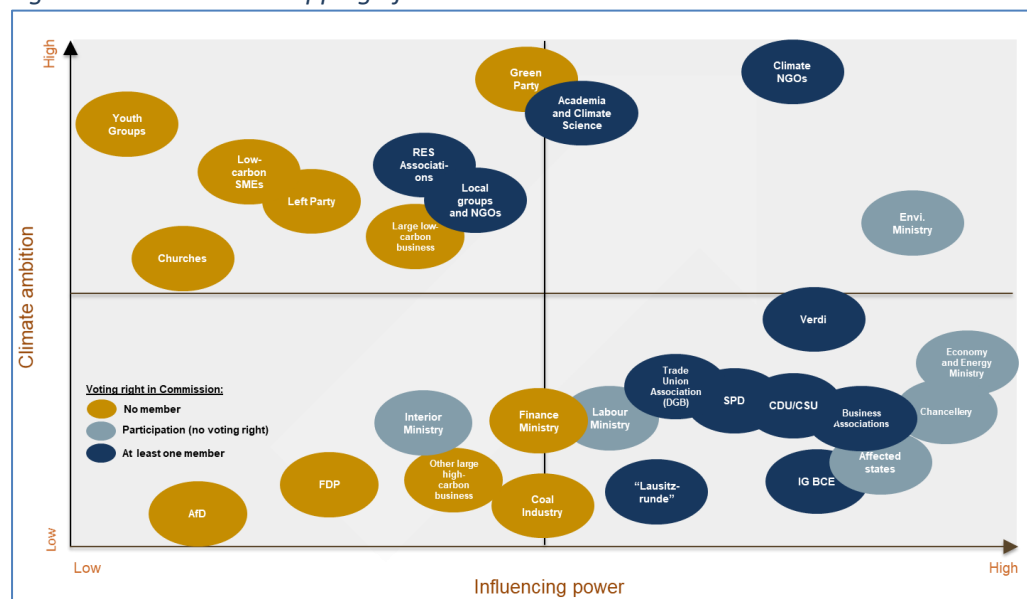
An analysis of the members suggests that the Commission was initially evenly split between supportive, undecided and opposing stakeholders of an early phase out date, as illustrated in Figure 9 below. As a consequence, many of the well-organised members of the Commission are unlikely to agree to or even champion an ambitious coal phase-out which would be in line with the 2030 sector targets or even the Paris Agreement.

While the federal government has traditionally been a strong advocate of the low-carbon transition, the current government coalition, Länder, business associations (BDA, BDI, VKU, BDEW, DIHK) and trade unions (Verdi, IG BCE) are divided on the topic due to competing interests of actors in high- and low-carbon industries.

The strongest opposition against a rapid coal phase out comes from the coal industry, the Union for workers in Mining, the Chemical Industry, and Energy (IG BCE), the States of Brandenburg, North Rhine-Westphalia, and Saxony, some local mayors and politicians, and parts of the ruling coalition parties, SPD and CDU/CSU. Under its new leadership, the Federal Economics and Energy Ministry seems to take a less progressive stance on climate policy as well.<sup>76</sup>

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Figure 9: Stakeholder mapping of the German Coal Commission



Source: E3G <sup>77</sup>

The Federal Environment Ministry is a key ally of ambitious climate action within the government. Varying degrees of support for an accelerated coal phase out come from environmental and climate NGOs, the trade union Verdi, the Green party as well as the progressive wings of SPD and Left party, villages threatened by expanding coal mines, renewable energy associations, various local initiatives in coal mining regions, academia and climate scientists, low-carbon SMEs and some large businesses.

Overall, the stakeholder constellation suggests difficult negotiations, bearing the risk of a low ambition outcome, which could lock Germany into a pathway which is not in line with the Paris Agreement. A phase-out by 2030, which would be necessary for Paris compatibility, at present seems very uncertain. It will be key to find common ground between civil society and trade unions by aligning strong transition measures, including targeted investments in infrastructure, reskilling, social support mechanisms, and the support of private low-carbon investments, with an ambitious phase-out strategy. Under these conditions, the Commission could be a role model for a just coal phase-out. Indeed, reports of the first meetings of the Commission suggest a relatively good working atmosphere, with generally constructive contributions from participants.

Outside the Commission, however, the public debate has heated up. First, the heatwave during the German summer raised awareness of existing and potential impacts of climate change. Secondly, the conflicted situation at the Hambach Forest in the Rhenish coal region has led to increasing media coverage and mobilisation of civil society.



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In a controversial move, the German utility company RWE has announced that it would clear the remaining forest next to the huge Hambach lignite mine. This deliberate provocation led to intensified protests and statements by both the Environment and Economy Ministries, calling on RWE to not cut trees at least until the Commission has come to an agreement. The open conflict is both a symbol for the polarised debate and a risk for the negotiations in the Commission.<sup>78</sup>

## Beyond climate: other drivers for a transition away from coal

Over decades, the German coal industry has been a highly subsidised sector. Recent trends put even bigger question marks over the profitability of coal mines and power plants. Developments in the economics of coal power generation, including new emission standards, litigation costs, sustainable finance drivers, and carbon pricing all put pressure on the German hard coal and lignite industries.

### Worsening economics for coal generation

The cost of generating electricity from coal has surged since 2017. Coal generation costs have increased by 72% to €46 per MWh.<sup>79</sup> These estimates include raw input fuel and carbon costs but exclude many social costs such as health impacts of coal combustion and related emissions. At the same time, the growth of renewables is beginning to eat into operating hours and increase operational complexity for coal plant operators.

In the case that new investments need to be made by power plant operators – for example to curb air pollution emissions (discussed below) – the additional capital costs can be substantial and unjustified in light of future operating expectations. In such a situation, power plant closure would become the appropriate course of action for the plant operator, undermining their case for compensation for ‘forced closure’ on climate grounds.

In the case of lignite, additional costs also apply even after plant closures where the costs for re-cultivation of landscapes and local development can be significant. There are persistent concerns that utility companies are failing to set aside sufficient resources for mine reclamation and re-cultivation.<sup>80</sup>

Indeed, the Swedish publicly-owned utility company Vattenfall had to pay EPH €1.7bn to take over its German lignite assets, with funds supposedly held in trust to contribute towards the €3bn+ costs of land reparation. A recent audit commissioned by Greenpeace however found that of the €1.7bn, only €1bn was transferred.<sup>81</sup> This leaves a €2bn funding gap that would supposedly be covered from profits. However new owner LEAG made a loss in 2016 and 2017, with this situation likely to deepen in the event that a timely coal phase out pathway reduces operating timeframes. State governments are now considering asking for collateral to protect them from the risk of having to cover re-cultivation costs in the event of company bankruptcy.



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### Carbon costs

The database of the consultancy Aurora Energy Research shows that German lignite-fired power generation is making losses of €113 per 1KW capacity (on average between 2016 and 2018) – that is €2.3bn for the entire lignite plant fleet in this period, and points to the currently high ETS prices as one factor behind this.<sup>82</sup>

In early September 2018, the carbon price in the EU ETS surpassed €25 per ton. Even prices around €20 per ton can already have an impact on the merit order in the German power mix, depending on relative coal and gas prices. Studies suggest that older hard coal power plants are already being pushed out of the market by new gas power plants in some cases.

Lignite plants make higher losses in this situation as they emit the highest amount of CO<sub>2</sub> but continue operating due to both their higher fixed costs and greater inflexibility resulting from their integration with mine operations. As a consequence, Germany has seen continued operation of lignite power plants even at times of low electricity prices and high renewables output, with the resulting power exported to neighbouring markets.<sup>83</sup>

The operators of lignite power plants have rejected these numbers, suggesting that lignite remains profitable in the short run and is backed by capacity payments and risk hedging strategies through both selling energy and buying ETS certificates in advance (a strategy RWE has been pursuing already).<sup>84</sup> However, in the medium to long run, when these advance purchase agreements reach their end, the lignite industry will be facing a significantly worsened market situation.

As a consequence, a senior government advisor has argued that ETS price trends alone are on track to result in the closure of half of Germany's coal fleet by 2030.<sup>85</sup> In addition, France has recently increased efforts to cooperate with Germany on a joint carbon pricing system which could help to stabilise higher ETS prices, for example through a regional carbon floor price.<sup>86</sup>

### Air pollution clean-up requirements

On top of higher carbon prices, recently introduced tougher EU air pollution standards (BREF), limiting toxic emissions of plants, will require costly upgrades in a significant number of German coal plants. Only 4 out of Germany's 28 lignite units (Schwarze Pumpe and Lippendorf) currently comply with the new NO<sub>x</sub> limits of 175mg/nm<sup>3</sup>. Given the negative market outlook and low profitability, this could result in early closures. Additional costs are expected to range from €700 million to €1.2bn.<sup>87</sup> The non-compliant plants include those that have been put into the lignite reserve for a paid closure pathway – yet they were also given an exemption from this tightening of emission standards instead of being forced to clean up or shut down.

These new BREF standards almost failed to be adopted with Germany voting against them at EU level following a strong lobby from German lignite industry. Even after the standards were adopted a coalition of industry and regions has litigated against the

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standards while, unsuccessfully, pressing the federal government to challenge the rules in Brussels.<sup>88</sup> Meanwhile the German government has not yet introduced its own domestic implementing measures, which should now have been completed.

### **Litigation risks**

EU pollution standards and the legally-binding nature of the intended Climate Law (which will be developed in 2019 on the back of the current Climate Action Plan 2050) both provide opportunities for a wave of “climate lawsuits” or strategic litigation where civil society and individuals ask governments for compliance, higher climate ambition or compensation for existing climate impacts.<sup>89</sup> Based on ever improving data on climate impacts and accountability of actors, this can cause high litigation costs for coal industries.

In the first such lawsuit in Germany, the Peruvian farmer Mr Lliuya’s case against RWE has passed the first stage and is now in the process of collecting the evidence. Another lawsuit from a number of families from Kenya, Fiji, and EU countries including Germany, known under the People’s Climate Case, has just been accepted by the European Court of Justice.

### **Finance sector puts the squeeze on coal**

The German government is a relative latecomer to the international sustainable finance debate, but a growing number of private sector actors have already been taking positive steps. The German financial community is engaging on issues including greening investment flows and the disclosure and reduction of climate risks, both of which have direct consequences for coal.

Germany’s insurance giant Allianz announced in May 2018 that it would immediately stop providing insurance to coal mines and coal power plants. It also now requires companies with high exposure to coal to develop a coal phase out plan by 2040 – a challenge that it confirmed applies directly to German utilities such as RWE.<sup>90</sup> Subsequently, French insurance companies Macif and AG2R La Mondiale announced that they would divest from RWE due to its continued development of a new coal power plant.<sup>91</sup>

Similarly, global asset manager Blackrock, which has a 5% stake in RWE, considers that any company planning to hold on to coal for longer than the next 10 years is exposing itself to significant risk. These early moves are likely to already affect the outlook of a utility like RWE. In the last 10 years, RWE shares have already lost 75% of their value. A recent £230 million investment to modernise a plant in South Wales led to questions from financial experts for example from Hermes asking for more elaborate justifications behind the decision. Also, DEKA, another RWE investor, has come out arguing that RWE needs to start planning for a coal phase out that is earlier than currently foreseen. Rating Agency Moodys already reduced RWE’s credit rating to Baa3 in 2016, only one step removed from speculative investment territory, citing the companies high share of old and polluting power plants as a reason.

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### **Not just climate: taking a holistic view of the transition out of coal**

While the creation of the Coal Commission is grabbing headlines, these other dynamics could help accelerate the coal phase out in Germany. These mainly economic factors introduce large risks for coal power plants and their operators, all of which could be amplified by the political decisions of the Coal Commission.

Indeed, there is a risk that the impact of these non-climate drivers could be watered down and delayed by coal industry interests that have already successfully secured compensation for the closure of ageing lignite power plants through the creation of the lignite reserve in 2016. By turning the Coal Commission into a Coal vs Climate fight, utility companies are seeking to maximise potential compensatory payments while once again maintaining a business-as-usual scenario.

Instead, all of the above drivers should be considered by the German government and the Coal Commission. Ahead of any climate-led coal phase out pathway these drivers are already set to cause the retirement of more than half of Germany's coal capacity ahead of 2030, with the oldest and dirtiest plants at risk of closure ahead of 2023 under the EU's Industrial Emissions Directive and new BREF standards. Minister Altmaier's suggestion that only half of coal capacity should go offline by 2030 is therefore worse than a business as usual trajectory, let alone an accelerated pathway aimed at reducing CO<sub>2</sub> emissions to deliver on Germany's European and International commitments.

Indeed, the members of the Coal Commission need to ensure that their proposed just transition measures and associated funding are robustly designed and flexible enough to avoid being overtaken by events in the real economy. A central principle should be to recognise that many coal plants are likely to be heading towards closure over the next decade due to age and other factors beyond the Commission's consideration of climate targets that will need to be updated. Taking this broader starting point would enable the Commission to maximise transition support for workers and communities while minimising closure aid costs to utility companies that appear intent on gaming the system one last time.

### **Conclusion and Recommendations**

As a long-term self-proclaimed climate leader and champion of the Energiewende, the German coal phase-out debate is of utmost importance for European and International efforts to deliver on the goals of the Paris Agreement.

#### **New coal**

Remarkably, Germany still has to deal with the question of new coal plants, with one plant under construction and two in planning (but unlikely to ever be built). The Federal government should make clear that no further permits will be granted for coal power plants. If utility company Uniper persists with taking the Datteln 4 project through to operation in 2020 it should not expect to be able to operate beyond 2030. Here, Germany can follow the example of The Netherlands, which has committed to

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ending coal power generation by 2030, including for the latest new coal plants commissioned within the past five years.

### **Existing coal phase out**

Coal power generation is now under pressure from multiple economic factors, as discussed above, all of which can play a role in accelerating the coal transition. The German government needs to make use of all of these elements and associated policy tools to drive a proactive approach. The Coal Commission process is an excellent approach for building consensus but needs to be built on a forward-looking view of the broader public benefit rather than being constrained by the narrow lobbying of incumbent industry interests.

The German government as well as private sector actors and affected regions need to decide: will they use the Coal Commission process to provide guidance for a timely and orderly transition, seizing market opportunities as a frontrunner? Or will they continue to fall behind, exposing workers, communities and the economy to increasingly unpredictable economic, political and climate risks?

The development of a climate change law and its national energy and climate plan (NECP) over the course of 2019 provide immediate opportunities for the German government to define the framework for a coal phase out by 2030 and a platform for subsequent implementing legislation or regulation. Throughout this process it can benefit from the experience of its progressive G7 peers and the wider set of jurisdictions cooperating on coal phase out through the Powering Past Coal Alliance.

### **International Influence**

At the moment, Germany's slowness to define a coal phase out means that it is perceived as a laggard in the fight against climate change and is failing to reach its domestic and European targets. A failure to come up with a timely coal phase out trajectory would further harm Germany's reputation internationally and could also disincentivise others from stepping up climate action.

If done properly, however, the outcomes of the Coal Commission can be a shining example of a coal phase out accompanied by measures for a just transition (both economically and socially) in a major industrial nation. Clear political guidance on the direction and speed of travel from the German government is required, aligned with the goals of the Paris Agreement.

By bringing the coal transition alongside its promotion of renewables, Germany would have a powerful platform for international impact through its climate finance and diplomatic and commercial influence.

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## CONCLUSIONS

Our analysis for this fourth edition of the G7 coal scorecard has found that the underlying structural transition away from coal remains strong. Political commitments have continued from leading national and regional governments, now assisted by their diplomatic cooperation through the Powering Past Coal Alliance.

In a striking contrast to its leadership on renewables Germany remains in sixth place in the scorecard ranking with no substantial change in performance overall since our 2017 report. Germany remains firmly behind the USA, despite the pro-coal rhetoric of the Trump Administration, and is falling further behind the four leading G7 members.

Our in-depth review of the current situation in Germany has highlighted that it scores poorly in respect to the phase out of domestic coal power generation due to entrenched opposition from major utility companies and coal sector interests. Following years of denial and delay (of both the urgency of climate action and the necessity for a shift in corporate strategy) they are now seeking to dilute the implementation of pollution regulations and disrupt the context of the new Federal Coal Commission.

Germany's self-image as a climate leader is contradicted by its slowness to act on coal. The German Federal Government needs to grasp the nettle of the coal transition and move away from its passive approach. It can draw on the policy insights and industry experience of its more proactive peers as it determines its own way forward:

- > As the largest user of coal power generation in Europe, Germany's decisions on its domestic coal phase out will have broader significance. Germany's actions on coal can unlock action by its near neighbours in central and eastern Europe and enable enhanced EU emissions reductions. Internationally, Germany can provide a positive example that heavily industrialised economies can successfully transition away from coal.
- > Canada's co-creation and leadership of the Powering Past Coal Alliance with the UK has been a substantial initiative that has enabled it to cultivate positive cooperation with sub-national actors in the USA and advance the international debate on coal phase out. Germany will need to consider how it can align its domestic coal phase out efforts with the Alliance's recognition of the need for an exit from coal by 2030 by OECD member countries.
- > Over the past year Germany played a positive leading role by advocating for restrictions on coal finance from Asian Infrastructure Investment Bank (AIIB). If it can align its domestic actions with its international advocacy Germany will increase its influence and help catalyse an accelerated global coal transition.
- > 2019 will see the G7 Presidency held by France and the G20 led by Japan. Germany has important economic and political relationships with both countries and can help secure an effective approach to climate action and economic growth that draws on its own G20 Presidency in 2017. But to do so it must decide if it will walk the walk on coal: this decision will be Chancellor Merkel's climate legacy.

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## ENDNOTES

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<sup>1</sup> In light of real-world developments, this year we have also included a new sub-category that considers the Diplomatic Leadership positions of countries as part of our assessment of their International Impact.

<sup>2</sup> World Economic Forum (2018) **Macron at Davos: I will shut all coal-fired power stations by 2021**

<sup>3</sup> Our G7 Scorecard analysis draws on E3G reviews of each of the G7 countries' domestic performance on coal undertaken during 2015 and incorporates additional data and assessments of countries' international impact. Detailed reviews of G7 countries were first undertaken in advance of the 2015 G7 summit, as an analytical input to Oxfam's report **'Let them eat coal'**. Versions of these papers are available on the E3G website at <http://www.e3g.org/showcase/coal-phase-out>

<sup>4</sup> Coal use is currently the source of significant emissions from industrial sectors such as steel production. Those industries are now on notice that they will need to reduce their CO<sub>2</sub> emissions over the coming decades. But a transition out of fossil fuels needs to start with where emissions can be reduced most quickly. The electricity sector is now firmly in the spotlight as the arrowhead of a coal phase out effort.

<sup>5</sup> The Paris Agreement commits countries to: *"Holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels, recognising that this would significantly reduce the risks and impacts of climate change;"* (Article 2). Together with the commitment to reach a *'balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century'* the Paris Agreement sets a new baseline for national actions to address climate change. (Article 4). See UNFCCC (2015) **Paris Agreement**

The forward process under the UNFCCC intends that countries will further reduce their intended national emissions reductions for the coming years, in particular under the review process scheduled for the period 2018-19. A central focus will be on the development of decarbonisation strategies for the period to 2050.

<sup>6</sup> 'Unabated' coal refers to coal-fired electricity generation without the application of carbon capture and storage technology to directly 'abate' (reduce) CO<sub>2</sub> emissions.

<sup>7</sup> For example, analysis by Climate Analytics finds that EU and OECD countries should phase out coal by 2030 in order to deliver emissions reductions compatible with the commitments made in the Paris Agreement. See **Implications of the Paris Agreement for Coal Use in the Power Sector**

<sup>8</sup> BBC News (2018) **Britain powers on without coal for three days**

<sup>9</sup> Business Green (2018) **UK Passes 1000 Hours without Coal as Energy Shift Accelerates**

<sup>10</sup> The total capacity of coal plants discussed here has fallen, as some historical projects have been re-assessed as having been cancelled prior to 2010 and have therefore been excluded from the data. An earlier start date before 2010 would find a large increase in coal power plant project cancellations, particularly in the USA.

<sup>11</sup> **Global Coal Plant Tracker** (2018) See: 'Newly Operating Coal Plants by Year – 2006-2018.

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<sup>12</sup> The Guardian (2018) **How America's clean coal dream unravelled**

<sup>13</sup> Source Watch (2017): **Caledonia Clean Energy Project**

<sup>14</sup> See Power Technology **Datteln 4 Coal-Fired Power Plant**

<sup>15</sup> Full disclosure: E3G has provided advice and support to the leadership of the Powering Past Coal Alliance by the Governments of Canada and the UK, drawing on our analytical work on international coal trends and policies.

<sup>16</sup> Powering Past Coal Alliance (2018) – **About: Our Mission**

<sup>17</sup> Powering Past Coal Alliance (2018) – **About: Declaration**

<sup>18</sup> Powering Past Coal Alliance (2018) – **About: Our History**

<sup>19</sup> Powering Past Coal Alliance (2018) – **Ten new Powering Past Coal Alliance members announced at Global Climate Action Summit**

<sup>20</sup> Powering Past Coal Alliance (2018) – **PPCA partners with Bloomberg Philanthropies to support global efforts on coal phase-out**

<sup>21</sup> World Bank (2017) **Canada and the World Bank Group to Support the Clean Energy Transition in Developing Countries and Small Island Developing States**

<sup>22</sup> Business Insider UK (2017) **The Latest: Italy to phase out coal for electricity by 2025**

<sup>23</sup> As an example, General Electric is backing the proposed 1050MW Lamu coal power project in Kenya. See: IEA (2018) **Governments still financing coal plants abroad in 2018**

<sup>24</sup> The Trump administration is reported to be building a “clean coal alliance” in response to the Powering Past Coal Alliance. This is yet to be formally announced. See Climate Change News (2017): **Trump seeks pro-coal allies global push fuel grows**

<sup>25</sup> The Globe and Mail (2017) **Canadian financial companies investing in coal overseas as feds push phase-out**

<sup>26</sup> Kiko Network (2018) **J-POWER Withdrawal from New Coal Project in Takasago**

<sup>27</sup> Kiko Network (2018) **Small Scale Power Plant in Sendai Switched from Coal to Biomass**

<sup>28</sup> There are proposed plans by Kobe Steel to build a coal-fired power plant made up of two units in the densely-populated Southern area of Kobe City. Residents are concerned that the units will contribute to air pollution, poor health and climate change and are opposing the plan on environmental protection grounds. They are seeking a court injunction to prevent the construction and operation of the power plant. See Kobe Sekitan (2018): **Kobe Coal Lawsuit**

<sup>29</sup> Japan's Ministry of Economy (METI) have articulated a policy to restrict construction of new coal-fired power plants, virtually prohibiting small size ones (smaller than 112.5 MW). This policy has not been formally announced however. If it goes ahead it is a small but positive step and a sign of METI being aware of the reputational risks against international community and investors. See: Nikkei (2018) **METI to regulate the construction of a new coal-fired power plant with low power generation efficiency**

<sup>30</sup> Meiji Yasuda Life Insurance, Nippon Life Insurance and Dai-ichi Life Insurance have each adopted policies to restrict financing to coal power plants. See: Kiko Network (2018) **Meiji Yasuda Divestment**



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<sup>31</sup> Mitsubishi UFJ Financial Group, Mizuho Financial Group and Sumitomo Mitsui Banking Corporation have all announced policies on lending to the coal-fired power sector. See: Kiko Network (2018) [\*\*Sumitomo Mitsui Trust Divestment\*\*](#)

<sup>32</sup> Marubeni has adopted new business policies that; i) intend for Marubeni to cut its FY2018 coal-fired power net generation capacity of 3GW in half; ii) prevent Marubeni to enter into any new coal fires power generation business (although ultra-supercritical technologies may be considered), and; iii) encourage the expansion of Marubeni's renewable energy generation business. See: Marubeni (2018) [\*\*Notification Regarding Business Policies Pertaining to Sustainability\*\*](#)

<sup>33</sup> The policies of Marubeni and Meiji Yasuda Life Insurance Company for example, also still allow for the support of ultra-supercritical (USC) technology without carbon capture and storage.

<sup>34</sup> The agreements relate to some thermal power plants, including Nghi Son 2, Van Phong 1, and Vung Ang 2 in Vietnam. See: VIR (2018) [\*\*State visit gives boost to Vietnam-Japan relations\*\*](#)

<sup>35</sup> Policy speech by Japanese Foreign Minister Taro Kono. See MOFA (2018) [\*\*Policy Speech by Japanese Foreign Minister Taro Kono\*\*](#)

<sup>36</sup> MODA (2018) [\*\*Advisory Panel of Experts on Climate Change\*\*](#)

<sup>37</sup> The Mainichi (2018) [\*\*Gov't holds 1st meeting of expert panel on Paris Agreement greenhouse gas goals\*\*](#)

<sup>38</sup> Energy Transition (2018). See: [\*\*Renewables overtake Coal as Germany's most important fuel source\*\*](#)

<sup>39</sup> Clean Energy Wire (2018) [\*\*Coal in Germany\*\*](#)

<sup>40</sup> Clean Energy Wire (2018) [\*\*German energy consumption and power mix in charts\*\*](#)

<sup>41</sup> Carbon Capture and Storage (CCS) is unpopular in Germany following controversies a decade ago over the perceived safety of onshore CO<sub>2</sub> storage. This resulted in a restrictive policy framework and the abandonment of previously proposed CCS demonstration projects. This outcome was actively encouraged by utility companies that had rhetorically supported CCS but opposed policy efforts to require its commercial deployment. The association of CCS with coal and lignite power generation resulted in the idea of CCS becoming toxic across civil society, to the extent that even industrial applications of CCS still struggle to get policy traction in German policy debates. CCS for power generation is currently out of the question.

<sup>42</sup> Sandbag (2018) [\*\*New Data: EU ETS emissions rise for first time in 7 years\*\*](#)

<sup>43</sup> S&P Global (2018) [\*\*Boiler damage delays Germany's 1.1 GW Datteln IV coal plant to 2020\*\*](#)

<sup>44</sup> Handelsblatt (2018) [\*\*Neue Verzögerungen beim Kraftwerk Datteln – Gewinneinbruch für Uniper\*\*](#) (in German)

<sup>45</sup> Montel News (2018) [\*\*1.1 GW lignite plant project to be cancelled\*\*](#)

<sup>46</sup> Montel News (2018) [\*\*1.1 GW lignite plant project to be cancelled\*\*](#)

<sup>47</sup> Carbon Tracker Initiative (2017) [\*\*Lignite of the living dead\*\*](#)

<sup>48</sup> Clean Energy Wire (2018) [\*\*The History behind Germany's Nuclear Phase-Out\*\*](#)

<sup>49</sup> Deutsche Welle (2018) [\*\*The end of an era: Hard coal in Germany\*\*](#)

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- <sup>50</sup> Boell Foundation (2018) **A just transition: The way forward for coal communities**
- <sup>51</sup> Verein der Kohlenimporteure (2018) **Importkohlemarkt auf einen Blick (p.2 in German)**
- <sup>52</sup> For an overview: Clean Energy Wire (2018) **Climate levy – the debate and proposals for cutting CO2 emissions**
- <sup>53</sup> For more information: E3G (2018) **A climate for ambition?**
- <sup>54</sup> Environment Ministry (2018) **Climate Action in Figures**
- <sup>55</sup> S&P Global Platts (2018): **Germany confirms target to halve coal-fired power output by 2030: energy minister**
- <sup>56</sup> Climate Analytics (2018) **Coal phase-out – regional perspective**
- <sup>57</sup> UBA (2018) **Indicator: Greenhouse Gas Emissions**. See also Clean Energy Wire (2018) **Germany's greenhouse gas emissions and climate targets**
- <sup>58</sup> For example: Fraunhofer Institute (2018) **Energieszenario 2020** (in German); Climate Home News (2018) **Why are coal workers so powerful when there are so few?** on RES jobs
- <sup>59</sup> For example: Agora Energiewende (2018) **Eine Zukunft für die Lausitz** (in German)
- <sup>60</sup> Morris & Jungjohann (2016) **Energy Democracy – Germany's Energiewende to Renewables**
- <sup>61</sup> Clean Energy Wire (2017) **Polls reveal citizens' support for Energiewende**
- <sup>62</sup> Greenpeace Germany (2018) **Soziale Akzeptanz eines Kohleausstiegs in Deutschland und in den Kohlerevieren** (in German)
- <sup>63</sup> A useful overview of dynamics is available at Spiegel Online (2017) **Can Germany break its lignite habit?**
- <sup>64</sup> DLR, DIW, GWS in Clean Energy Wire (2018): **Jobs in Germany's wind power sector 2000-2016 & jobs in hard coal and lignite industry**
- <sup>65</sup> Einfacher Dienst (2018) **Kohlejobs: Die größte Herausforderung in der Energiewende?** (in German)
- <sup>66</sup> Climate Home News (2018) **Why are coal workers so powerful when there are so few?**
- <sup>67</sup> Clean Energy Wire (2018) **German industry embraces Energiewende transformation challenge**
- <sup>68</sup> See for example: IDDRI (2018) **Coal industry in Germany: 2018, a turning point?**; Fraunhofer Institute (2018) **Energieszenario 2020**
- <sup>69</sup> Atlantic Council (2018) **The Coal Phase-Out Commission and Germany's Struggling Climate Leadership**
- <sup>70</sup> For example: New York Times (2018) **German hard-liners want to close borders, threatening Merkel coalition**
- <sup>71</sup> Politico (2018) **Merkel loses support, far right rises after migration row**
- <sup>72</sup> NTV, Emnid Poll (2018) **Altersarmut wichtigstes Politikthema** (in German)
- <sup>73</sup> See Clean Energy Wire Coverage **here**.
- <sup>74</sup> Environment Ministry (2018) **Launch of Commission on Growth Structural Change, and Employment**
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<sup>75</sup> Environment Ministry (2018) **Launch of Commission on Growth Structural Change, and Employment**

<sup>76</sup> For example: Euractiv (2018) **Germany pours cold water on EU's clean energy ambitions**

<sup>77</sup> E3G (2018) **A climate for ambition?**

<sup>78</sup> Deutsche Welle (2018) **Hambach: The battle between a forest and a coal mine**

<sup>79</sup> Energy Transition (2018) **European Carbon Trading drives up fossil fuel prices**

<sup>80</sup> Deutschlandfunk (2018) **Streit um Rücklagen für Renaturierung** (in German)

<sup>81</sup> Klima Reporter (2018) **Auditors: Leag missing billions** (in German)

<sup>82</sup> Tagesspiegel based on Aurora Energy Research (2018) **Braunkohle verdient oft kein Geld** (in German)

<sup>83</sup> Agora (2014) **Negative Electricity Prices: Causes and Effects**

<sup>84</sup> CNBC (2018) **Savvy European utilities shield themselves from higher carbon costs**

<sup>85</sup> Montel News (2018) **ETS on track to close half of Germany's coal fleet**

<sup>86</sup> Euractiv (2018) **Ministers highlight divide over carbon floor price**

<sup>87</sup> Climate Analytics (2018) **About 80% of EU and German non-compliant with new EU 2021 air pollution regulations**

<sup>88</sup> Case T-739/17 participants include EURACOAL, DEBRIV, LEAG, EinsEnergie Sachsen, MIBRAG, State of Saxony, Freshfields, Spieth und Hellermann.

<sup>89</sup> See for example EEB (2018) on **BREF; Germanwatch; Independent**

<sup>90</sup> Financial Times (2018) **Allianz to stop selling insurances to coal companies** and Deutsche Welle (2018) **Allianz stops insuring coal companies**

<sup>91</sup> Euractiv (2018) **French insurance companies to divest from German top utility RWE**